Abstracts from
The American Telemedicine Association
Twentieth Annual Telemedicine
Meeting and Trade Show

Jointly provided by:
USF Health
American Telemedicine Association

May 2–5, 2015
Los Angeles Convention Center
Los Angeles, CA
HOW-TO PANEL
Session 1
Session Title: ESTABLISHING A SUCCESSFUL SPECIALTY CLINIC IN A MOBILE SETTING THROUGH TELEMEDICINE
Track: Pediatric Telehealth Colloquium    Room 308AB
PRESENTER: Lisa Gwynn, DO, MBA, Medical Director, Pediatric Mobile Clinic
University of Miami Miller School of Medicine, Miami, FL, USA

PRESENTATION PANEL
Session 2
Session Title: IMPLEMENTING INNOVATIVE TELEHEALTH PROGRAMS IN CHILDREN’S HOSPITALS
Track: Pediatric Telehealth Colloquium    Room 308AB
MODERATOR: Julie Hall-Barrow, EdD, Senior Director, Healthcare Innovation
Children’s Health System of Texas, Dallas, TX, USA
PRESENTER: Julie Hall-Barrow, EdD, Senior Director, Healthcare Innovation
Children’s Health System of Texas, Dallas, TX, USA
PRESENTER: Shawn Farrell, MBA, Director, Telehealth Programs
Boston Children’s Hospital, Boston, MA, USA
PRESENTER: Jennifer Ruschman, ScM, Director, Center for Telehealth
Cincinnati Children’s, Cincinnati, OH, USA
PRESENTER: Evelyn Terrell, BS, MS, OTD, Regional Director, Rehabilitation Services and Telehealth Operations
Miami Children’s Hospital, Miami, FL, USA

PRESENTATION PANEL
Session 3
Session Title: A PATIENT-CENTERED TELEBEHAVIORAL HEALTH INTERVENTION FOR MEDICAID-INSURED CHILDREN
Track: Pediatric Telehealth Colloquium    Room 308AB
MODERATOR: Tumaini Coker, MD, MBA, Assistant Professor-in Residence of Pediatrics
Mattel Children's Hospital UCLA, Los Angeles, CA, USA
### TELEMEDECINE APPROACHES TO EVALUATING ACUTE-PHASE RETINOPATHY OF PREMATURITY (ROP): e-ROP

**PRESENTERS AND CONTRIBUTING AUTHORS:**
Agnieszka Baumritter, MS, Project Director  
Children’s Hospital of Philadelphia, Philadelphia, PA, USA

### ENHANCED RESIDENT INTUBATION USING A TELE-LARYNGOSCOPE IN NEONATES

**PRESENTERS AND CONTRIBUTING AUTHORS:**
Richard W. Hall, MD, Professor, Neonatology  
University of Arkansas for Medical Sciences, Little Rock, AR, USA  
1, David K. Williams, PhD1, Jimmie A. Birdsong, BSN1, Ron C. Sanders, MD2  
1University of Arkansas for Medical Sciences, Little Rock, AR, USA, 2Arkansas Children’s Hospital, Little Rock, AR, USA

### I SEE U BABY: TEAMWORK IN THE NICU

**PRESENTERS AND CONTRIBUTING AUTHORS:**
Donald Ponturo, BS, Director, External Relations and Innovation, Justin Stephens, BA  
Mattel Children’s Hospital UCLA, Los Angeles, CA, USA

### TELENICU IMPROVING PEDIATRIC SUBSPECIALTIES SECOND OPINION AND QUALIFICATION OF CARE

**PRESENTERS AND CONTRIBUTING AUTHORS:**
Maria do Carmo B. Melo, MD, Associate Professor; Visiting Professor at University of California, Davis1, Nara Lucia Carvalho Silva2, Thais Costa Nascente Queiroz, MD2, Cintia Alcantara Carvalho1, Carla Carvalho Martins4, Alaneir Fatima Santos, MD3, Humberto José Alves, MD3  
1Universidade Federal de Minas Gerais, Belo Horizonte, Brazil, 2Universidade Federal de Minas Gerais, Belo Horizonte, Brazil, 3Secretaria de Estado da Saúde de Minas Gerais, Brazil, 4Secretaria de Estado da Saúde de Minas Gerais, Belo Horizonte, Brazil.

### MONDAY, MAY 4, 2015

#### 11:00 am–12:00 pm Monday, May 4, 2015

**Session Title:** IT’S A SMALL WORLD AFTER ALL: APPROACHES IN NEONATAL ICU CARE

**Track:** Pediatric Telehealth Colloquium  
**Room:** 308AB

**MODERATOR:** Richard W. Hall, MD, Professor, Neonatology  
University of Arkansas for Medical Sciences, Little Rock, AR, USA

**TELEMEDICINE APPROACHES TO EVALUATING ACUTE-PHASE RETINOPATHY OF PREMATURITY (ROP): e-ROP**

**PRESENTERS AND CONTRIBUTING AUTHORS:**
Agnieszka Baumritter, MS, Project Director  
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**ENHANCED RESIDENT INTUBATION USING A TELE-LARYNGOSCOPE IN NEONATES**

**PRESENTERS AND CONTRIBUTING AUTHORS:**
Richard W. Hall, MD, Professor, Neonatology1, David K. Williams, PhD1, Jimmie A. Birdsong, BSN1, Ron C. Sanders, MD2  
1University of Arkansas for Medical Sciences, Little Rock, AR, USA, 2Arkansas Children’s Hospital, Little Rock, AR, USA

**I SEE U BABY: TEAMWORK IN THE NICU**

**PRESENTERS AND CONTRIBUTING AUTHORS:**
Donald Ponturo, BS, Director, External Relations and Innovation, Justin Stephens, BA  
Mattel Children’s Hospital UCLA, Los Angeles, CA, USA

**TELENICU IMPROVING PEDIATRIC SUBSPECIALTIES SECOND OPINION AND QUALIFICATION OF CARE**

**PRESENTERS AND CONTRIBUTING AUTHORS:**
Maria do Carmo B. Melo, MD, Associate Professor; Visiting Professor at University of California, Davis1, Nara Lucia Carvalho Silva2, Thais Costa Nascente Queiroz, MD2, Cintia Alcantara Carvalho1, Carla Carvalho Martins4, Alaneir Fatima Santos, MD3, Humberto José Alves, MD3  
1Universidade Federal de Minas Gerais, Belo Horizonte, Brazil, 2Universidade Federal de Minas Gerais, Belo Horizonte, Brazil, 3Secretaria de Estado da Saúde de Minas Gerais, Brazil, 4Secretaria de Estado da Saúde de Minas Gerais, Belo Horizonte, Brazil.

#### MONDAY, MAY 4, 2015

#### 12:00 pm–1:00 pm Monday, May 4, 2015

**Session Title:** PEDIATRIC SPEED ROUNDS: MEET THE EXPERTS

**Track:** Pediatric Telehealth Colloquium  
**Room:** 308AB

**MODERATOR:** Neil E. Herendeen, MD, MS, Associate Professor of Pediatrics  
University of Rochester, Pittsford, NY, USA

**PRESENTER:** Madan Dharmar, MBBS, PhD, Assistant Research Professor  
University of California, Davis Children’s Hospital, Sacramento, CA, USA

**PRESENTER:** James P. Marcin, MD, MPH, Professor of Pediatrics  
University of California, Davis, Sacramento, CA, USA

**PRESENTER:** Kathleen Webster, MD, MBA, Associate Professor  
Advocate Health System, Oak Lawn, IL, USA
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1:15 pm–2:15 pm Monday, May 4, 2015
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Session Title: UNDERSTANDING OUTCOME MEASURES AND EVALUATION METHODS IN PEDIATRIC TELEHEALTH
Track: Pediatric Telehealth Colloquium Room 308AB
MODERATOR: Madan Dharmar, MBBS, PhD, Assistant Research Professor
University of California, Davis Children’s Hospital, Sacramento, CA, USA
PRESENTER: Neil E. Herendeen, MD, MS, Associate Professor of Pediatrics
University of Rochester, Pittsford, NY, USA
PRESENTER: Madan Dharmar, MBBS, PhD, Assistant Research Professor,
University of California, Davis Children’s Hospital, Sacramento, CA, USA
PRESENTER: Kathleen Webster, MD, MBA, Associate Professor
Advocate Health System, Oak Lawn, IL, USA

MONDAY, MAY 4, 2015
3:00 pm–4:00 pm Monday, May 4, 2015
INDIVIDUAL ORAL
Session 51
Session Title: EXPLORING MODELS OF CARE FOR CHILDREN THROUGH TELMEDECINE
Track: Pediatric Telehealth Colloquium Room 308AB
MODERATOR: James McElligott, MD, MSCR, Assistant Professor
Medical University of South Carolina, Summerville, SC, USA

THE TELEHEALTH FRONTIER: PROVIDING PEDIATRIC BEHAVIORAL THERAPIES INTO THE HOME
PRESENTERS AND CONTRIBUTING AUTHORS:
Lisa Kelchner, PhD, Associate Professor, Director of Graduate Studies1, Stephanie Zacharias, PhD1, Casey Keck, MA1, Alessandro de Alarcon, MD, MPH1, Dimitar Delyski, PhD1, Janet Beckmeyer, MA2, Meredith Tabangin, MPH1, Charles Doarn, MBA1, Kathryn Davidson, MA1
1Cincinnati Childrens Hospital Medical Center and the University of Cincinnati, Cincinnati, OH, USA, 2Cincinnati Childrens Hospital Medical Center, Cincinnati, OH, USA, 3University of Cincinnati, Cincinnati, OH, USA, 4University of Cincinnati, Cincinnati, OH, USA

USING TELEHEALTH TO MEET THE NEEDS OF CHILDREN WITH SPECIAL HEALTHCARE NEEDS IN CALIFORNIA: AN EXPLORATION OF POLICY AND PRACTICE
PRESENTERS AND CONTRIBUTING AUTHORS:
Jacob Vigil, MSW, Program Associate
The Children’s Partnership, Santa Monica, CA, USA

FAST AND FURIOUS: LAUNCHING SCHOOL TELMEDECINE IN NORTH TEXAS
PRESENTERS AND CONTRIBUTING AUTHORS:
Tamara Perry, BS, Project Manager, Telehealth, Julie Hall-Barrow, EdD, Danielle Wesley, MHA
Children’s Health System of Texas, Dallas, TX, USA

UTILIZING TELMEDECINE TECHNOLOGY IN PEDIATRIC HEALTHCARE
PRESENTERS AND CONTRIBUTING AUTHORS:
Sunil Buthrani, MD, MPH, MBA, Cofounder
CareClix Telemedicine, Vienna, VA, USA
MONDAY, MAY 4, 2015

4:15 pm–5:15 pm

INDIVIDUAL ORAL

Session 52

Session Title: IMPROVING CARE COORDINATION THROUGH TELEMEDICINE

Track: Pediatric Telehealth Colloquium Room 308AB

MODERATOR: Kathleen Webster, MD, MBA, Associate Professor

Advocate Health System, Oak Lawn, IL, USA

INTEGRATING TELEMEDICINE TOOLS INTO A THERAPEUTIC ENVIRONMENT FOR CARE COORDINATION

PRESENTERS AND CONTRIBUTING AUTHORS:

Jason T. Long, PhD, Associate Professor and Director, Christopher J. Kovacs, PT, DPT, Erin E. Fritts, OTR/L, Krystin Turner, OTR/L, Brian E. Cunningham, BS

Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, USA

TELEHOSPICE FOR CHILDREN: PRELIMINARY FINDINGS AND NEXT STEPS

PRESENTERS AND CONTRIBUTING AUTHORS:

David Steinhorn, MD, Professor of Pediatrics1, Devon Dabbs, BA2, Terri Warren, MSW3, Mario Gutierrez, MPH4, James Marcin, MPH MD1

1University of California, Davis Medical Center, Sacramento, CA, USA, 2Children’s Hospice and Palliative Care Coalition (CHPCC), Salinas, CA, USA, 3Providence TrinityCare Hospice, Torrance, CA, USA, 4Center for Connected Health Policy, Sacramento, CA, USA

TUESDAY, MAY 5, 2015

11:00 am–12:00 pm

PRESENTATION PANEL

Session 53

Session Title: INTEGRATING HEALTH IT INTO EDUCATION SYSTEMS TO PRODUCE A MORE PREPARED MEDICAL WORK FORCE

Track: Pediatric Telehealth Colloquium Room 308AB

MODERATOR: Sherrie L. Williams, LCSW, Executive Director

Georgia Partnership For Telehealth, Waycross, GA, USA

PRESENTER: Sherrie L. Williams, LCSW, Executive Director

Georgia Partnership For Telehealth, Waycross, GA, USA

PRESENTER: Phyllis Johnson, BSN, Career Technical Agricultural Education Program Specialist

Georgia Department of Education, Atlanta, GA, USA

PRESENTER: Loren Nix, BSN, RN, Telemedicine Liaison

Georgia Partnership For Telehealth, Waycross, GA, USA

TUESDAY, MAY 5, 2015

1:15 pm–2:15 pm

HOW-TO PANEL

Session 54

Session Title: DELIVERING SAFE AND EFFECTIVE HOME-BASED CHILD TELEMENTAL HEALTH

Track: Pediatric Telehealth Colloquium Room 308AB

PRESENTER: Eve-Lynn Nelson, PhD, Professor & Director

University of Kansas Medical Center, Fairway, KS, USA

PRESENTER: Kathleen M. Myers, MD, Professor & Director

University of Washington and Seattle Children’s Hospital, Seattle, WA, USA
TUESDAY, MAY 5, 2015

3:00 pm–4:00 pm

INDIVIDUAL ORAL

Session 55

Session Title: USING TECHNOLOGY FOR PATIENT EVALUATION AND DISEASE MANAGEMENT IN CHILDREN

Track: Pediatric Telehealth Colloquium Room 308AB

MODERATOR: Bryan Burke, MD, Professor of Neonatology
University of Arkansas for Medical Sciences, Little Rock, AR, USA

FACE-TO-FACE VERSUS ASYNCHRONOUS CLINICAL SWALLOWING EVALUATIONS IN PEDIATRIC DYSPHAGIA

PRESENTERS AND CONTRIBUTING AUTHORS:
Cagla Kantarcigil, MS, Doctoral Student¹, Justine J. Sheppard, PhD², Andrew Gordon, PhD², Kathleen Friel, PhD², Georgia A. Malandraki, PhD¹
¹Purdue University, West Lafayette, IN, USA, ²Teachers College, Columbia University, New York, NY, USA

CARING FOR KIDS WHERE THEY LIVE: USING REMOTE PRESENCE TO IMPROVE PEDIATRIC ORAL HEALTH

PRESENTERS AND CONTRIBUTING AUTHORS:
Carol A. Bullin, RN, PhD, Assistant Professor, Jill M.G. Bally, RN, PhD, Shelley Spurr, RN, PhD, Lorna J. Butler, RN, PhD
University of Saskatchewan, Saskatoon, SK, Canada

USING TECHNOLOGY TO EXPAND ACCESS TO MULTIDISCIPLINARY PEDIATRIC OBESITY CARE IN URBAN LOS ANGELES

PRESENTERS AND CONTRIBUTING AUTHORS:
Miranda Westfall, MPH, RD, Program Manager & Clinic Dietitian
Mattel Children’s Hospital UCLA, Los Angeles, CA, USA

TUESDAY, MAY 5, 2015

4:15 pm–5:15 pm

INDIVIDUAL ORAL

Session 56

Session Title: ACUTE PEDIATRIC ASSESSMENT THROUGH TELEHEALTH

Track: Pediatric Telehealth Colloquium Room 308AB

MODERATOR: James Marcin, MD, Associate Professor
University of California, Davis, Sacramento, CA, USA

CLINICIAN ATTITUDES TOWARD ADOPTION OF PEDIATRIC EMERGENCY TELEMEDICINE IN RURAL SETTINGS

PRESENTERS AND CONTRIBUTING AUTHORS:
Courtney Kuza, MPH, Project Manager¹, Jeremy Kahn, MD, MS¹,², Kristin Ray, MD¹,², Kathryn Felmet, MD³,¹, Melinda Hamilton, MD, MS³,¹, Brian Schultz, MD³,¹, R. Scott Watson, MD, MPH¹,³
¹University of Pittsburgh School of Medicine, Pittsburgh, PA, USA, ²University of Pittsburgh Graduate School of Public Health, Pittsburgh, PA, USA, ³Children’s Hospital of Pittsburgh, Pittsburgh, PA, USA

PROVIDING URGENT CHILD ABUSE CONSULTATIONS WITH TECHNOLOGY

PRESENTERS AND CONTRIBUTING AUTHORS:
Claudia Wang, MD, Clinical Professor of Pediatrics
Mattel Children’s Hospital UCLA, Los Angeles, CA, USA

INTEGRATING TELEHEALTH TECHNOLOGY IN A PEDIATRIC PALLIATIVE CARE PROGRAM

PRESENTERS AND CONTRIBUTING AUTHORS:
Elana E. Evan, PhD, Directory, Program Development and Research, UCLA Children’s Pain Comfort Care Program
Mattel Children’s Hospital UCLA, Los Angeles, CA, USA
MONDAY, MAY 4, 2015

HOW-TO PANEL
Session 4
Session Title: ENSURING YOUR SERVICE IS HIPAA COMPLIANT
Track: Direct to Consumer Room 403A
PRESENTER: William Mee, MS, Senior Information Security Analyst
VCU Medical Center, Richmond, VA, USA

MONDAY, MAY 4, 2015

INDIVIDUAL ORAL
Session 5
Session Title: IMPROVING COMMITMENT, QUALITY, AND OUTCOMES
Track: Direct to Consumer Room 403A
MODERATOR: Lisa Roberts, PhD, Senior Vice President
AMC Health, New York, NY, USA

PROVIDER INCENTIVES FOR EFFECTIVE VIRTUAL CARE

PRESENTERS AND CONTRIBUTING AUTHORS:
Steve Creelman, MD, Director of Clinical Affairs
Carena, Seattle, WA, USA

EMPLOYER AND PATIENT BENEFITS FROM ONSITE EMPLOYEE VIRTUAL CARE

PRESENTERS AND CONTRIBUTING AUTHORS:
Dustin Helvey, DPT, MBA, Leader, Virtual Care Delivery
Kaiser Permanent, San Diego, CA, USA

MONDAY, MAY 4, 2015

INDIVIDUAL ORAL
Session 6
Session Title: MAINSTREAM MEDICINE MOVES INTO DIRECT TO CONSUMER HEALTH
Track: Direct to Consumer Room 403A
MODERATOR: Naomi Fried, PhD, Vice President, Medical Information, Innovation, and External Partnerships
Biogen Idec, Cambridge, MA, USA

THE FIRST OF ITS KIND: A SNEAK PEEK OF MERCY VIRTUAL CARE CENTER

PRESENTERS AND CONTRIBUTING AUTHORS:
Thomas Hale, M, MD, PhD, Executive Medical Director, Telehealth Services, Christopher Veremakis, MD, Janet Pursley, RN, BSN, MBA, Wendy Delbert, F, RN, BSN
Mercy Virtual, Chesterfield, MO, USA

MYCARE ONLINE: THE CLEVELAND CLINIC EXPERIENCE

PRESENTERS AND CONTRIBUTING AUTHORS:
Matthew Faiman, MD, MBA, Director, Teleprimary Care Services, Department of Internal Medicine
Cleveland Clinic Foundation, Cleveland, OH, USA
A COMPARISON OF REAL-TIME, DIRECT-TO-PATIENT URGENT CARE TELEMEDICINE TO BRICK AND MORTAR PRACTICE

PRESENTERS AND CONTRIBUTING AUTHORS:
Michael Bess, MD, MHA, National Medical Director Telehealth, Laura Ten Eyck, PhD, Associate Director Healthcare Analytics, Anant Patel, BSc, Product Specialist Consumer System Navigation
Optum, Eden Prairie, MN, USA

VIRTUAL URGENT CARE VISIT OUTCOMES

PRESENTERS AND CONTRIBUTING AUTHORS:
Robert Bernstein, MD, MPH, Director for Clinical Quality
Carena, Seattle, WA, USA

URGENT CARE AND TELEMEDICINE

PRESENTERS AND CONTRIBUTING AUTHORS:
Howard Reis, MBA, President
HEALTHePRACTICES, West Nyack, NY, USA

THE RISE OF CONSUMER DRIVEN HEALTHCARE: THE GOLD RUSH TO DISRUPT THE EXISTING PRIMARY CARE PARADIGM

PRESENTERS AND CONTRIBUTING AUTHORS:
Alan Dappen, MD, Founder
DocTalker Family Medicine, Vienna, VA, USA

DELIVERING DIRECT-TO-CONSUMER CONSULTS VIA TELEMEDICINE

PRESENTERS AND CONTRIBUTING AUTHORS:
Tobias Barker, MD, Vice President, Medical Operations
CVS MinuteClinic, Woonsocket, RI, USA
TUESDAY, MAY 5, 2015

11:00 am–12:00 pm Tuesday, May 5, 2015

PRESENTATION PANEL

Session 9

Session Title: A LARGE PROVIDER FOCUSES ON CONSUMERS: THE EXPERIENCE AT KAISER PERMANENTE

Track: Direct to Consumer Room 403A

MODERATOR: Jeffrey A. Benabio, MD, Physician Director of Healthcare Transformation
Kaiser Permanente, San Diego, CA, USA

PRESENTER: Jan Ground, PT, MBA, Senior Project Manager
Colorado Permanente Medical Group, Denver, CO, USA

PRESENTER: Amanda Hauser, MPH, Project Manager Lead
Kaiser Permanente’s Fontana and Ontario Medical Centers, Fontana, CA, USA

PRESENTER: John Tanouye, MPH, Project Manager - Ambulatory
Kaiser Permanente South Bay Medical Center, Los Angeles, CA, USA

TUESDAY, MAY 5, 2015

1:15 pm–2:15 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL

Session 10

Session Title: DESIGNING AND IMPLEMENTING SUCCESSFUL CONSUMER APPS BY MAINSTREAM PROVIDERS

Track: Direct to Consumer Room 403A

MODERATOR: Mark Blatt, MD, MBA, Worldwide Medical Director
Intel Corporation, Santa Clara, CA

DESIGNING A MOBILE APP FOR TELEMEDICINE: A MODEL FOR EVALUATION OF CRITICAL ELEMENTS

PRESENTERS AND CONTRIBUTING AUTHORS:
William Eng, MD, Assistant Professor
University of Central Florida Medical School, Orlando, FL, USA

THE EFFECT OF MOBILE APP HOME MONITORING ON THE NUMBER OF IN-PERSON VISITS FOLLOWING AMBULATORY SURGERY: COST-EFFECTIVENESS ANALYSIS ALONGSIDE A RANDOMIZED CONTROLLED TRIAL

PRESENTERS AND CONTRIBUTING AUTHORS:
Kathleen Armstrong, MD, Plastic & Reconstructive Surgery Resident, Peter Coyte, MA, PhD, John Semple, MD, MSc
University of Toronto, Toronto, ON, Canada

TELECONSULTATION IN SEXUAL AND REPRODUCTIVE HEALTH FOR YOUNG ADULTS THROUGH MOBILE DEVICES: EXPERIENCE IN COLOMBIA

PRESENTERS AND CONTRIBUTING AUTHORS:
Catalina Lopez, MD, MSc, Assistant Director, Center for Health Innovation and Education1, Daniel Ramirez, MD2, Jose Ignacio Valenzuela, MD, MSc1, Arturo Arguello, MD, EdM1, Juan Pablo Saenz, MSc3, Stephanie Trujillo, MD1, Dario Correal, PhD2, Roosevelt Fajardo, MD, MBA3, Cristina Dominguez, MD4
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TUESDAY, MAY 5, 2015

3:00 pm–4:00 pm Tuesday, May 5, 2015

PRESENTATION PANEL
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Session Title: TELEMEDICINE: OPTIMIZING THE PATIENT EXPERIENCE
Track: Direct to Consumer Room 403A
MODERATOR: Andrew Field, Producer / Writer, President
Andrew Field Associates, Pittsburgh, PA, USA
PRESENTER: Stephen Q. Sponsel, Director, Media Support Services
Mayo Clinic, Rochester, MN, USA
PRESENTER: Robert Nicholson, PhD, LCP, FAHS, Director, Behavioral Medicine, Mercy Clinic Headache Center
Mercy Health, Chesterfield, MO, USA
PRESENTER: Amnon Gavish, PhD, Senior Vice President, Vertical Solutions
VIDYO, Hackensack, NJ, USA

TUESDAY, MAY 5, 2015

4:15 pm–5:15 pm Tuesday, May 5, 2015

HOW-TO PANEL
Session 12
Session Title: INTEGRATING TELEMEDICINE INTO AN ESTABLISHED HEALTHCARE DELIVERY MODEL
Track: Direct to Consumer Room 403A
PRESENTER: Braden McLellan, BA, Director of Telehealth Product and Operations
Optum, Eden Prairie, MN, USA
PRESENTER: Eugene Somphone, MD, Medical Director
Southwest Medical Associates, Las Vegas, NV, USA

MONDAY, MAY 4, 2015

8:00 am–8:45 am Monday, May 4, 2015

INDIVIDUAL ORAL
Session 13
Session Title: IMPLEMENTATION STRATEGIES FOR SUCCESSFUL CHRONIC CARE MANAGEMENT
Track: Chronic Care Room 406AB
MODERATOR: Joseph Kvedar, MD, Vice President
Center for Connected Health at Partners HealthCare, Boston, MA, USA

DEVELOPMENT OF SCIENCE-BASED CONNECTED HEART HEALTHCARE PLANS FOR POST-ACUTE CARE
PRESENTERS AND CONTRIBUTING AUTHORS:
Pat Dunn, MBA, MS, Manager, Health Innovation, Adam C. Tiner, MA
American Heart Association, Washington, DC, USA

THE REALITY OF IMPLEMENTING TELEHEALTH PROGRAMS FOR PATIENTS WITH CHRONIC CONDITIONS
PRESENTERS AND CONTRIBUTING AUTHORS:
Melissa Palacios, RN, BSN, PHN, Project Manager
Sharp Rees-Stealy, San Diego, CA, USA
MONDAY, MAY 4, 2015

11:00 am–12:00 pm Monday, May 4, 2015

PRESENTATION PANEL
Session 14
Session Title: USING TELEMEDICINE TO REDUCE HOSPITAL READMISSIONS FOR CHRONIC DISEASES PATIENTS
Track: Chronic Care  Room 406AB
MODERATOR: Laurie A. Poole, BScN, MHSA, Vice President
Ontario Telemedicine Network, Toronto, ON, Canada
PRESENTER: Kirby K. Farrell, MBA, President and CEO
Broad Axe Technology Partners, Charlottesville, VA, USA
PRESENTER: Alexis A. Silver, RN, MBA, Health Technology Consultant
Consultant, NYC, NY, USA
PRESENTER: Rhonda A. Wilson, BSc, Executive Project Lead
Ontario Telemedicine Network, Toronto, ON, Canada

MONDAY, MAY 4, 2015

1:15 pm–2:15 pm Monday, May 4, 2015

PRESENTATION PANEL
Session 15
Session Title: A NEW MODEL FOR REMOTE DIABETES CARE BEST PRACTICES
Track: Chronic Care  Room 406AB
MODERATOR: Karissa Price-Rico, BA, PhD, Chief Marketing Officer
Intel-GE Care Innovations, Roseville, CA, USA
PRESENTER: Kristi Henderson, DNP, NP-BC, FAEN, Chief Telehealth & Innovation Officer
University of Mississippi Medical Center, Jackson, MS, USA
PRESENTER: Marcus Grindstaff, BE, Director of Strategic Planning
Intel-GE Care Innovations, Roseville, CA, USA
PRESENTER: Terrell Knight, BA, VP Government and Economic Development
C Spire, Ridgeland, MS, USA

MONDAY, MAY 4, 2015

3:00 pm–4:00 pm Monday, May 4, 2015

PRESENTATION PANEL
Session 16
Session Title: THE IMPACT OF TECHNOLOGY AS A GAME CHANGER IN CHRONIC DISEASE MANAGEMENT
Track: Chronic Care  Room 406AB
MODERATOR: Herbert Rogove, DO, FCCM, FACP, President
C3O Telemedicine, Ojai, CA, USA
PRESENTER: David Sachs, PhD, Professor
Pace University, New York, NY, USA
PRESENTER: Hector Rodriguez, Director, HLS Industry Technology Unit, Microsoft
Microsoft, Irvine, CA, USA
PRESENTER: David Putrino, PhD, Director, Burke Rehabilitation Center
Weil Cornell Medical College, New York, NY, USA
PRESENTER: David Lindeman, PhD, Director of Healthcare CITRIS
University of California, Berkeley, Berkeley, CA, USA
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MONDAY, MAY 4, 2015

4:15 pm–5:15 pm Monday, May 4, 2015

PRESENTATION PANEL
Session 17
Session Title: THE SENSOR REVOLUTION: HOW REMOTE PATIENT MONITORING CAN SCALE POPULATION HEALTH
Track: Chronic Care Room 406AB
MODERATOR: Martin Kohn, MD, Chief Medical Scientist
Jointly Health, San Juan Capistrano, CA, USA
PRESENTER: Raj Khandwalla, MD, Director, Cardiovascular Education, Cedars-Sinai Medical Care Foundation, Cardiologist
Cedars-Sinai Medical Center, Beverly Hills, CA, USA
PRESENTER: David Ramirez, BA, MD, Chief Quality Officer
CareMore, Cerritos, CA, USA
PRESENTER: Anne DeGheest, MBA, Founder and Managing Director
Health Tech Capital, Los Altos, CA, USA

TUESDAY, MAY 5, 2015

11:00 am–12:00 pm Tuesday, May 5, 2015

HOW-TO PANEL
Session 18
Session Title: UTILIZING INTERACTIVE VOICE RESPONSE (IVR) AND TELEMONITORING TO REDUCE HOSPITAL ADMISSIONS AND READMISSIONS FOR HEART FAILURE PATIENTS
Track: Chronic Care Room 406AB
PRESENTER: Jonathan Shankman, MBA, MPH, Senior VP, Clinical Innovation
AMC Health, New York City, NY, USA
PRESENTER: Doreen Salek, RN, CCS/CPC, CPC-P, Director, Population Health Business Intelligence
Geisinger Health Plan, Danville, PA, USA

TUESDAY, MAY 5, 2015

1:15 pm–2:15 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL
Session 19
Session Title: FOSTERING PATIENT ENGAGEMENT AND IMPROVING OUTCOMES IN DIABETES CARE DELIVERY
Track: Chronic Care Room 406AB
MODERATOR: Pramod K. Gaur, PhD, Adjunct Professor
Pace University, White Plains, NY, USA

LESSONS LEARNED FROM CMMI: ADOPTION OF REMOTE MONITORING EQUIPMENT AND VIDEO CONNECTIONS
PRESENTERS AND CONTRIBUTING AUTHORS:
Neal Sikka, MD, Associate Professor, Emergency Medicine, Chief, Innovative Practice, Manya Magnus, PhD, Teena Cherian, BS,
Mona Hariri, MPH, Susie Lew, MD
The George Washington University - Medical Faculty Associates, Washington, DC, USA

COLLABORATIVE WISDOM: REMOTE MONITORING TECHNOLOGY FACILITATES e-PATIENT AND DIABETES EDUCATOR ENGAGEMENT
PRESENTERS AND CONTRIBUTING AUTHORS:
Deborah A. Greenwood, PhD, RN, CDE, BC-ADM, FAADE, Diabetes Program Coordinator
Sutter Health, Roseville, CA, USA
TECHNOLOGY-ENABLED INTERVENTIONS FOR MODERATE RISK INDIVIDUALS

PRESENTERS AND CONTRIBUTING AUTHORS:
Neal D. Kaufman, MD, MPH, Chief Medical Officer
DPS Health, Los Angeles, CA, USA

TUESDAY, MAY 5, 2015

3:00 pm–4:00 pm Tuesday, May 5, 2015

HOW-TO PANEL
Session 20
Session Title: VALUE-BASED TELEHEALTH FOR PATIENTS WITH CONGESTIVE HEART FAILURE
Track: Chronic Care Room 406AB
PRESENTER: Kori Krueger, MD, MBA, Medical Director for the Institute for Quality, Innovation and Patient Safety
Marshfield Clinic, Marshfield, WI, USA
PRESENTER: Tammy Simon, RN, BS, MSN, Assistant Administrator, IQIPS
Marshfield Health System, Marshfield, WI, USA

TUESDAY, MAY 5, 2015

4:15 pm–5:15 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL
Session 21
Session Title: IMPROVING CHRONIC DISEASE THROUGH HOME-BASED REMOTE PATIENT MONITORING
Track: Chronic Care Room 406AB
MODERATOR: Kathy Duckett, RN, BSN, Director of Population Health
VNA Care Network Foundation & Subsidiaries, Charlestown, MA, USA

HOME MONITORING OF MEDICAID PATIENTS WITH DIABETES, HYPERTENSION AND CONGESTIVE HEART FAILURE: PRELIMINARY FINDINGS

PRESENTERS AND CONTRIBUTING AUTHORS:
Barbara H. Oliver, BSN, CRNP, Clinical Coordinator
University of South Alabama, Mobile, AL, USA

TELEMONITORING OF PATIENTS INITIATING ORAL ANTICOAGULATION THERAPY

PRESENTERS AND CONTRIBUTING AUTHORS:
Ricardo Quezada, MD, Chief Medical Officer1, Noelia Espinoza, DON, CN1, Andres Contreras, CN1, Jorge Lastra, MD, MPS1, Xavier Urtubey, MD, MBA2
1AccuHealth, Santiago - Las Condes, Chile, 2Xavier URTUBEY, Las Condes, Chile

TELEREHABILITATION OF CARDIAC PATIENTS: FINDINGS FROM AN INTERDISCIPLINARY TELEREHABILITATION PROGRAM

PRESENTERS AND CONTRIBUTING AUTHORS:
Birthe Dinesen, PhD, Master of Political Science, Associate Professor1,2
1Aalborg University, Aalborg, Denmark, 2Laboratory of Telehealth & Telerehabilitation, SMI, Aalborg, Denmark

MONDAY, MAY 4, 2015

8:00 am–8:45 am Monday, May 4, 2015

INDIVIDUAL ORAL
Session 22
Session Title: STREAMLINING ACCESS TO QUALITY CARE THROUGH TELETRIAGE
Track: Critical and Acute Care Room 402AB
MODERATOR: Jill Berg, PhD, RN, FAHA, Dean and CEO/Professor
Columbia College of Nursing, Glendale, WI, USA

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CONCURRENT ORAL PRESENTATIONS ABSTRACT INDEX

TELEDERMATOLOGY TRIAGE IN A STATE SAFETY NET CLINIC SYSTEM

PRESENTERS AND CONTRIBUTING AUTHORS:
Roy Colven, MD, Professor of Medicine, Division of Dermatology1, Cara Towle, RN1, Dorothy Hardin, JD2
1University of Washington, Seattle, WA, USA, 2Community Health Plan of Washington, Seattle, WA, USA

POST-PARTUM mHEALTH HOME MONITORING OF PREECLAMPTIC WOMEN

PRESENTERS AND CONTRIBUTING AUTHORS:
Sarah Kinder, PhD, DNP, APRN, Assistant Professor, Donna Ussery, RN, Nafisa Dajani, MD, Everett Magann, MD, Tina Benton, RN, BSN
University of Arkansas for Medical Sciences, Little Rock, AR, USA

MONDAY, MAY 4, 2015

11:00 am–12:00 pm Monday, May 4, 2015

INDIVIDUAL ORAL
Session 23
Session Title: EMPLOYING UTILIZATION AND COST EFFECTIVENESS MODELS IN TELESTROKE NETWORKS
Track: Critical and Acute Care Room 402AB
MODERATOR: Bart Demaerschalk, MD, MSc, FAHA, FRCP(C), Professor of Neurology
Mayo Clinic College of Medicine, Phoenix, AZ, USA

A PREDICTIVE MODEL OF SERVICE UTILIZATION IN AN ACADEMIC MEDICAL CENTER-DRIVEN TELESTROKE NETWORK

PRESENTERS AND CONTRIBUTING AUTHORS:
Juan J. Estrada, MBA, MSc, Program Director, Anand Viswanathan, MD, PhD, Adam B. Cohen, MD, Lee H. Schwamm, MD
Massachusetts General Hospital, Boston, MA, USA

TELESTROKE NETWORK COST-EFFECTIVENESS IN THE PACIFIC NORTHWEST: GEOGRAPHY AND FACILITY SIZE SUPPORT
A COST-SHARING MODEL BETWEEN HUB AND SPOKE

PRESENTERS AND CONTRIBUTING AUTHORS:
Nicholas J. Okon, DO, Northwest Stroke Solutions, PLLC1, Richard Nelson, PhD2, Jennifer Majersik, MD, MS, FAHA1, Alyx Lesko, BS1, Archit Bhatt, MD, MPH, FACP, FAHA1, Elizabeth Baraban, MPH, PhD1
1Providence Brain and Spine Institute Oregon, Portland, OR, USA, 2University of Utah Division of Epidemiology, Department of Internal Medicine, Salt Lake City, UT, USA

DRIVING CHANGE AND INNOVATION THROUGH EFFECTIVE TELEMEDICINE SERVICE DELIVERY

PRESENTERS AND CONTRIBUTING AUTHORS:
Jim Roxburgh, RN, MPA, Director
Dignity Health Telemedicine Network, Carmichael, CA, USA

MONDAY, MAY 4, 2015

1:15 pm–2:15 pm Monday, May 4, 2015

INDIVIDUAL ORAL
Session 24
Session Title: IMPROVING PATIENT OUTCOMES THROUGH ADVANCED TECHNOLOGIES FOR TELESTROKE
Track: Critical and Acute Care Room 402AB
MODERATOR: Alex Nason, MBA, MHA, Vice President, Service Development
Specialists On Call, Reston, VA, USA

TELESTROKE: EXPEDITING CARE WHEN MINUTES COUNT

PRESENTERS AND CONTRIBUTING AUTHORS:
Carol Olff, RN, MSN, CCRN-E, NEA-BC, Director Critical Care and TeleICU
John Muir Health, Concord, CA, USA
## Telestroke in New Brunswick

**Presenters and Contributing Authors:**
Krisan Palmer, RN, Regional Telehealth Manager, Patti Gallagher, RN, BN, MSN  
*Horizon Health Network, Saint John, NB, Canada*

---

## Teleurosonology: A Novel Application of Transcranial and Carotid Ultrasound

**Presenters and Contributing Authors:**
Mark N. Rubin, MD, Assistant Professor, Hospital & Vascular Neurology¹, Kevin M. Barrett, MD, MSc², W David Freeman, MD², Joyce K. Lee-Iannotti, MD², Dwight D. Channer, MS², Alejandro A. Rabinstein, MD³, Bart M. Demaerschalk, MD, MSc, FRCP [C]¹  
¹Mayo Clinic, Scottsdale, AZ, USA, ²Mayo Clinic, Jacksonville, FL, USA, ³Mayo Clinic, Rochester, MN, USA

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## Monday, May 4, 2015

### 3:00 pm–4:00 pm Monday, May 4, 2015

#### Individual Oral

**Session 25**

**Session Title:** Applying Care in Novel Models of Non-Acute Teleurosonology

**Track:** Critical and Acute Care  
**Room:** 402AB

**Moderator:** Curtis Lowery, MD, Medical Director  
*University of Arkansas for Medical Sciences, Little Rock, AR, USA*

**Teleurosonology Beyond Acute Care: Outpatient Clinics and Inpatient Wards**

**Presenters and Contributing Authors:**
Adam B. Cohen, MD, Teleneurology Director; Inpatient Neurology Director, Juan Estrada, MBA, Anand Viswanathan, MD, PhD, Soren Capawanna, BA, Lee Schwamm, MD  
*Massachusetts General Hospital, Boston, MA, USA*

**Online Speech Treatment for Parkinson’s Disease in the Home: A Noninferiority Randomized Controlled Trial**

**Presenters and Contributing Authors:**
Deborah Theodoros, BSpThy, PhD, Professor of Speech Pathology, Anne Hill, BSpTh, PhD, Trevor Russell, BPhysiotherapy, PhD  
*University of Queensland, Brisbane, Australia*

**Developing an Interdisciplinary Model for Telehealth in a Nurse Managed Health Center**

**Presenters and Contributing Authors:**
Allen V. Prettyman, PhD, APRN, Director, Nurse Managed Health Center  
*University of Delaware, Newark, DE, USA*

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### 4:15 pm–5:15 pm Monday, May 4, 2015

#### Individual Oral

**Session 26**

**Session Title:** Delivering TeleICU Services: Improving Clinical, Operational, and Financial Outcomes

**Track:** Critical and Acute Care  
**Room:** 402AB

**Moderator:** Yulun Wang, PhD, Chairman and CEO  
*InTouch Health, Santa Barbara, CA, USA*

**Noninvasive Lung Water Determination Using Novel Radiofrequency Technology: Clinical Validation**

**Presenters and Contributing Authors:**
Michael Jonas, MD¹, Kent Volosin, MD², Physician, Assaf Nini, MD¹, Michal Shohat, DMD³, Nimrod Adi, MD¹, Galia Karp, MD¹  
¹Kaplan Medical Center, Rehovot, Israel, ²Big Sky Cardiology, Moorestown, NJ, USA, ³Kyma Medical Technologies, Los Altos, CA, USA
CONCURRENT ORAL PRESENTATIONS ABSTRACT INDEX

MOBILE CRITICAL CARE IN SUPPORT OF RAPID RESPONSE TEAMS: A TWO-YEAR ANALYSIS

PRESENTERS AND CONTRIBUTING AUTHORS:
Peter Pappas, MD, FACS, Associate Professor1, Luann Tirelli, RN MHA MSN/ED CCRN-E CNRN NHCE2, James Shaffer, MD MHA2, Scott Gettings, MD2
1University of Central Florida College of Medicine, Orlando, FL, USA, 2Health First, Rockledge, FL, USA

HOW TO WORK WITH A TELEICU PARTNER, OPTIMIZING CLINICAL, OPERATIONAL, AND FINANCIAL OUTCOMES

PRESENTERS AND CONTRIBUTING AUTHORS:
Lou Silverman, MBA, Chairman and CEO
Advanced ICU Care, St. Louis, MO, USA

ENABLING VIRTUAL VISITS TO THE ICU AT APOLLO HOSPITALS, CHENNAI, INDIA

PRESENTERS AND CONTRIBUTING AUTHORS:
Ganapathy Krishnan, MCh, FACS, PhD, President, Kevin Devasia, BE, MBA, Yogesh Kumar, BE
Apollo Telemedicine Networking Foundation, Chennai, India

TUESDAY, MAY 5, 2015

11:00 am–12:00 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL
Session 27
Session Title: IMPLEMENTING EMERGENCY CARE TELEMEDICINE TO SAVE LIVES
Track: Critical and Acute Care Room 402AB
MODERATOR: Ed Brown, MD, CEO
Ontario Telemedicine Network, Toronto, ON, Canada

IMPLEMENTATION OF EMERGENCY TELEMEDICINE IN A VA COMMUNITY-BASED OUTPATIENT CLINIC SETTING

PRESENTERS AND CONTRIBUTING AUTHORS:
David G. Ellis, MD, Chief, Emergency Medicine; Associate Professor, Clinical Emergency Medicine1, Paul J. Galantowicz, BS2, John Carnevale, BS3
1VA WNY Healthcare System, University at Buffalo (SUNY) Department of Emergency Medicine, Buffalo, NY, USA, 2VA WNY Healthcare System, Buffalo, NY, USA, 3University at Buffalo (SUNY) Department of Emergency Medicine, Buffalo, NY, USA

TELETRIAGE FOR FIRST RESPONDERS AND EMERGENCY DEPARTMENTS

PRESENTERS AND CONTRIBUTING AUTHORS:
YiDing Yu, MD, Clinical Fellow1, Eugene Duffy, EMTP2, Brian B. O’Neil, EMTP, Jake Kushkuley, EMTP1, Jason Tracy, MD2
1Brigham and Women’s Hospital, Boston, MA, USA, 2South Shore Hospital, South Weymouth, MA, USA

TUESDAY, MAY 5, 2015

1:15 pm–2:15 pm Tuesday, May 5, 2015

PRESENTATION PANEL
Session 28
Session Title: NEUROSURGERY-ANEURYSM VIRTUAL VISITS: LINKING PROVIDERS TO PATIENTS IN HOME SETTINGS
Track: Critical and Acute Care Room 402AB
MODERATOR: Sarah Fletcher, MD, MA, Medical Director
Dartmouth-Hitchcock Medical Center, Lebanon, NH, USA

COST-BENEFIT ANALYSIS OF AN e-AMBULANCE PROJECT IN KOCHI PREFECTURE, JAPAN

PRESENTERS AND CONTRIBUTING AUTHORS:
Masatsugu Tsuji, PhD, Professor1, Yoshihisa Matsumoto, MS2, Masaru Ogawa, PhD3
1University of Hyogo, Kobe, Japan, 2Graduate University for Advanced Studies, Tokyo, Japan, 3Kobe Gakuin University, Kobe, Japan
MONDAY, MAY 4, 2015

8:00 am–8:45 am Monday, May 4, 2015

HOW-TO PANEL

Session 31
Session Title: ESTABLISHING A PROGRAM TO REDUCE READMISSIONS AND COSTS IN THE AMBULATORY SETTING: A CALIFORNIA SUCCESS STORY
Track: Clinical Services Case Studies       Room 409AB
PRESENTER: Kathleen Sullivan, RN, MSN, Vice President, Post Acute Services
Dignity Health, Santa Maria, CA, USA
PRESENTER: Krista Kelly, BSN, Account Manager
Philips Hospital to Home, Framingham, MA, USA

MONDAY, MAY 4, 2015

11:00 am–12:00 pm Monday, May 4, 2015

PRESENTATION PANEL

Session 32
Session Title: CUTTING EDGE RESEARCH INNOVATIONS AND HIGHLIGHTS: WHAT DOES THE EVIDENCE SHOW?
Track: Clinical Services Case Studies       Room 409AB
CO-MODERATORS: Peter Yellowlees, MBBS, MD, Director of Informatics
University of California, Davis, Sacramento, CA, USA
Ronald C. Merrell, MD, FACS, Professor of Surgery
Virginia Commonwealth University, Richmond, VA, USA
John Whited, MD, MHS, Associate Chief of Staff, Research and Development at Department of Veterans Affairs
Durham VA Medical Center, Durham, NC, USA

MONDAY, MAY 4, 2015

1:15 pm–2:15 pm Monday, May 4, 2015

PRESENTATION PANEL

Session 33
Session Title: EXPANDING SURGICAL TELEMENTORING OUTCOMES AND EXPERIENCE IN THE ERA OF ACCOUNTABILITY IN HEALTHCARE
Track: Clinical Services Case Studies       Room 409AB
MODERATOR: Andrew Watson, MD, Vice President, International Division; Medical Director, Telementicine
University of Pittsburgh Medical Center, Pittsburgh, PA, USA
PRESENTER: James Rosser, MD, FACS, General Surgeon
Celebration Health, Celebration, FL, USA
**CONCURRENT ORAL PRESENTATIONS ABSTRACT INDEX**

**PRESENTER:** Todd Ponsky, MD, FACS, Pediatric Surgeon  
*Akron Children’s Hospital, Akron, OH, USA*

**PRESENTER:** Steven S. Rothenberg, MD, Pediatric Surgeon  
*Rocky Mountain Hospital for Children, Denver, CO, USA*

**PRESENTER:** Christopher Schlachta, MDCM, FRCS, FACS, General Surgeon  
*London Health Sciences Centre, London, ON, Canada*

**MONDAY, MAY 4, 2015**

**3:00 pm–4:00 pm Monday, May 4, 2015**

**PRESENTATION PANEL**

**Session 34**

**Session Title:** eTUMOR BOARDS: BEST PRACTICES AND LESSONS LEARNED

Track: Clinical Services Case Studies  
Room 409AB

**MODERATOR:** Alexander G. von Bormann, MSc, MBA, Operations Administrator  
*Mayo Clinic, Rochester, MN, USA*

**PRESENTER:** Sara Blouin, MS, Associate Project Manager  
*Mayo Clinic, Rochester, MN, USA*

**PRESENTER:** Charles Erlichman, MD, FACP, FRCP, Professor & Deputy Director of Clinical Research  
*Mayo Clinic, Rochester, MN, USA*

**PRESENTER:** Julie Hobbs, PT, DPT, PhD, Operations Manager  
*Mayo Clinic, Rochester, MN, USA*

**PRESENTER:** Angela Mathew, BS, RN, MBA, Director of Clinical Operations, Department of Surgery  
*University of Minnesota Physicians, St. Paul, MN, USA*

**MONDAY, MAY 4, 2015**

**4:15 pm–5:15 pm Monday, May 4, 2015**

**INDIVIDUAL ORAL**

**Session 35**

**Session Title:** NOVEL APPROACHES FOR REMOTE RETINAL SCREENING

Track: Clinical Services Case Studies  
Room 409AB

**MODERATOR:** Edward Chaum, MD, PhD, Plough Foundation Professor  
*University of Tennessee, Memphis, TN, USA*

**THE USE OF CROWDSOURCING TO RAPIDLY GRADE FUNDUS PHOTOGRAPHS FOR DIABETIC RETINOPATHY**

**PRESENTERS AND CONTRIBUTING AUTHORS:**

Christopher J. Brady, MD, Assistant Professor of Ophthalmology1,2, Andrea C. Villanti, MPH, PhD3, Jennifer L. Pearson, MPH, PhD3, Thomas R. Kirchner, PhD4, Ingrid E. Zimmer-Galler, MD5, Chirag P. Shah, MD, MPH6, Omesh P. Gupta, MD, MBA7

1Johns Hopkins University, Baltimore, MD, USA, 2Wills Eye Hospital, Philadelphia, PA, USA, 3Schroeder Institute for Tobacco Research and Policy Studies, Legacy, Washington, DC, USA, 4Schroeder Institute for Tobacco Research and Policy Studies, Legacy, Washington, DC, USA, 5Schroeder Institute for Tobacco Research and Policy Studies, Legacy, Washington, DC, USA

**TELEDIABETIC RETINOPATHY SCREENING IN CHINA**

**PRESENTERS AND CONTRIBUTING AUTHORS:**

Yogesan Kanagasigam, PhD, MSc, BSc, Research Director1, Nathan Congdon, MD2

1Australian e-Health Research Centre, Floreat, Australia, 2ORBIS, Guangdong, China

**METADATA-ASSISTED RISK ASSESSMENT IN A DIABETIC RETINOPATHY SCREENING PROGRAM IN A HEALTH DISPARITY COMMUNITY**

**PRESENTERS AND CONTRIBUTING AUTHORS:**

Edward Chaum, MD PhD, Plough Foundation Professor1, Karen Matthews, PhD2, Derek Austin, PhD3

1University of Tennessee, Memphis, TN, USA, 2Delta Health Alliance, Stoneville, MS, USA, 3Hubble Telemedical, Knoxville, TN, USA
TUESDAY, MAY 5, 2015

11:00 am–12:00 pm Tuesday, May 5, 2015

PRESENTATION PANEL
Session 36
Session Title: IMPROVING VA HEALTHCARE THROUGH TELEREHABILITATION AND TECHNOLOGY ENABLED TOOLS
Track: Clinical Services Case Studies Room 409AB

MODERATOR: Christopher M. Peterson, PT, DPT, Physical Therapist
Hartford Healthcare Network, Hartford, CT, USA

PRESENTER: Sheryl Flynn, PT, PhD, Founder/CEO
Blue Marble Game Company, Altadena, CA, USA

PRESENTER: Karen Duddy, MHA, OTA/L, Occupational Therapy Supervisor
VA Long Beach Healthcare System, Long Beach, CA, USA

PRESENTER: Sean McCoy, PhD, Health Science Specialist
Veterans Rural Health Resource Center-Eastern Region, Gainesville, FL, USA

TUESDAY, MAY 5, 2015

1:15 pm–2:15 pm Tuesday, May 5, 2015

PRESENTATION PANEL
Session 37
Session Title: MEASURING QUALITY ASSURANCE IN OCULAR TELEHEALTH PROGRAMS
Track: Clinical Services Case Studies Room 409AB

MODERATOR: Ingrid E Zimmer-Galler, M.D., Associate Professor of Ophthalmology
Wilmer Eye Institute, Johns Hopkins University Medical Institutions, Frederick, MA, USA

PRESENTER: Paolo S. Silva, MD, Assistant Chief of Telemedicine
Joslin Diabetes Center, Boston, MA, USA

PRESENTER: Mark Blake Horton, OD, MD, Chief of Eye Department
Phoenix Indian Medical Center, Phoenix, AZ, USA

PRESENTER: Ingrid E. Zimmer-Galler, MD, Associate Professor of Ophthalmology
Wilmer Eye Institute, Johns Hopkins University Medical Institutions, Frederick, MD, USA

TUESDAY, MAY 5, 2015

3:00 pm–4:00 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL
Session 38
Session Title: IMPLEMENTING SUCCESSFUL CLINICAL SPECIALTY PROGRAMS: BURNS, INFECTIOUS DISEASES, AND GENETICS
Track: Clinical Services Case Studies Room 409AB

MODERATOR: Richard S. Bakalar, MD, Managing Director, Advisory Services; Specialist in Healthcare Clinical Intelligence and Telehealth, Global Center of Excellence for Health
KPMG, LLC, Denver, CO, USA

TELEHEALTH + mHEALTH = TRIPLE AIM SUCCESS

PRESENTERS AND CONTRIBUTING AUTHORS:
Taylan Bozkurt, MBA, Operations and Financial Specialist, Department of Surgery
Massachusetts General Hospital, Boston, MA, USA

TELEHEALTH TECHNOLOGIES IMPACT ON TREATMENT OF EBOLA AND OTHER INFECTIOUS DISEASE

PRESENTERS AND CONTRIBUTING AUTHORS:
Kyle Hall, BS, Telehealth Program Coordinator
Nebraska Medicine, Omaha, NE, USA
TELEGENETICS IN THE UNITED STATES: A NATIONAL SURVEY OF GENETICS PROVIDERS

PRESENTERS AND CONTRIBUTING AUTHORS:
Sylvia Mann, MS, NCC Telegenetics Workgroup Chair1,2
1National Coordinating Center for the HRSA Regional Genetic Service Collaboratives, Bethesda, MD, USA,
2Western States Regional Genetic Services Collaborative, Honolulu, HI, USA

TUESDAY, MAY 5, 2015

INDIVIDUAL ORAL Session 39
Session Title: IMPLEMENTATION AND DELIVERY OF CLINICAL SERVICES: LESSONS FROM OTHER COUNTRIES
Track: Clinical Services Case Studies Room 409AB
MODERATOR: Dale Alverson, MD, Professor of Pediatrics and University of New Mexico
University of New Mexico – Center for Telehealth, Albuquerque, NM, USA

CHRONIC DISEASE MANAGEMENT: OPPORTUNITIES AND CHALLENGES IN INDIA

PRESENTERS AND CONTRIBUTING AUTHORS:
Sanjay Seetharama Sharma, MS, PhD, PGDBA, Executive Director
APTA Healthcare Advisers Private Limited, Bangalore, India

CHRONIC DISEASE TELEHEALTH COMMERCIAL AND BUSINESS MODEL

PRESENTERS AND CONTRIBUTING AUTHORS:
Xavier R. Urtubey, MD, MBA, CEO, Pablo Felgaer, B. Eng, Juan Carlos Rodriguez, MD, Michel Tesmer, MBA
AccuHealth, Santiago, Las Condes, Chile

THE EXPERIENCE OF THE TELEHEALTH NETWORK OF MINAS GERAIS, BRAZIL

PRESENTERS AND CONTRIBUTING AUTHORS:
Júnia Xavier Maia, MD, Endocrinologist1, Lidiane Sousa, PhD1, Maria Beatriz Moreira Alkmim, MD, MsC1, Milena Marcolino, MD, PhD1, Cristiane Guimarães Pessoa, MsC1, Daniel Neves, BSc1, Leonardo Bonisson, BSc1, Andre Antunes, MD1, Clareci Cardoso, PhD1, Daniel Cunha, MD, PhD2, Fabio Nunes, MD, PhD2, Elmiro Resende, MD, PhD1, Adelson Resende, MD1, Antonio Luiz Pinho Ribeiro, MD, PhD1
1Universidade Federal de Minas Gerais, Belo Horizonte, Brazil, 2Telehealth Network of Minas Gerais, Belo Horizonte, Brazil

MONDAY, MAY 4, 2015

PRESENTATION PANEL Session 40
Session Title: COMMUNITY-BASED TEMELENTAL HEALTH: PARENT-CHILD INTERACTION THERAPY IN LOS ANGELES COUNTY
Track: Mental Health Room 306AB
MODERATOR: Anthony Joseph Urquiza, PhD, Director
University of California, Davis Medical Center, Sacramento, CA, USA
PRESENTER: Susan Timmer, PhD, Director of PCIT Training
University of California, Davis Children’s Hospital, Sacramento, CA, USA
PRESENTER: Lindsay Forte, BA, BS, PCIT Training Coordinator
University of California, Davis Children’s Hospital, Sacramento, CA, USA
PRESENTER: Deanna Boys, MA, PCIT Data Manager.
University of California, Davis Children’s Hospital, Sacramento, CA, USA
MONDAY, MAY 4, 2015

1:15 pm–2:15 pm Monday, May 4, 2015

INDIVIDUAL ORAL

Session 41
Session Title: USING MOBILE APPS IN YOUR PSYCHIATRIC PRACTICE
Track: Mental Health Room 306AB
MODERATOR: Elizabeth Brooks, PhD, Assistant Professor
University of Colorado Denver, Aurora, CO, USA

AUTOMATED MACHINE TRANSLATION APPLIED TO MEDICAL PSYCHIATRIC INTERPRETATION USING GOOGLE GLASS, MOBILE APPS

PRESENTERS AND CONTRIBUTING AUTHORS:
Steven R. Chan, MD, MBA, Research Track Resident Physician, Peter Yellowlees, MD, MBBS, Prashan Dharmasena,
Michelle Burke-Parish, MA, C.Phil
1University of California, Davis, Sacramento, CA, USA, 2University of California, Berkeley, Berkeley, CA, USA

USING TECHNOLOGY AND MOBILE APPS FOR BEHAVIORAL HEALTH

PRESENTERS AND CONTRIBUTING AUTHORS:
Charlene Slaney, RN, Chief Clinical Officer
FONEMED, Mount Pearl, NL, Canada

INTRODUCING STEP AWAY: A SMARTPHONE-BASED, MOBILE HEALTH INTERVENTION SYSTEM FOR MANAGING ALCOHOL ADDICTION

PRESENTERS AND CONTRIBUTING AUTHORS:
Patrick Dulin, PhD, Associate Professor
University of Alaska Anchorage, Anchorage, AK, USA

MONDAY, MAY 4, 2015

3:00 pm–4:00 pm Monday, May 4, 2015

INDIVIDUAL ORAL

Session 42
Session Title: UNDERSTANDING TELEPSYCHIATRY IN UNIQUE AND DIFFERENT SETTINGS
Track: Mental Health Room 306AB
MODERATOR: Jan Lindsay, PhD, Clinical Psychologist and Research Scientist
Michael E. DeBakey VA Medical Center, Houston, TX, USA

IMPROVING ACCESS TO PSYCHIATRY SERVICES IN RURAL NURSING HOMES THROUGH TELEMEDICINE

PRESENTERS AND CONTRIBUTING AUTHORS:
Leena Krishnaswami, MS, CEO
CareNow Services, Roswell, GA, USA

ASYNCHRONOUS TELEPSYCHIATRY: FEASIBILITY AND SUSTAINABILITY IN PRIMARY CARE

PRESENTERS AND CONTRIBUTING AUTHORS:
Peter Yellowlees, MBBS, MD, Professor of Psychiatry, Michelle Burke Parish, MA, Steven Chan, MBA MD, Alberto Odor, MD,
Anna-Maria Iosif, PhD, Jay Shore, MD, Don Hilty, MD
1University of California, Davis, Sacramento, CA, USA, 2University of Colorado, Denver, CO, USA, 3University of Southern California, Los Angeles, CA, USA
## MONDAY, MAY 4, 2015

**4:15 pm–5:15 pm Monday, May 4, 2015**

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<tr>
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| **Track:** Mental Health  
**Room:** 306AB |
| **MODERATOR:** Jack Cahalane, PhD, Director of Telepsychiatry at UPMC  
Western Psychiatric Institute and Clinic of the University of Pittsburgh Medical Center, Pittsburgh, PA, USA |
| **PRESENTER:** Jack Cahalane, PhD, Director of Telepsychiatry at UPMC  
Western Psychiatric Institute and Clinic of the University of Pittsburgh Medical Center, Pittsburgh, PA, USA |
| **PRESENTER:** Joseph Pierri, MD, Medical Director of Telepsychiatry at UPMC  
Western Psychiatric Institute and Clinic of the University of Pittsburgh Medical Center, Pittsburgh, PA, USA |
| **PRESENTER:** Shabana Khan, MD, Assistant Professor of Psychiatry at UPMC  
Western Psychiatric Institute and Clinic of the University of Pittsburgh Medical Center, Pittsburgh, PA, USA |
| **PRESENTER:** Kelley Victor, MD, PGY-5 Child and Adolescent Psychiatry Fellow  
Western Psychiatric Institute and Clinic of the University of Pittsburgh Medical Center, Pittsburgh, PA, USA |

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## TUESDAY, MAY 5, 2015

**11:00 am–12:00 pm Tuesday, May 5, 2015**

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| **Track:** Mental Health  
**Room:** 306AB |
| **MODERATOR:** Robert L Caudill, BA, BS, MD, Associate Professor  
University of Louisville, Louisville, KY, USA |
| **PRESENTERS AND CONTRIBUTING AUTHORS:**  
Jay Shore, MD, MPH, Director of Telemedicine Depression Center, Alexander Vo, PhD, Jeanette Waxmonsky, PhD, Marshall Thomas, MD  
1University of Colorado Denver, Denver, CO, USA, 2Colorado Access, Denver, CO, USA, 3University of Colorado Denver, Aurora, CO, USA, 4University of Colorado Denver, Aurora, CO, USA |
| **INTEGRATION OF TELEPSYCHIATRY INTO PRIMARY CARE: BETTER CARE, BETTER HEALTH, AND LOWER COST** |
| **PRESENTERS AND CONTRIBUTING AUTHORS:**  
Barb Johnston, MSN, MLN, CEO  
HealthLinkNow, Sacramento, CA, USA |
| **AN INTEGRATED, SUSTAINABLE MODEL OF CONSULTATION BASED TELEPSYCHIATRY IN PRIMARY CARE** |
| **PRESENTERS AND CONTRIBUTING AUTHORS:**  
Michelle B. Parish, MA, C.Phil, Research Project Manager, Doctoral Student, Steven R. Chan, MD, MBA, Peter Yellowlees, MD, MBBS  
University of California, Davis, Sacramento, CA, USA |

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## TUESDAY, MAY 5, 2015

**1:15 pm–2:15 pm Tuesday, May 5, 2015**

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<td><strong>Session Title:</strong> CULTURAL “FIT” AND SELECTION OF THE “BEST” MODEL FOR TELEMENTAL HEALTH</td>
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| **Track:** Mental Health  
**Room:** 306AB |
| **MODERATOR:** Rick Mendoza, MD, Director, Telepsychiatry  
Los Angeles County Department of Mental Health, Los Angeles, CA, USA |
TUESDAY, MAY 5, 2015

3:00 pm–4:00 pm Tuesday, May 5, 2015

PRESENTATION PANEL
Session 46
Session Title: IMPLEMENTING SAFETY RISK MANAGEMENT AND TELEBEHAVIORAL HEALTH FOR SPECIAL POPULATIONS
Track: Mental Health Room 306AB
MEDIUM: Eve-Lynn Nelson, PhD, Professor and Director University of Kansas Medical Center, Fairway, KS, USA
PRESENTER: Eve-Lynn Nelson, PhD, Professor and Director University of Kansas Medical Center, Fairway, KS, USA
PRESENTER: David D. Luxton, PhD, Research Health Scientist Naval Health Research Center, San Diego, CA, USA
PRESENTER: Marlene M. Maheu, PhD, Executive Director TeleMental Health Institute, San Diego, CA, USA

TUESDAY, MAY 5, 2015

4:15 pm–5:15 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL
Session 47
Session Title: DEVELOPMENT AND EXPANSION OF TELEPSYCHIATRY PROGRAMS
Track: Mental Health Room 306AB
MEDIUM: Carolyn Turvey, PhD, Professor, Department of Psychiatry University of Iowa, Iowa City, IA, USA

A CLINICAL MODEL FOR TELEPSYCHIATRY SERVICES
PRESENTERS AND CONTRIBUTING AUTHORS:
Matthew D. Jeffreys, MD, VA Texas Valley Coastal Bend 1, Jennifer A. Wood, PhD 2
1VHA, San Antonio, TX, USA, 2VHA, Harlingen, TX, USA

UNIVERSITY OF COLORADO DEPRESSION CENTER INTEGRATED CARE PILOT: LESSONS IN TELEPSYCHIATRY FOR PRIMARY CARE
PRESENTERS AND CONTRIBUTING AUTHORS:
Jay Shore, MD, MPH, Director of Telemedicine Depression Center 1, Alexander Vo, PhD 2, Christopher Schneck, MD 3, Jacqueline Calderone, MD 1, Corey Lyon, MD 1, Shandra Brown Levey, PhD 1, Frank DeGruy, MD 1, Marshall Thomas, MD 1
1University of Colorado Anschutz Medical Campus, Aurora, CO, USA, 2Colorado Access, Denver, CO, USA

NOT JUST SUSTAINABLE BUT ALSO STICKY: HOW TO BUILD TELEPSYCHIATRY PROGRAMS THAT DELIVER 200% FINANCIAL ROI AND ACHIEVE 85% PATIENT FOLLOW-UP RATES
PRESENTERS AND CONTRIBUTING AUTHORS:
Samir Malik, MBA, CEO 1DocWay, New York, NY, USA
MONDAY, MAY 4, 2015

8:00 am–8:45 am Monday, May 04, 2015

INDIVIDUAL ORAL
Session 57
Session Title: LEARNING OPPORTUNITIES FROM LARGE SCALE TELEMEDICINE INITIATIVES
Track: Successful Business Strategies  Room 408A
MODERATOR: Nancy Vorhees, RN, MS, Chief Administrative Officer
Inland Northwest Health Services, Spokane, WA, USA

CAN THE LARGEST CANADIAN PUBLICLY FUNDED TELEPSYCHIATRY PROGRAM BE PROFITABLE?
A DISCUSSION OF STRATEGIC DESIGN AND IMPLEMENTATION PRACTICES

PRESENTERS AND CONTRIBUTING AUTHORS:
David Willis, PBDM, MBA, Manager, Telepsychiatry-Telemedicine Program HSC, Umesh Jain, MD, PhD, MEd
Hospital for Sick Children, Toronto, ON, Canada

CHILDREN’S HOSPITAL LOS ANGELES’ GLOBAL TELE-EDUCATION PROGRAM

PRESENTERS AND CONTRIBUTING AUTHORS:
Stuart Siegel, MD, Director, Center for Global Health1, Ryan Navarro, MHA1, Cristina Aquino, RN2, Mae-Fay Koenig, MPH1, Silvio Vega, MD2
1CHLA, Los Angeles, CA, USA, 2CHLA-LFF International Telemedicine Program, Los Angeles, CA, USA

ARMY TELEHEALTH: A GLOBAL OPERATING COMPANY MODEL

PRESENTERS AND CONTRIBUTING AUTHORS:
Colleen B. Rye, PhD, Chief, Telehealth Service Line
U.S. Army, Office of the Surgeon General, Falls Church, VA, USA

MONDAY, MAY 4, 2015

11:00 am–12:00 pm Monday, May 04, 2015

HOW-TO PANEL
Session 58
Session Title: BENEFITS AND DRAWBACKS OF DIFFERENT TELEMEDICINE DELIVERY MODELS
Track: Successful Business Strategies  Room 408A
PRESENTER: Sumbul Desai, MD, Associate Chief Medical Officer
Stanford Hospital and Clinics, Stanford, CA, USA
PRESENTER: Lauren Cheung, MD, MBA, Assistant Medical Director.
Stanford University School of Medicine, Stanford, CA, USA

MONDAY, MAY 4, 2015

1:15 pm–2:15 pm Monday, May 04, 2015

PRESENTATION PANEL
Session 59
Session Title: EXPANDING TELEHEALTH TO IMPROVE HOSPITAL-WIDE READMISSION RATES
Track: Successful Business Strategies  Room 408A
MODERATOR: Michael K. Ong, MD, PhD, Associate Professor
UCLA, Los Angeles, CA, USA
PRESENTER: Michelle Eslami, MD, Clinical Professor of Medicine
UCLA, Los Angeles, CA, USA
PRESENTER: Melissa Reider-Demer, DNP, Nurse Practitioner
UCLA, Los Angeles, CA, USA
MONDAY, MAY 4, 2015

3:00 pm–4:00 pm Monday, May 04, 2015

PRESENTATION PANEL
Session 60
Session Title: UNDERSTANDING HOW PATIENT CENTERED DESIGN IMPROVES PROVIDER ADOPTION: MAYO CLINIC AND MASS GENERAL HOSPITAL
Track: Successful Business Strategies Room 408A
MODERATOR: Ling Shao, BS, MBA, National Vice President, Client Solutions Optum, Rossmoor, CA, USA
PRESENTER: Matthew Gardner, Service Designer, Center for Innovation Mayo Clinic, Rochester, MN, USA
PRESENTER: Sarah Sossong, MPH, Director of Telehealth Massachusetts General Hospital, Boston, MA, USA
PRESENTER: Steve Ommen, MD, Medical Director, Centers for Innovation & Connected Care Mayo Clinic, Rochester, MN, USA
PRESENTER: Ami B. Bhatt, MD, FACC, Codirector, Adult Congenital Heart Disease Program Massachusetts General Hospital, Boston, MA, USA

MONDAY, MAY 4, 2015

4:15 pm–5:15 pm Monday, May 04, 2015

PRESENTATION PANEL
Session 61
Session Title: CHALLENGES AND OPPORTUNITIES OF TELEMEDICINE IN CORRECTIONAL FACILITIES
Track: Successful Business Strategies Room 408A
MODERATOR: Don J. Kosiak, MD, MBA, CPE, FACEP, Medical Director Avera Health, Sioux Falls, SD, USA
PRESENTER: Jay Weems, MBA, Vice President, eCARE Operations Avera Health, Sioux Falls, SD, USA
PRESENTER: Lisa Lindgren, BSN, MBA, eCARE Critical Care Officer Avera Health, Sioux Falls, SD, USA
PRESENTER: Darcy Litzen, RN, BSN, eCARE Sales Director Avera Health, Sioux Falls, SD, USA

TUESDAY, MAY 5, 2015

11:00 am–12:00 pm Tuesday, May 05, 2015

PRESENTATION PANEL
Session 62
Session Title: HOW TO USE AND INTEGRATE TELEMEDICINE AND mHEALTH APPS AND SENSORS
Track: Successful Business Strategies Room 408A
MODERATOR: Robert E Levin, MBA, MA, CEO Transclick, Manhattan, NY, USA
PRESENTER: Robert E. Levin, MBA, MA, CEO Transclick, Manhattan, NY, USA
PRESENTER: Amy Sheng, MBA, Cofounder CellScope, San Francisco, CA, USA
PRESENTER: Hrishikesh Amravatkar, MS, CEO & Cofounder HealthQuickly, Sunnyvale, CA, USA
TUESDAY, MAY 5, 2015

1:15 pm–2:15 pm Tuesday, May 5, 2015

PRESENTATION PANEL

Session 63

Session Title: HOW A MAJOR URBAN HEALTH SYSTEM LEVERAGES TELEMEDICINE
Track: Successful Business Strategies Room 408A

MODERATOR: Edward Loo, MSECE, Telemedicine Engineer
Inova Health System, Falls Church, VA, USA

PRESENTER: Theresa M. Davis, PhD, RN, NE-BC, Clinical Operations Director
Inova Health System, Falls Church, VA, USA

PRESENTER: Albert Holt, MD, MBA, Medical Director TeleICU
Inova Health System, Falls Church, VA, USA

PRESENTER: Rina Bansal, MD, MBA, Medical Director Telemedicine Institute
Inova Health System, Falls Church, VA, USA

PRESENTER: Steve Dean, MS, Telemedicine Administrative Director
Inova Health System, Falls Church, VA, USA

TUESDAY, MAY 5, 2015

3:00 pm–4:00 pm Tuesday, May 5, 2015

PRESENTATION PANEL

Session 64

Session Title: FOSTERING A GLOBAL TELEHEALTH SYSTEM AND RESEARCH NETWORK:
TRANSATLANTIC TELEHEALTH RESEARCH NETWORK (TTRN)
Track: Successful Business Strategies Room 408A

MODERATOR: Thomas Nesbitt, MD, MPH, Vice Chancellor
University of California, Davis, Sacramento, CA, USA

PRESENTER: Birthe Dinesen, PhD, Associate Professor
Aalborg University, Aalborg, Denmark

PRESENTER: David Lindeman, PhD, Director
University of California, Berkeley, Berkeley, CA, USA

PRESENTER: James Marcin, MD, Associate Professor
University of California, Davis, Davis, CA, USA

TUESDAY, MAY 5, 2015

3:00 pm–4:00 pm Tuesday, May 5, 2015

PRESENTATION PANEL

Session 29

Session Title: USING COMMUNITY HEALTH MODELS TO ENHANCE PATIENT PERFORMANCE AND OUTCOMES
Track: Successful Business Strategies Room 402AB

MODERATOR: Matthew Jansen, MPA, Senior Business Development Manager
Iron Bow Technologies, Chantilly, VA, USA

PRESENTER: Courtney Crooks, PhD, Senior Research Scientist
Georgia Institute of Technology, Atlanta, GA, USA

PRESENTER: Jean Sumner, MD, Medical Director
Georgia Composite Medical Board, Atlanta, GA, USA

PRESENTER: Paula Guy, RN, Chief Executive Officer
Global Partnership for TeleHealth, Waycross, GA, USA
TUESDAY, MAY 5, 2015

4:15 pm–5:15 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL
Session 65
Session Title: USING TELEHEALTH TO IMPROVE ACCESS TO CARE IN RURAL COMMUNITIES
Track: Successful Business Strategies Room 408A
MODERATOR: Edwin Vaughan, MBA, VP, Clinical Services Group
Catholic Health Initiatives, Englewood, CO, USA

VIRTUAL HOSPITAL: MAKING A DIFFERENCE IN RURAL COMMUNITIES
PRESENTERS AND CONTRIBUTING AUTHORS:
Don J. Kosiak, Jr., MD, MBA, CPE, FACEP, Medical Director
Avera Health, Sioux Falls, SD, USA

RURAL INPATIENT CARE AND THE TELEHOSPITALIST
PRESENTERS AND CONTRIBUTING AUTHORS:
Ariel E. Lufkin, MD, Telehospitalist
Mercy, Oklahoma City, OK, USA

IDENTIFYING TELEMEDICINE NEEDS FOR SMALL RURAL HOSPITALS: A LOOK AT SOUTH CAROLINA HOSPITAL BYPASS BEHAVIOR
PRESENTERS AND CONTRIBUTING AUTHORS:
Taylor A. Lawrence, MHA, Administrative Resident
Medical University of South Carolina, Charleston, SC, USA

TUESDAY, MAY 5, 2015

4:15 pm–5:15 pm Tuesday, May 5, 2015

PRESENTATION PANEL
Session 30
Session Title: ESTABLISHING A SUSTAINABLE TELEHEALTH INFRASTRUCTURE THROUGH A REGIONAL MONITORING CENTER
Track: Successful Business Strategies Room 402AB
MODERATOR: Matt Levi, MHA, MPH, Director, Virtual Health Services
CHI Franciscan Health, Tacoma, WA, USA
PRESENTER: Tim Plante, MSN, MHA, Associate Vice President, St. Clare Hospital
CHI Franciscan Health, Tacoma, WA, USA
PRESENTER: Mary Alice Ragsdale, MSN, MBA, Associate Vice President, St. Joseph Medical Center
CHI Franciscan Health, Tacoma, WA, USA
PRESENTER: Paul Catterson, RN, BA, Clinical Manager, Remote Care Services
CHI Franciscan Health, Tacoma, WA, USA

MONDAY, MAY 4, 2015

8:00 am–8:45 am Monday, May 4, 2015

PRESENTATION PANEL
Session 66
Session Title: DELIVERING QUALITY DISTANCE EDUCATION
Track: Operational Management Room 304ABC
MODERATOR: Janet Major, BS, Associate Director for Facilities
University of Arizona, Tucson, AZ, USA
CONCURRENT ORAL PRESENTATIONS ABSTRACT INDEX

PRESENTER: Ana Maria Lopez, MD, MPH, FACP, Medical Director
Arizona Telemedicine Program, Tucson, AZ, USA

PRESENTER: Elizabeth Krupinski, PhD, Professor
University of Arizona, Arizona Telemedicine Program, Tucson, AZ, USA

PRESENTER: Janet Major, BS, Associate Director for Facilities.
University of Arizona, Tucson, AZ, USA

MONDAY, MAY 4, 2015

11:00 am–12:00 pm Monday, May 4, 2015

PRESENTATION PANEL
Session 67
Session Title: STATE OF THE TELEHEALTH MARKETPLACE
Track: Operational Management Room 304ABC
MODERATOR: Daniel Ruppar, BS, Research Director, Healthcare & Life Sciences
Frost & Sullivan, San Antonio, TX, USA

PRESENTER: Daniel Ruppar, BS, Research Director, Healthcare & Life Sciences
Frost & Sullivan, San Antonio, TX, USA

PRESENTER: Harry Wang, BA, MS, MBA, Director, Mobile & Health Product Research
Parks Associates, Dallas, TX, USA

PRESENTER: Unity Stoakes, President & CEO
StartUp Health, New York, NY, USA

MONDAY, MAY 4, 2015

1:15 pm–2:15 pm Monday, May 4, 2015

PRESENTATION PANEL
Session 68
Session Title: EXPLORING CRITICAL SUCCESS FACTORS FOR TELEHEALTH IMPLEMENTATION
Track: Operational Management Room 304ABC
MODERATOR: Mario Gutierrez, Executive Director
Center for Connected Health Policy, Sacramento, CA, USA

PRESENTER: Kathy J. Chorba, Executive Director
California Telehealth Resource Center, Sacramento, CA, USA

PRESENTER: Arthur L. Gruen, MD, CEO
EA Health, Solana Beach, CA, USA

PRESENTER: Javeed Siddiqui, MD, MPH, Chief Medical Officer
Telemed2U, Roseville, CA, USA

PRESENTER: Daniel A. Kurywchak, President & CEO
Telemedicine.com, Cameron Park, CA, USA

MONDAY, MAY 4, 2015

3:00 pm–4:00 pm Monday, May 4, 2015

PRESENTATION PANEL
Session 69
Session Title: ATA'S PRACTICE GUIDELINES: ROADMAPS GUIDING TELEMEDICINE SERVICE
Track: Operational Management Room 304ABC
MODERATOR: Elizabeth A. Krupinski, PhD, Professor & Vice Chair of Research
University of Arizona, Tucson, AZ, USA

PRESENTER: David McSwain, MD, Assistant Professor
Medical University of South Carolina, Charleston, SC, USA

PRESENTER: Elizabeth A. Krupinski, Professor & Vice Chair of Research
University of Arizona, Tucson, AZ, USA
MONDAY, MAY 4, 2015

**PRESENTATION PANEL**

**Session 70**  
**Session Title:** BEST PRACTICES HOW MEDICAL INSTITUTIONS ARE INTEGRATING TELEMEDICINE TO IMPROVE CARE AND THE BOTTOM LINE  
Track: Operational Management  
Room 304ABC  
MODERATOR: Kristi Henderson, DNP, NP-BC, FAEN, Chief Telehealth & Innovation Officer  
University of Mississippi Medical Center, Jackson, MS, USA  
PRESENTER: Matt Levi, MHA, MPH, Director, Virtual Health Services  
CHI Franciscan Health, Tacoma, WA, USA  
PRESENTER: Karen Rheuban, MD, Director, UVA Center for Telehealth; Professor of Pediatrics, Senior Associate Dean for CME and External Affairs  
University of Virginia, Charlottesville, VA, USA  
PRESENTER: Randall S. Moore, MD, MBA, President  
Mercy Virtual, Chesterfield, MO, USA  

TUESDAY, MAY 5, 2015

**PRESENTATION PANEL**

**Session 71**  
**Session Title:** UNDERSTANDING THE KEY FACTORS TO IMPLEMENTING AN eHOSPITALIST SERVICE LINE  
Track: Operational Management  
Room 304ABC  
MODERATOR: Cynthia LeRouge, PhD, Associate Professor,  
Saint Louis University, Saint Louis, MO, USA  
PRESENTER: Pam Forducey, PhD, Director, eHealth  
Integris Oklahoma - Jim Thorpe Rehabilitation, Oklahoma City, OK, USA  
PRESENTER: Richard Sanders, DHA, MPH, FACHE, Vice President Telemedicine Services  
Eagle Hospital Physicians, Atlanta, GA, USA  
PRESENTER: Tim Hulen, BS, Regional Sales Manager  
InTouch Health, Santa Barbara, CA, USA  

TUESDAY, MAY 5, 2015

**INDIVIDUAL ORAL**

**Session 72**  
**Session Title:** LEVERAGING TOOLS AND TECHNOLOGICAL ADVANCES FOR TRAINING AND DECISION MAKING  
Track: Operational Management  
Room 304ABC  
MODERATOR: Jason Chaffin, VP, Clinical Solutions  
LifePoint Hospitals, Brentwood, TN, USA  

WEARABLE AUGMENTED REALITY FOR REMOTE CLINICAL TRAINING AND DECISION SUPPORT

**PRESENTERS AND CONTRIBUTING AUTHORS:**

Jayfus T. Doswell, PhD, Chairperson¹, Peter Kazanzides, PhD², Toks Fashola, PhD³  
¹Juxtopia Group, Baltimore, MD, USA, ²Johns Hopkins University, Baltimore, MD, USA, ³MERA Associates, Baltimore, MD, USA
GOOGLE FIBER AND FIBER CITIES LIKE CHATTANOOGA TO REDUCE APPOINTMENT WAITING TIMES AND INCREASE MEDICAL PROVIDER REVENUES

Presenters and contributing authors:
Raj Devasigamani, MS, MBA, PhDc, Director, Planning and Development
iPhotonix, Richardson, TX, USA

Developing a comprehensive telehealth dashboard at the system level

Presenters and contributing authors:
Kelsey E. Hofacer, MHSA, Consultant
Smriti Neogi, PhD, Denise White, PhD
Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, USA

Telemedicine architectural framework: Telemedicine success through standards and ontologies

Presenters and contributing authors:
Daniel Ramirez, MD, Telehealth Coordinator, Catalina Lopez, MD, MSc
Fundación Santa Fe de Bogotá, Bogota, Colombia

Tuesday, May 5, 2015

3:00 pm–4:00 pm Tuesday, May 5, 2015

Individual Oral

Session 73

Session Title: Key Issues Driving Telemedicine Policy and Implementation in Other Countries

Track: Operational Management Room 304ABC

Moderator: Silvio Vega, MD, Director, Preventive Medicine; Medical Director
Social Security Hospital, Panama City, Panama, International Telepediatrics Program, Panama City, Republic of Panama

Does Policy Solve the Problem?

Presenters and contributing authors:
Richard E. Scott, BSc, PhD, Professor of Telehealth, University of KwaZulu-Natal; President and CEO1,2, Maurice Mars, MBChB, MD1
1Nelson R Mandela School of Medicine, Durban, South Africa, 2NTC Consulting - Global e-Health, Calgary, AB, Canada

Abstract withdrawn

A Review of Telehealth in Brazil: Advances and Limitations

Presenters and contributing authors:
Magdala A. Novaes, PhD, Associate Professor1, Rhayssa R R P Lopes2, Juliana Wolf3, Claudinalle F q Souza, MSc, PhD3
1Federal University of Pernambuco, Recife, Brazil, 2University of Pernambuco, Recife, Brazil, 3Universidade Regional Integrada do Alto Uruguai e das Missões, Santo Ângelo, Brazil

A Multi-Stakeholder Strategy for the Generation of New Telehealth Services in Rural Queensland

Presenters and contributing authors:
Anthony C. Smith, PhD, Deputy Director; Adjunct Professor1,2, Ruth Saunders, RN1, Liam J. Caffery, PhD1, Natalie K. Bradford, PhD1, Joanne Grey, BA1, Len C. Gray, PhD1
1Centre for Online Health, The University of Queensland, Brisbane, Australia, 2Queensland Children’s Medical Research Institute, Brisbane, Australia
TUESDAY, MAY 5, 2015

4:15 pm–5:15 pm Tuesday, May 5, 2015

PRESENTATION PANEL
Session 74
Session Title: FCC HEALTHCARE CONNECT FUND: HOW TO MAXIMIZE TELEHEALTH BENEFITS USING THE CONSORTIUM MODEL
Track: Operational Management Room 304ABC
MODERATOR: Radhika Karmarkar, JD, BA, Deputy Division Chief Federal Communications Commission, Washington, DC, USA
PRESENTER: Kip Smith, BS, Executive Director Health Information Exchange of Montana, Kalispell, MT, USA
PRESENTER: Scott Davis, MHA, BA, Assistant Vice President, Business Strategy and Development Geisinger Health System, Danville, PA, USA
PRESENTER: Eric Brown, MBA, BA, President & CEO California Telehealth Network, Sacramento, CA, USA
PRESENTER: Donald Lewis, MHA, BA, Senior Manager, Rural Healthcare Universal Service Administrative Company, Washington, DC, USA

MONDAY, MAY 4, 2015

8:00 am–8:45 am Monday, May 4, 2015

PRESENTATION PANEL
Session 75
Session Title: STAYING AHEAD OF THE SHIFTING LEGAL AND REGULATORY LANDSCAPE
Track: Policy and Legal Room 403B
MODERATOR: Natasa Sokolovich, JD, MSHCPM, Executive Director University of Pittsburgh Medical Center, Pittsburgh, PA, USA
PRESENTER: Ellen Janos, JD, Partner Mintz Levin, Boston, MA, USA
PRESENTER: Julie Korostoff, JD, Partner Mintz Levin, Boston, MA, USA
PRESENTER: Terrence Lewis, JD, Associate Counsel University of Pittsburgh Medical Center, Pittsburgh, PA, USA

MONDAY, MAY 4, 2015

11:00 am–12:00 pm Monday, May 4, 2015

PRESENTATION PANEL
Session 76
Session Title: REMOTE MONITORING OF PATIENTS: POLICY OPPORTUNITIES AND CHALLENGES
Track: Policy and Legal Room 403B
MODERATOR: David Gray, Associate, Government Affairs Telecommunications Industry Association, Arlington, VA, USA
PRESENTER: Robert Jarrin, JD, Senior Director, Government Affairs Qualcomm, Washington, DC, USA
PRESENTER: Neal Sikka, MD, Associate Professor, Chief, Innovative Practice & Telehealth Section Emergency Medicine The George Washington University–Medical Faculty Associates, Washington, DC, USA
PRESENTER: Kevin Cahill, BS, Director of Nocturnal Services & Home Special Projects DaVita, Denver, CO, USA
CONCURRENT ORAL PRESENTATIONS ABSTRACT INDEX

MONDAY, MAY 4, 2015

1:15 pm–2:15 pm Monday, May 4, 2015

INDIVIDUAL ORAL

Session 77

Session Title: BUILDING A COALITION FOR PUBLIC POLICY
Track: Policy and Legal  Room 403B
MODERATOR: Kathy Schwarting, Executive Director
Palmetto Care Connections, Bamberg, SC, USA

STRATEGIES FOR ADVANCING PRO-GROWTH TELEHEALTH POLICIES AT THE STATE LEVEL

PRESENTERS AND CONTRIBUTING AUTHORS:
Michele Lynn Satterlund, JD, Lawyer & Lobbyist
McGuireWoods, Richmond, VA, USA

POLITICAL COMPROMISE: PLANNING AND IMPLEMENTING A STATEWIDE TELEHEALTH ALLIANCE IN SOUTH CAROLINA, A STATE THAT IS NOT EXPANDING MEDICAID

PRESENTERS AND CONTRIBUTING AUTHORS:
Mark Ashton Lyles, MD, MBA, Chief Strategic Officer
Medical University of South Carolina, Charleston, SC, USA

GRASSROOTS TELEMEDICINE: ADDRESSING POLICY CHALLENGES AND MAKING PROGRESS IN THE STATES THROUGH COALITION BUILDING

PRESENTERS AND CONTRIBUTING AUTHORS:
Latoya Thomas, BS, Director, State Policy Resource Center
American Telemedicine Association, Washington D.C, DC, USA

MONDAY, MAY 4, 2015

3:00 pm–4:00 pm Monday, May 4, 2015

PRESENTATION PANEL

Session 78

Session Title: TELEHEALTH PARTNERING IN US AND ABROAD: A LOOK AT VIABLE STRATEGIES AND LEGAL CONSIDERATIONS
Track: Policy and Legal  Room 403B
MODERATOR: Alexis Gilroy, JD, Partner
Jones Day, Washington, DC, USA
PRESENTER: Scott Edelstein, JD, Partner
Jones Day, Washington, DC, USA
PRESENTER: Alexis Gilroy, JD, Partner
Jones Day, Washington, DC, USA
PRESENTER: Kevin Mooney, JD, Counsel, IT Group Practice Chair
The Cleveland Clinic Foundation, Beechwood, OH, USA

MONDAY, MAY 4, 2015

4:15 pm–5:15 pm Monday, May 4, 2015

PRESENTATION PANEL

Session 79

Session Title: KEY PUBLIC POLICIES TO IMPROVE IMPLEMENTATION OF TELEREHABILITATION SERVICES
Track: Policy and Legal  Room 403B
MODERATOR: Jana Cason, DHS, OTR/L, FAOTA, Associate Professor
Spaulding University, Louisville, KY, USA
PRESENTER: Janet Brown, MA, CCC-SLP, Director, Healthcare Services in SLP
American Speech-Language-Hearing Association, Rockville, MD, USA
CONCURRENT ORAL PRESENTATIONS ABSTRACT INDEX

PRESENTER: Christine Calouro, MA, Project Coordinator
CCHP, Sacramento, CA, USA

PRESENTER: Tammy Richmond, MS, OTR/L, FAOTA, CEO
Go 2 Care, Inc, Los Angeles, CA, USA

TUESDAY, MAY 5, 2015

11:00 am–12:00 pm Tuesday, May 5, 2015

PRESENTATION PANEL
Session 80
Session Title: PAYING FOR TELEMEDICINE FROM TRADITIONAL PAYERS
Track: Policy and Legal Room 403B
MODERATOR: Eric Brown, MBA, BA, President & CEO
California Telehealth Network, Sacramento, CA, USA

PRESENTER: Mario Gutierrez, Executive Director
Center for Connected Health Policy, Sacramento, CA, USA

PRESENTER: Nina M. Antoniotti, RN, MBA, PhD, Executive Director of Telehealth and Clinical Outreach
Southern Illinois University School of Medicine, Springfield, IL, USA

TUESDAY, MAY 5, 2015

1:15 pm–2:15 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL
Session 81
Session Title: INNOVATIVE, NON-TRADITIONAL APPROACHES TO PAYMENT
Track: Policy and Legal Room 403B

MODERATOR: Kathy J. Chorba, Executive Director
California Telehealth Resource Center, Sacramento, CA, USA

FULL HEALTHCARE INTEGRATION THROUGH UPDATED PAYMENT SYSTEMS AND LOW-COST TECHNOLOGIES

PRESENTER: Curtis Lowery, MD, Department Chairperson
University of Arkansas for Medical Sciences, Little Rock, AR, USA

POLICY OPTIONS FOR TELEMEDICINE SERVICES PAYMENT: THE EMPLOYERS’ PERSPECTIVE

PRESENTER: Bill Kramer, MBA, Executive Director for National Health Policy
Pacific Business Group on Health, San Francisco, CA, USA

THE FUTURE OF TELEMEDICINE REIMBURSEMENT

PRESENTER: Gary Capistrant, MA, Chief Policy Officer
American Telemedicine Association, Washington, DC, USA

TUESDAY, MAY 5, 2015

3:00 pm–4:00 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL
Session 82
Session Title: LEGISLATIVE AND ADMINISTRATIVE POLICIES IN THE STATES: WHAT YOU NEED TO KNOW
Track: Policy and Legal Room 403B

MODERATOR: Emily Stewart, National Director of Public Policy
Planned Parenthood Federation of America, New York, NY, USA
A PROVIDER COMPANY’S PERSPECTIVE ON MULTI-STATE TELEHEALTH POLICY

PRESENTERS AND CONTRIBUTING AUTHORS:
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ONE STATE’S JOURNEY TO A SUSTAINABLE TELEHEALTH PROGRAM: MISSISSIPPI’S STORY

PRESENTERS AND CONTRIBUTING AUTHORS:
Kristi Henderson, DNP, NP-BC, FAEN, Chief Telehealth & Innovation Officer
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DEVELOPING A SUCCESSFUL STATEWIDE TELEHEALTH AGENDA: LESSONS FROM NEBRASKA

PRESENTERS AND CONTRIBUTING AUTHORS:
Mandi Constantine, PhD, Executive Director of Telehealth
Nebraska Medicine, Omaha, NE, USA

TUESDAY, MAY 5, 2015

4:15 pm–5:15 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL
Session 83
Session Title: STATE MEDICAL AND LICENSING BOARDS: WHAT YOU NEED TO KNOW
Track: Policy and Legal Room 403B
MODERATOR: Ellen R. Cohn, PhD, CCC-SLP, Associate Dean for Instructional Development, School of Health and Rehabilitation Sciences
RERC on Telerehabilitation, University of Pittsburgh, Pittsburgh, PA, USA

AMENDING TWO INTERSTATE LICENSURE COMPACTS: THE PROSPECT OF FOUR MILLION US NURSES WITH NATIONWIDE LICENSURE PORTABILITY ENABLING SEAMLESS TELEHEALTH PRACTICE

PRESENTERS AND CONTRIBUTING AUTHORS:
Sandra Evans, MAEd, RN, Chair, Nurse Licensure Compact
NCSBN, Chicago, IL, USA

THE EMERGING FEDERAL STANDARD FOR TELEHEALTH: GAINING CLARITY IN A FIFTY STATE ENVIRONMENT

PRESENTERS AND CONTRIBUTING AUTHORS:
Kofi A. Jones, MA, Vice President of Public Affairs
American Well, Boston, MA, USA

EXPANDING ACCESS, PROTECTING PATIENTS: AN UPDATE ON THE INTERSTATE MEDICAL LICENSURE COMPACT AND TELEMEDICINE POLICY

PRESENTERS AND CONTRIBUTING AUTHORS:
Lisa Robin, MS, Chief Advocacy Officer
Federation of State Medical Boards, Washington, DC, USA
The goal of this project was to establish multi-disciplinary specialty services utilizing telemedicine technology in a pediatric mobile clinic setting. Accomplishing this would require an understanding of the various technologies which include videoconferencing, the internet, store-and-forward imaging, streaming media, and terrestrial and wireless communications. HIPAA compliance must be ensured. Overcoming logistical and technical challenges unique to a mobile environment includes establishing reliable internet connectivity, understanding how to operate telemedicine equipment and peripheral devices properly, identifying key support, training staff, predicting how this would impact regular clinic workflow and operations. The decision must be made to choose which modality is most appropriate for the service being provided. If there is a need for transmission of physical findings utilizing medical devices, specific type of equipment must be purchased. Examples include high resolution video/still cameras for Dermatology, EKG machine, Spirometer, Stethoscope, Otoscope, Vital signs, etc. If the consult is just an interview with a patient, then videoconferencing would be necessary. In addition, the specialists must have the proper equipment/connectivity to ensure that the communication can be successful as well. For example, if a specialist doesn’t have a webcam on their computer or speakers, they can’t communicate with the patient. Other operational points considered are the manner in which the specialty clinics are organized. For example, how will the patients be selected and scheduled, how does one access specialists that will be willing to provide their services through telehealth? Special consideration must be taken when identifying which specialties would be offered. Do these services meet the needs of the patients in the underserved communities traveled. Additionally, how would the project achieve appropriate staffing and funding? Can one bill for these services? Are there regulatory limitations? After careful planning and collaboration, these challenges can be overcome and a successful specialty clinic via telehealth can be implemented in a mobile health setting.

Objectives

1. Illustrate the innovative telehealth modalities of service delivery in a mobile clinic setting.
2. Gain insight into the challenges in establishing a successful specialty clinic in a mobile setting and how to overcome them.
3. Identify strategies for establishing and sustaining a successful telehealth program.

As telehealth continues to transform lives, special attention to those most vulnerable (children) is of upmost importance. Four nationally recognized Children’s Hospitals will provide insight to leading innovations that are improving access to care and health outcomes of children. This panel will describe successful implementations of telehealth solutions for treating both patients internally and externally. Children’s Health System of Texas (CHST) – Launching a Telehealth Program: This presentation will describe the ins and outs of starting a telehealth program. As healthcare revenue shifts, so must the way we take care of our patients. In order to maintain and gain market share, telehealth can be the backbone for extending a hospital’s reach. Utilizing Accountable Care Organizations, Health Plans, Clinically Integrated Networks and Patient Centered Medical Homes, CHST is leveraging stakeholders to increase access, improve outcomes and generate a healthier population. Telehealth areas to discuss include: compliance, regulatory, legal and security hurdles that were overcome. Cincinnati Children’s Hospital Medical Center – Integrating Telehealth – In an effort to integrate telehealth into existing workflows, this presentation will discuss Electronic Medical Records (EMR) documentation plan, Relative Value Unit (RVU) assignments for physician productivity, project criteria selection, evaluation process and consistent approaches to contracting. In addition, this presentation will expand on how they are utilizing telehealth for: Inpatient critical care rounding and support for outlying facilities, critical care consults on admission cases as well as for psychiatry consults from our intake response team and ambulatory care. Boston Children’s Hospital – Taking Care to the Patient: Boston Children’s Hospital’s growing portfolio of telehealth programs are effectively linking our clinicians and patients together to make the practice of medicine more efficient, expedite timely access to care, reduce overall costs, and to increase patient satisfaction. In the community
hospital and outpatient settings, telehealth brings specialty care to the patient rather than bringing the patient to Boston Children’s. In the home setting, clinicians at Boston Children’s are using telehealth to support routine follow-up care for both episodic events (e.g., concussion and plastic surgery) and chronic conditions (e.g., diabetes and obesity). Nationwide Children’s Hospital – Improving Outcomes and Increasing Growth: Nationwide Children’s Hospital has developed a Telehealth Continuum that is focused on guiding the implementation of services by addressing access, care coordination, and engagement issues in order to position the hospital for improved outcomes, cost effective care, and growth. Conclusion: This panel presentation will bring together experts with tremendous experience in implementing and growing telehealth programs. Lessons learned and guiding tenants will be delineated during the presentations.

Objectives:
1. Gain insights into innovative telehealth solutions for the pediatric population.
2. Understand how Children’s Hospitals are using technology to improve patient outcomes and access to care.
3. Identify key steps in identifying new mobile technologies for the pediatric population.

SUNDAY, MAY 3, 2015
2:00 pm–3:00 pm Sunday, May 3, 2015

PRESENTATION PANEL

Session 3
Session Title: A PATIENT-CENTERED TELEBEHAVIORAL HEALTH INTERVENTION FOR MEDICAID-INSURED CHILDREN
Track: Pediatric Telehealth Colloquium Room 308AB

MODERATOR: Tumaini Coker, MD, MBA, Assistant Professor-in Residence of Pediatrics
Mattel Children’s Hospital UCLA, Los Angeles, CA, USA

PRESENTER: Neelkamal Soares, MD, FAAP, Developmental-Behavioral Pediatrician
Geisinger Health System, Danville, PA, USA

PRESENTER: Bonnie Zima, MD, Associate Director, Jane and Terry Semel Institute’s Health Services Research Center
David Geffen School of Medicine at UCLA, Los Angeles, CA, USA

PRESENTER: Claudia Sweener, Mother of Behavioral Health Patient/Advocate
Mattel Children’s Hospital UCLA, Los Angeles

Background: Up to 20% of U.S. children suffer from a developmental, behavioral, or mental health (DB/MH) disorder, while nearly 80% of those who need DB/MH specialty services do not receive them. For publicly-insured children, this unmet DB/MH need is especially acute, with inequities in access to care due, in part, to overall DB/MH specialty provider shortages, long waiting lists for safety-net DB/MH services (e.g., California Department of Mental Health), a lack of private DB/MH specialists willing to accept Medicaid insurance, and inadequate coordination and collaboration for DB/MH care between primary care and specialty care providers. An integrated specialty and primary care DB/MH telehealth system for Medicaid-insured children has the potential to greatly improve access, both 1) improving the ability of primary care clinicians to manage less complex issues with remote DB/MH specialty provider support and 2) allowing children with more complex DB/MH needs to gain direct telehealth access to DB/MH specialty providers.

Objectives:
1. Acquire an understanding of how formative research can provide insights to develop telehealth interventions that fit the needs of the community.
2. Acquire an understanding of the advantages and challenges in using telehealth to deliver developmental, behavioral pediatric services in primary care settings in underserved areas.
3. Gain insights into helpful strategies that can be used to implement telehealth to improve access to mental health services for pediatric patients.

MONDAY, MAY 4, 2015
11:00 AM–12:00 pm Monday, May 4, 2015

INDIVIDUAL ORAL

Session 48
Session Title: IT’S A SMALL WORLD AFTER ALL: APPROACHES IN NEONATAL ICU CARE
Track: Pediatric Telehealth Colloquium Room 308AB

MODERATOR: Richard W. Hall, MD, Professor, Neonatology
University of Arkansas for Medical Sciences, Little Rock, AR, USA

TELEMEDICINE APPROACHES TO EVALUATING ACUTE-PHASE RETINOPATHY OF PREMATURETY (ROP): e-ROP

PRESENTERS AND CONTRIBUTING AUTHORS:
Agnieszka Baumritter, MS, Project Director
Children’s Hospital of Philadelphia, Philadelphia, PA, USA

Introduction: Over 50,000 premature infants are born at less than 31 gestational age (GA) or less than 1250g birth weight (BW) in the US each year.
CONCURRENT ORAL PRESENTATIONS ABSTRACTS

These infants are at risk for sight-threatening ROP, a treatable disease that is a leading cause of blindness in children. ROP detection is currently based on a diagnostic examination by an ophthalmologist experienced in examining premature babies. However, there are too few experts to meet the growing demand for ROP screening. We report data from a large, NIH/NEI-funded, multi-center clinical study “Teledermology Approaches to Retinopathy of Prematurity (e-ROP)” undertaken to evaluate an eROP telemedicine system for screening eyes of at-risk preemies with (BW) ≤ 1250g who require a diagnostic evaluation by an ophthalmologist.

Methods: Between May 2011 and October 2013, 1257 premature infants in 13 North American neonatal intensive care units (NICUs) underwent regularly scheduled diagnostic examinations by an ophthalmologist and digital imaging by non-physician staff using a wide-field digital camera. Starting at 32 weeks postmenstrual age (PMA) ophthalmologists documented whether an eye met criteria for referral-warranted ROP (RW-ROP), i.e. zone I ROP, stage 3 ROP, or plus disease. A standard 6-image per eye set was taken by a non-physician retinal imager, uploaded to a central server and graded at a remote location by two trained, masked, non-physician readers. A reading supervisor adjudicated disagreements.

Results: 1257 infants (mean BW 864g, mean GA 27 wks.) out of 2351 eligible (59.8%) underwent a median of 3 sessions of examination and imaging. Diagnostic examination identified RW-ROP in 18.2% of eyes (19.4% of infants). Telemedicine/remote grading of images of an eye at a single session had sensitivity of 81.9% (95% confidence interval [CI]: 77.4-85.6%) and specificity of 90.1% (95% CI: 87.9-91.8%). With both eyes of an infant were considered, as would routinely be done in a NICU screening, the sensitivity was 90.0% (95% CI 85.4-93.5%) with specificity of 87.0% (95% CI 84.0-89.5%), negative predictive value 97.3% and positive predictive value 62.5% at the observed RW-ROP rate of 19.4%. Also, 43% of RW-ROP cases were detected by telemedicine/remote grading on average 15 days earlier than by the ophthalmic exam.

Discussion: Implementation of remote grading/telemedicine programs remains a challenge for ophthalmology. Contingency plans for detecting the small number of eyes not detected using telemedicine need to be established. Other challenges concern licensing and liability requirements for care providers, and establishing accessible and reliable image reading centers.

Conclusion: When compared with the criterion standard diagnostic examination, the e-ROP results provide strong support for the validity of using telemedicine/remote evaluation of digital images of eyes of premature babies at risk for ROP. Teledermology ROP screening identified 90% of infants with potentially serious ROP based on the eye examination. This increased to nearly 100% for eyes that subsequently were treated. Teledermology for ROP detection has the potential to spare millions of premature babies from vision loss.

Funded by National Eye Institute of the National Institutes of Health, Department of Health and Human Services. U10 EY017014

Objectives
1. Acquire an understanding of novel approaches to screening for sight threatening ROP.
2. Gain insights into how technology can assist in a faster detection of ROP.
3. Achieve a better understanding of screening practices that are generalizable to other countries and diseases.

ENHANCED RESIDENT INTUBATION USING A TELE-LARYNGOSCOPE IN NEONATES

PRESENTERS AND CONTRIBUTING AUTHORS:
Richard W. Hall, MD, Professor, Neonatology1, David K. Williams, PhD1, Jimmie A. Birdsong, BSN1, Ron C. Sanders, MD2
1University of Arkansas for Medical Sciences, Little Rock, AR, USA, 2Arkansas Children’s Hospital, Little Rock, AR, USA

Background. Tracheal intubation is one of the most important interventions in the stabilization of critically ill neonates and children. Unfortunately, resident trainee success rates are moderate at best, with 1/3 of upper level pediatric residents unable to intubate a very low birth weight neonate. The Residency Review Committee determined that many residents do not develop competence in intubation and that a more robust method is needed for teaching procedural skills. We hypothesized that intubation training using a modified videolaryngoscope (camera connected to a laryngoscope blade and a telemedicine unit for high definition visualization) would allow enhanced intubation skills compared to standard instruction as evidenced by decreased time to intubate a manikin.

Methods: This study included 86 pediatric and med-peds resident physicians. There were 38 residents randomized to the Intervention group (IG) and 48 residents randomized to the Non–Intervention Group (NIG). The IG completed a pre- and post-intervention survey, observed a Neonatal Resuscitation Program Instructional video, and participated in intubation training utilizing a Mastery Learning practice approach using a Storz C-Mac videolaryngoscope connected to a telemedicine unit. Instructors in the IG could see what the resident was viewing over teledermology while the resident intubated a neonatal manikin, allowing him to make corrections in real time. Residents randomized to the NIG completed a pre- and post- intervention survey. Residents in both groups were tested at the end of the year for cognitive and procedural skills (time to intubate a neonatal manikin). Surveys were also used to assess the length of training and comfort with intubation of various age groups. NIG and IG were compared using 2 sample t-tests.

Results: Pre-intervention surveys were available for 86 residents. At the time of submission, post intervention surveys and tests were available for 6 residents in the IG and 9 residents in the NIG. Results of at least 85% of the residents will be available and analyzed before May, 2015, as well as success rates of each group in live intubations. Results are shown in the Table.

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>NIG</th>
<th>IG</th>
<th>P VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Months in intensive care nursery training</td>
<td>2.02</td>
<td>1.97</td>
<td>0.478</td>
</tr>
<tr>
<td>Months in pediatric intensive care training</td>
<td>0.90</td>
<td>0.50</td>
<td>0.173</td>
</tr>
<tr>
<td>Mean comfort level with pediatric patients ≥ 8 years</td>
<td>2.21</td>
<td>1.97</td>
<td>0.358</td>
</tr>
<tr>
<td>Comfort level pediatric patients &lt; 8 years</td>
<td>2.15</td>
<td>2.03</td>
<td>0.642</td>
</tr>
<tr>
<td>Comfort level with neonates</td>
<td>2.71</td>
<td>2.16</td>
<td>0.054</td>
</tr>
<tr>
<td>Mean cognitive score</td>
<td>12.7</td>
<td>15.2</td>
<td>0.236</td>
</tr>
<tr>
<td>Mean time to intubate a manikin (sec)</td>
<td>43.3</td>
<td>13.8</td>
<td>0.099</td>
</tr>
</tbody>
</table>

Conclusion: Despite similar months of training, pediatric residents receiving the teledermology intervention showed a trend towards better cognitive scores and decreased time to intubate a manikin compared to standard training. Based on these results, further analysis will likely demonstrate a significant benefit of this intervention.

Future Studies: This method of intubation training can be adapted to assist community providers during live intubations.

Objectives
1. Understand applicability of the tele-laryngoscope to enhance intubation skills.
2. Understand applicability of the tele-laryngoscope to enhance community intubation skills.
3. Understand the need for more frequent intubation training.
I SEE U BABY: TEAMWORK IN THE NICU

PRESENTERS AND CONTRIBUTING AUTHORS:
Donald Ponturo, BS, Director, External Relations and Innovation, Mattel Children’s Hospital UCLA, Los Angeles, CA, USA

Background: Live video feeds of babies in the neonatal intensive care unit (NICU) at Mattel Children’s Hospital UCLA are now available to parents, siblings and extended family members through a new iPad initiative dubbed "I See U Baby." NICU nurses facilitate the video feeds by uploading a secure, invitation-only network for parents and two additional invitees, who can receive video feeds via the Internet on their phones, tablets or computers. The video feeds are provided in “view only” mode to protect the privacy of other NICU patients and family members. "Once families do it the first time, they are hooked," says Leticia Dahlke, RN, the assistant director of the NICU. “It’s great because the video is live and the family members get to see the baby awake or yawning or moving. It’s a great alternative to a picture.”

Objective: Family members, particularly those in distant locations are unable to visit and emotionally connect with their babies. Inexpensive video connections provide an effective solution to make this connection but there are a variety of issues involving privacy concerns and the nursing staff’s willingness to incorporate this technical procedure into their work process.

Introducing a new telehealth service line can create unique and unexpected workflow, and increasing care provider workload. Discover how we overcame these barriers at Mattel Children’s Hospital UCLA introducing, “I See U Baby.” Discover how to obtain buy-in from all stakeholders, clearly defining employee roles, identifying champions, mapping out how each goal will be reached, and having a clear understanding of the expected outcomes.

Findings: This presentation will review implementation results and will help anyone interested in adopting new telehealth services in an inpatient environment define and address the human factors to bring a successful program to scale.

Objectives
1. To define and address human factors to implement a new telehealth service line.
2. Craft a communication plan to reach and motivate stakeholders and to identify champions within the care team.
3. Learn how to develop effective training materials for medical staff and patient families.

TELENICU IMPROVING PEDIATRIC SUBSPECIALTIES SECOND OPINION AND QUALIFICATION OF CARE

PRESENTERS AND CONTRIBUTING AUTHORS:
Maria do Carmo B. Melo, MD, Associate Professor; Visiting Professor at University of California, Davis¹, Nara Lucia Carvalho Silva², Thais Costa Nascente Queiroz, MD³, Cintia Alcántara Carvalho⁴, Carla Carvalho Martins⁵, Alaneir Fatima Santos, MD⁶, Humberto José Alves, MD⁷.
¹Universidade Federal de Minas Gerais, Belo Horizonte, Brazil, ²Universidade Federal de Minas Gerais, Belo Horizonte, Brazil, ³Secretaria de Estado da Saúde de Minas Gerais, Brazil, ⁴Secretaria de Estado da Saúde de Minas Gerais, Brazil, Belo Horizonte, Brazil, ⁵Secretaria de Estado da Saúde de Minas Gerais, Belo Horizonte, Brazil.

Introduction: Neonatal mortality is still high in some countries and in most cases it is related to neonatal assistance. In the state of Minas Gerais, Brazil, a partnership between the State Health Department and the Telehealth Center of the Medical School of the Federal University of Minas Gerais permitted to organize a Telemonitoring Center in order to improve neonatal care throughout the state. In that region child mortality is high, reaching almost 18.7 per 1,000 live births in some municipalities. Of every 100 child deaths, 71 occurred in the first 28 days of life. Public funds were used to open news Neonatal Intensive Care Units (NICU), but there are not sufficient pediatricians and subspecialists in the towns to support the assistance of complex cases.

Objectives: To present the results of the subspecialist request to the NICU Telemonitoring Center and discuss its importance.

Methods: Pediatricians and nurses, experienced in neonatology and intensive care are available 12 hours per day, seven day a week in the Telemonitoring Center. These professionals are from the local hospitals and subspecialists in the state of Minas Gerais. The Telemonitoring Center provides a video conference service and a connection to teleconsultation. These services are available for neonatal assistance, decrease the rate of transfer to higher levels of care and improve the quality of care in pediatric patients receiving pediatric critical care by telemedicine tools in remote areas.

Results and Discussions: From December 2012 to July 2014 6,903 teleconsultations were performed between the Telemonitoring Center and 17 NICUs. When necessary, subspecialists were consulted in specific more complex cases. During this period, 149 teleconsultations with subspecialists were performed. The data demonstrated that the more requested subspecialists were cardiologists (n = 42), neurologists (n = 23), pediatric surgeons (n = 22), infectologists (n = 19), nutritionists (n = 16) and geneticists (n = 11). Hospital transfers were avoided with this service. The Hospital Bed Regulation Center interfaced with the Central and it was important for the best decision of transfers and triage of the neonates. Best practices are improved and the training in service is possible. Studies demonstrated that specialized cardiac critical care is a central component in the management of critically ill neonates with congenital heart disease. Scarcity of specialized medical staff is a widespread problem and telemedicine can help to solve this problem. There have been previous reports of high satisfaction and improved quality of care in pediatric patients receiving pediatric critical and emergency care by telemedicine tools in remote areas.

Conclusion: This model can be extended for other Brazilian regions, since there are human resources scarcity, in special of pediatricians and subspecialists with experience in neonatology and intensive care. This system also has the potential to reduce costs by reducing expensive and sometimes risky transportation of neonates for subspecialist consultation. Telemedicine can improve the quality of care, the efficiency and effectiveness of resources and provides support for remote areas health professionals in order to qualify the neonatal assistance, decrease the rate of transfer to higher levels of care and consequently reduce neonatal mortality.

Objectives
1. Achieve a better understanding of the teleICU projects.
2. Acquire an understanding of specialist’s second opinion in critically ill patients admitted to the NICU.
3. Realize the importance of creating a network of communication and support for neonate care.
CONCURRENT ORAL PRESENTATIONS ABSTRACTS

PRESENTER: Madan Dharmar, MBBS, PhD, Assistant Research Professor, University of California, Davis Children’s Hospital, Sacramento, CA, USA

PRESENTER: Kathleen Webster, MD, MBA, Associate Professor Advocate Health System, Oak Lawn, IL, USA

Introduction: In assessing the impact of telemedicine programs, it is important to keep in mind how to determine if established goals have been met. The goals of telemedicine programs are often cited as the need to improve the quality of, access to, and efficiency of care in a financially sustainable manner. In designing a program, it is important to consider how these goals will be evaluated.

Methods: This panel will discuss various types of outcome measures that can be evaluated in a telehealth program based on the programmatic and institutional needs. The panel will explore explicit outcome measures such as medication error rates, transfer rates and criterion-based outcomes; implicit measures such as quality and satisfaction of care; utilization measures such as cost-effectiveness, emergency department utilization and health dollars spent per patient. To achieve our objectives, the panel will illustrate the why, who, how and what defines possible outcome measures by discussing the experiences of researchers in developing an evaluation plan for their program. This panel will discuss the following successful telemedicine programs: 1. Internal telemedicine programs, designed to meet quality and patient safety goals needs within a health system. 2. Pediatric telemedicine program, which has shown higher quality and satisfaction of care, improved patient safety, and cost-effective delivery of pediatric specialist to rural/underserved hospitals; and 3. Health-e-Access program which has shown a decrease in emergency department utilization and healthcare dollars spent by providing access to daytime pediatric telemedicine services to school and childcare centers.

Conclusion: The use of telemedicine keeps increasing exponentially and continues to change the way healthcare is delivered. Through this panel, we will help enable providers to establish evaluative outcome measures which will assess the success of their telehealth program.

Objectives
1. Discuss the importance of measurable outcomes in evaluating and improving telehealth programs which deliver telemedicine services to care for children.
2. Discuss the why, who, how and what defines possible outcome measures for telehealth program evaluation.
3. Discuss cost/utilization outcome measures.

MONDAY, MAY 4, 2015
3:00 pm–4:00 pm Monday, May 4, 2015

INDIVIDUAL ORAL

Session 51
Session Title: EXPLORING MODELS OF CARE FOR CHILDREN THROUGH TELEMEDICINE
Track: Pediatric Telehealth Colloquium Room 308AB

MODERATOR: James McElligott, MD, MSCR, Assistant Professor Medical University of South Carolina, Summerville, SC, USA

THE TELEMEDICINE FRONTIER: PROVIDING PEDIATRIC BEHAVIORAL THERAPIES INTO THE HOME

PRESENTERS AND CONTRIBUTING AUTHORS:
Lisa Kelchner, PhD, Associate Professor, Director of Graduate Studies1, Stephanie Zacharias, PhD1,2, Casey Keck, MA1,
Alessandro de Alarcon, MD, MPH1, Dmitar Deliyski, PhD1, Janet Beckmeyer, MA2, Meredith Tabangin, MPH2, Charles R. Doarn, MBA2, Kathryn Davidson, MA1
1Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, USA, 2University of Cincinnati, Cincinnati, OH, USA

Introduction: Access to certain types of behaviorally based specialized therapies for children is limited. This is especially true in the area of pediatric voice disorders which. Untreated, there can be significant educational and social consequences. Secure Internet transmission of voice (speech) and visual data is emerging as an effective means by which to increase patient access to specialized allied health services. Published data regarding the application of telehealth within the field of speech language pathology (SLP) include numerous technical and policy type reports yet there is a paucity of data that provide real evidence related to treatment feasibility or outcomes. The purpose of this federally-funded study was to determine the feasibility of using a telehealth solution for delivering pediatric voice therapy via secure teleconferencing (hospital to home) and a Web-based patient portal. The quality and stability of synchronous Internet and Web-based audio/video data transmission was assessed and progress in therapy was documented. The personal and interpersonal benefits and obstacles surrounding delivery of pediatric voice therapy using telehealth were quantified and described.

Methods: Participants were 10 children (median age: 11.1 years) who had been diagnosed with a voice disorder and were referred to SLP for therapy. All lived in central or southwest Ohio or northern Kentucky. After receiving consent the children were enrolled in a standard 8 week therapy program that was delivered via secure, synchronous internet sessions with a home practice program that used an asynchronous Web-based practice portal. Equipment was dispensed to each family for the duration of their involvement in the study. Clinical and call quality related data were captured during the synchronous sessions by the treating clinicians and family. Additional outcome measures were captured via the Web portal and included satisfaction, compliance, and cost data. Adaptations needed to deliver voice therapy via the Internet were qualitatively described.

Results: All 10 children successfully completed the 8 weeks of therapy. Preliminary feasibility data reveal that the tech stability ratings were either good or excellent for both audio and video (participant and parent ratings). All claim good or excellent ease of use for both the synchronous and asynchronous sessions with the asynchronous being rated slightly higher. The families demonstrate strong satisfaction with both forms of treatment (Internet based session and Web portal). Clinician’s ratings were distributed over more categories though the majority of the ratings were good. Audio compression of sustained phonation caused minor acoustic fidelity issues. ISP speeds for the in home connections have averaged 1.2 Mbps upload (range of .63–1.98); 22.27 Mbps download; and 10.11 ms ping.

Discussion: The findings reported in this provide initial proof that delivering specialized behavioral types of treatment into the home is possible and desirable. Moreover, improved patient access to quality care was accomplished. Obstacles related to technology stability and typical patient compliance issues were encountered but should not discourage next generation attempts. Participants and clinicians indicated the potential for greater self-management and clinical monitoring via the methods tested.

Objectives

1. Understand the benefits and obstacles of delivering behavioral therapy hospital to home.
2. Demonstrate knowledge of the protocol design and implementation for a hospital to home therapy program.
3. Understand the benefits and obstacles of implement a synchronous patient Web portal for home practice.

Discussion:

The findings reported in this provide initial proof that delivering specialized behavioral types of treatment into the home is possible and desirable. Moreover, improved patient access to quality care was accomplished. Obstacles related to technology stability and typical patient compliance issues were encountered but should not discourage next generation attempts. Participants and clinicians indicated the potential for greater self-management and clinical monitoring via the methods tested.

Objectives

1. Understand the benefits and obstacles of delivering behavioral therapy hospital to home.
2. Demonstrate knowledge of the protocol design and implementation for a hospital to home therapy program.
3. Understand the benefits and obstacles of implement a synchronous patient Web portal for home practice.

Introduction:

Access to primary care for children who are Medicaid eligible in North Texas is limited due to lack of providers accepting Medicaid, non-enrollment in Medicaid and limited or no pediatric providers in geographic locations. With funding from the Texas Waver Project - Children’s Health System of Texas launched a school-based telehealth program that provides acute primary care services in 26 schools in the Summer of 2014. This deployment included both Independent School Districts and Charter Schools located in urban and rural locations. Utilizing emergency room data usage and pediatric coverage data:potential schools administrators were contacted for participation. This presentation will provide the details of implementing school telehealth in five different school entities for a total of 26 schools including: (a) Work plans, (b) Clinical Work-flow, (c) Infrastructure and deployment, (d) Training and Education of Nurse Presenters, (e) Regulatory hurdles, (f) Registration and Access, and (g) On-going monitoring and assessment. The program’s objective is to improve access to primary care for North Texas students, to reduce emergency room visits for non-emergent conditions, decrease absenteeism for health related reasons and assess patient/family satisfaction with telehealth. Deploying telehealth in schools on a large-scale is
UTILIZING TELEMEDICINE TECHNOLOGY IN PEDIATRIC HEALTHCARE

PRESENTERS AND CONTRIBUTING AUTHORS:
Sunil Budhrani, MD, MPH, MBA, Cofounder
CareClix Telemedicine, Vienna, VA, USA

We will discuss the various telemedicine and telehealth technologies as they are utilized in the care of the pediatric population and the benefits and limitations of these platforms in their care. Additionally, we will explore the various settings and conditions in which these patients are evaluated.

OBJECTIVES
1. Identify telemedicine strategies that are used to care for the pediatric population.
2. Discuss the benefits of telemedicine for pediatrics and its limitations.
3. Explore the environments and settings in which telemedicine technologies are used to take care of pediatric patients.

MONDAY, MAY 4, 2015
4:15 pm–5:15 pm Monday, May 4, 2015

INTEGRATING TELEMEDICINE TOOLS INTO A THERAPEUTIC ENVIRONMENT FOR CARE COORDINATION

PRESENTERS AND CONTRIBUTING AUTHORS:
Jason T. Long, PhD, Associate Professor and Director, Christopher J. Kovacs, PT, DPT, Erin E. Fritts, OTR/L, Krystin Turner, OTR/L, Brian E. Cunningham, BS
Cincinnati Children's Hospital Medical Center, Cincinnati, OH, USA

The telemedicine environment for physical therapists and occupational therapists has traditionally lagged that of physicians’ in terms of insurance coverage and licensure portability. However, as telemedicine programs scale up at hospitals and other patient care environments across the country, the tools and principles of telemedicine become more readily available to all clinical professionals. Within pediatric therapeutic environments, these telemedicine tools allow the clinician to engage with children and families in more natural environments, and to maintain an educational presence with the family in the absence of physical interaction. The telemedicine program in the Division of Occupational Therapy, Physical Therapy, and Therapeutic Recreation (OTPTTR) at Cincinnati Children’s Hospital Medical Center (CCHMC) was developed using a Design Thinking strategy to frame our approach. This strategy involved four stages of planning (Empathy Building, Ideation, Prototyping, and Implementation). A series of interviews and interactions with patients and families in a variety of environments led to the creation of three personas (“able and ready”, “ready but not able”, and “able but not ready”). For each persona, an empathy profile was created which identified needs, goals, available resources, and barriers to implementation. With these profiles in mind, the team conceptualized an array of possible interventions. Select interventions were then identified for pilot study within the clinical environment, and pilot studies were conducted using Small Tests of Change as per the Model for Improvement.

Pilot Case Studies:
1. Inpatient / Outpatient Care Coordination - In the orthopaedic and sports PT practice, patients are frequently referred from a satellite location to a central location for a one-time isokinetic strength test. Treating therapists in these satellite locations connect with evaluation therapists at the central site, using an encrypted Web-based voice/video environment for simultaneous videoconferencing and screen sharing. This allows the treating therapist to virtually consult with the evaluation therapist after the patient’s isokinetic test and immediately review the results with the patient in a face-to-face setting. Based on the test results, the treating therapist can then make immediate clinical decisions and changes to the plan of care, rather than waiting until the next therapy session.
2. Inpatient / Outpatient Care Coordination - Patients transitioning from the inpatient therapeutic environment to the outpatient have unique care coordination needs. Ideally, care provided in the outpatient setting will be a natural progression of the inpatient therapy, with persistent awareness of the patient’s needs and progress toward the same goals. Inpatient therapists use video to capture information that cannot be adequately communicated in a written chart (e.g. feeding strategies, positioning needs, etc.) The outpatient therapist(s) with whom the patient is scheduled can then review these videos prior to the patient’s initial outpatient visit, improving both the continuum of care and the patient/family experience.

Conclusion: A Design Thinking strategy was successfully employed to conceptualize telemedicine concepts which were relevant to our existing clinical population, and to implement these ideas within our therapeutic environments. Initial feedback from providers indicates high satisfaction with the program and desire to expand to additional settings.

OBJECTIVES
1. Describe the Design Thinking strategy employed in initiating the telemedicine program in the Division of Occupational Therapy, Physical Therapy, and Therapeutic Recreation at Cincinnati Children’s Hospital Medical Center.
2. Explain the role of the Model for Improvement in program development.
3. Appreciate case studies in which telemedicine tools play an explicit role in care coordination for a diverse range of pediatric patients.

TELEHOSPIRE FOR CHILDREN: PRELIMINARY FINDINGS AND NEXT STEPS

PRESENTERS AND CONTRIBUTING AUTHORS:
David Steinborn, MD, Professor of Pediatrics1, Devon Dabbs, BA2, Terri Warren, MSW3, Mario Gutierrez, MPH4, James Marcin, MPH, MD5
1University of California, Davis Medical Center, Sacramento, CA, USA,
2Children’s Hospice and Palliative Care Coalition (CHPPC), Salinas, CA, USA,
3Providence TrinityCare Hospice, Torrance, CA, USA, 4Center for Connected Health Policy, Sacramento, CA, USA

Background: Access to Pediatric Palliative Care is limited by the number of trained individuals in each of the disciplines caring for children (physicians, nurses, social workers, psychologists, and childlife therapists). To increase the
availability of those disciplines to patients living at a large distance from pediatric medical centers, we have developed the use of readily available televideo applications (FaceTime and VSee).

Methods: To pilot test this approach, we trialed this method in a fully staffed pediatric palliative care program in the Los Angeles area. As part of a quality improvement project, families were asked whether they were interested in using iPad based televideo conferencing to assess patient symptoms and to provide routine follow up visits. iPads were made available using FaceTime. Four families were enrolled in the initial phase and were supplied with iPads obtained through a seed grant from the Center for Connected Health Policy. Following each session, feedback was provided through a Web-based survey on a five-point scale. Families were also able to give verbal feedback to their hospice providers which was noted. Subsequent work has used VSee software which is available for all platforms including smartphones. VSee is HIPAA compliant and permits recording of sessions for and medico-legal documentation.

Results: We obtained a convenience sample of 9 family responses and 13 caregiver responses in this pilot phase of development. The overall satisfaction was 5.0/5.0 for families and 4.8/5.0 for providers. All participants found the software easy to use. They reported that the interpersonal relationship with the caregiver could be maintained via the televideo interface and “intimacy of communication” was not lost after a few sessions of experience with the medium. Families said they would prefer to use their own smartphones rather than having an additional piece of equipment (iPad) in their homes to keep track of. An example of a successful case managed at home was a child who developed symptoms which concerned the family. The family requested a nursing visit in the late afternoon which would have taken two hours each way in rush hour traffic. The parents intended to take the child home, following best practices to ensure the safe and effective inter-sessions and to provide routine follow up visits. The family stated they felt relieved to know the nurse was seeing what they were concerned about.

Conclusion: Telehealth can provide an effective medium for supporting families living at great distance from the medical center. All healthcare disciplines can utilize this approach. Avoidance of burdensome and expensive ED visits may be possible through timely assessment by skilled hospice personnel via simple telehealth intervention. We will show several sessions that highlight this approach.

Objectives
1. Understand the challenges to home palliative care.
2. List 3 ways in which telehealth can overcome obstacles.
3. Describe two aspects of security concern for telehospice.

TUESDAY, MAY 5, 2015

PRESENTER: Sherrrie L. Williams, LCSW, Executive Director
Georgia Partnership For Telehealth, Waycross, GA, USA

HOW-TO PANEL
Session 54
Session Title: DELIVERING SAFE AND EFFECTIVE HOME-BASED CHILD TELEMENTAL HEALTH
Track: Pediatric Telehealth Colloquium Room 308AB

PRESENTER: Eve-Lynn Nelson, PhD, Professor & Director
University of Kansas Medical Center, Fairway, KS, USA

PRESENTER: Kathleen M. Myers, MD, Professor & Director
University of Washington and Seattle Children’s Hospital, Seattle, WA, USA

Background: Child telemental health services have been successfully delivered in many supervised settings, with attention to national best practices. There is strong consumer and provider interest in extending child telemental health services to unsupervised settings such as the home. The presenters have extended their long-standing telesychiatry and telespsychology services to the home. This is across a range of pediatric diagnoses, including ADHD, child trauma, depression, and coping with chronic illnesses. Home-based telemental health services have advantages including convenience, decreased stigma, increased family participation, and increased generalizability of skills practices in the child’s lived environment. However, challenges should also be considered when considering practice, particularly safety planning.

Objectives: The how-to session will address child telemental health services to the home, following best practices to ensure the safe and effective intervention. (1) The presenters will provide detailed examples of administrative approaches for establishing and sustaining a child telemental health service to
the home. (2) As teleproviders, they will utilize case examples to highlight clinical strategies for building rapport, completing screening/assessment, and adapting behavioral health treatment strategies.

**Findings:** The presenters will delineate: standard operating procedures; workflow; protocols including emergency management; informed consent; client appropriateness; professional issues including licensing, credentialing, and malpractice insurance; and other ethical-legal considerations. The presenters will articulate pros/cons of the different technology options, including mobile devices, for both individual and group interventions. The presenters will present de-identified case-based examples in order to highlight the similarities and differences between home-based child telemental health and traditional onsite services. Dr. Nelson will give examples related to rapport building, screening/assessment, and treatment based. One home-based clinic delivers individual, evidence-based therapy for child trauma in an urban setting. A second group-based intervention delivers home-based, facilitated support group services for homebound patients. Dr. Myers will utilize examples from her individual home-based interventions in rural settings, including treating children with ADHD. She will also describe an innovative pilot pairing of an online gaming intervention for youth depression with televideo services.

**Conclusion:** While it takes time and careful planning to adapt videoconferencing services for the home setting, these early steps lay a strong foundation for successful child behavioral intervention. Evaluation/research approaches will be encouraged to inform best practices in this emerging area.

**Objectives**

1. Acquire an understanding of administrative approaches for establishing and sustaining a child telemental health service to the home.
2. Gain insights into adapting child behavioral health interventions for home telehealth.
3. Achieve a better understanding of technology options for individual and group sessions to the home.

**TUESDAY, MAY 5, 2015**

3:00 pm–4:00 pm Tuesday, May 5, 2015

**INDIVIDUAL ORAL**

**Session 55**

**Session Title:** USE TECHNOLOGY FOR PATIENT EVALUATION AND DISEASE MANAGEMENT IN CHILDREN

**Track:** Pediatric Telehealth Colloquium Room 308AB

**MODERATOR:** Bryan Burke, MD, Professor of Neonatology

University of Arkansas for Medical Sciences, Little Rock, AR, USA

**FACE-TO-FACE VERSUS ASYNCHRONOUS CLINICAL SWALLOWING EVALUATIONS IN PEDIATRIC DYSPHAGIA**

**PRESENTERS AND CONTRIBUTING AUTHORS:**

Cagla Kantarcigil, MS, Doctoral Student1, Justine J. Sheppard, PhD2, Andrew Gordon, PhD3, Kathleen Friel, PhD1, Georgia A. Malandraki, PhD1

1Purdue University, West Lafayette, IN, USA, 2Teachers College, Columbia University, New York, NY, USA, 3Burke Medical Research Institute, New York, NY, USA

**Introduction:** Swallowing and feeding disorders (aka dysphagia) affect many children with developmental disabilities and can have devastating consequences including malnutrition, and failure-to-thrive. Accurate evaluation of these disorders is essential; however patients in under-served communities may not have access to expert swallowing services. Therefore, it is important to create evidence-based telehealth practices for dysphagia management. Our study aimed to test a telehealth model for evaluating dysphagia in children, and specifically to examine the agreement between face-to-face (FTF) and remote asynchronous (RA) clinical swallowing evaluations performed by the same and different raters.

**Methods:** This was a prospective cohort study with 21 participants diagnosed with developmental disabilities (13 M, 8F, age range 6.9–17.6). All children were assessed via the Dysphagia Disorder Survey (DDS), a standardized clinical dysphagia assessment performed during a functional eating task. Children were videotaped during the task. Cameras faced each child and were placed at a 60 cm distance to fully capture the head, neck, and trunk anteriorly and the food trays. FTF evaluations were conducted by three Speech Language Pathologists (SLPs) who were trained in DDS administration and scoring and had reached high-level of agreement (>90%) with the PI (last author) before study initiation. RA evaluations were conducted by one of the SLPs two months post-FTF evaluations. Eight of the evaluations were conducted by the same rater in the FTF phase. The DDS consists of two parts. Part 1 relates to posture and independence, and Part 2 includes seven items specific to swallowing (i.e., orienting to and reception of foods and liquids, containment of bolus, oral transport, chewing, oral-pharyngeal swallow coordination and post-swallow signs of difficulty). These are rated on a binary scale (0 = Normal; 1 = Abnormal). Only Part 2 items were rated for this study. Also, a 4-point Dysphagia Severity Scale was used for an overall dysphagia severity score; (0 = no dysphagia; 1 = mild dysphagia; 2 = moderate/severe dysphagia; 3 = profound dysphagia).

**Results:** Two types of agreement were assessed using percentage of agreement and the weighted kappa coefficient for all variables (i.e., Part 2 items and overall severity score): (1) agreement between the FTF and RA evaluations with the same rater, and (2) agreement between FTF and RA evaluations with different raters. (1) Regarding the first agreement, there was substantial to excellent agreement on orienting, reception, chewing and post-swallow signs (range 87.5–100% agreement, weighted kappa = 0.63–1) and moderate agreement on containment and oral-transport of the bolus (range 75–87.5%, weighted kappa = 0.5–0.6). Agreement on oral-pharyngeal swallow was poor. Moderate agreement was found for overall severity (75%); weighted kappa = 0.42; but all disagreements were within 1 point in the 4-point scale. (2) Regarding the second agreement, there was substantial to excellent agreement on all items of the DDS Part 2 (range 76.9–92.3%, weighted kappa = 0.69–0.91). Moderate agreement was found for overall severity (69.2%); weighted kappa = 0.48); but all disagreements were within 1 point in the 4-point scale.

**Conclusion:** Our findings support that asynchronous clinical evaluations for pediatric dysphagia are feasible and have good agreement with face-to-face evaluations for most examined variables. Challenges that remain, potential solutions, and future directions will be discussed.

**Objectives**

1. Describe the role of telehealth as a service delivery model in pediatric swallowing disorders to ensure easier access to specialists.
2. Describe the methodology for conducting asynchronous clinical swallowing evaluations.
3. Identify challenges and future directions in conducting pediatric swallowing evaluations via telehealth.

**CARING FOR KIDS WHERE THEY LIVE: USING REMOTE PRESENCE TO IMPROVE PEDIATRIC ORAL HEALTH**

**PRESENTERS AND CONTRIBUTING AUTHORS:**

Carol A. Bullin, RN, PhD, Assistant Professor, Jill M.G. Bally, RN, PhD, Shelley Spurr, RN, PhD, Lorna J. Butler, RN, PhD

University of Saskatchewan, Saskatoon, SK, Canada
CONCURRENT ORAL PRESENTATIONS ABSTRACTS

Introduction: In the Canadian North, 90% of Aboriginal children develop early childhood caries. A lack of preventative intervention results in children evacuated for dental surgery. The Federal Government recently invested a million dollars to fly 120 Inuit children under age 7 to urban centres for dental surgery. Many of the efforts, and most of the funding, in Aboriginal oral health is currently focusing on medical mitigation of problems through dental services and surgeries. However, it is becoming increasingly clear that community-based oral health initiatives have a necessary but currently underutilized role in promoting oral health. The consequence is that up to 87% of First Nations children living on-reserve have tooth decay by age five. The College of Nursing developed the Caring for Kids Where They Live Program as a way to bring dental care to the north. The InTouch RP-Xpress, uses a USB powered intra-oral health camera equipped with a peripheral light attachment. Faculty from Nursing and Dentistry instructed northern nursing students in performing oral health screenings for children in schools as part of a pediatric practicum.

Description: Our distributed learning environment has provided students in the health professions learning opportunities where they are able to meet clinical competency requirements, apply previously learned knowledge, and gain confidence in working with children and adolescents. For example, the College of Dentistry faculty will teach pediatric oral health to the nursing students including screening, and conducting assessments. Similarly, each northern school-based practicum will present unique experiences for nursing students. Using the InTouch RP-Xpress created a new tool by which nursing students in rural and remote regions could be taught oral healthcare. The long term benefit is the ability for nurses to address oral health challenges faced by children in northern communities. The remote presence allows us to teach northern and aboriginal residents in areas where there are acute shortages of healthcare professionals, making it more likely that they will practice in those communities. In addition, existing local nurses are, by necessity, involved in many aspects of the nursing education, increasing their ownership in and capacity of the local health system, and providing new opportunities for local leadership and input.

Conclusions: The outcome is that new practitioners are fully immersed in the use and practice of the remote presence technology. Remote presence made it possible for us to link global communities in the Philippines, Siberia, Norway and Canada. Students and faculty have shared expertise, knowledge, and insights to address the challenges facing Indigenous people in achieving optimal health and well-being. Creating a high degree of synergy among global partners, from north to south, has supported learners to expand beyond traditional thinking and health practices through shared learning. Remote presence has enabled global leadership in “putting health into place” for Indigenous people. Establishing these partnerships using telerobotics advances our efforts in addressing the underserved needs of vulnerable, remote populations who share similar health challenges.

Objectives
1. Learn about the provision of accessible and culturally safe oral healthcare for Northern Canadian children using remote presence.
2. Identify the importance of primary prevention, early care service, and referrals to dental healthcare providers in order to improve the oral health of children while decreasing healthcare costs.
3. Describe the faculty experience in using remote presence to support and enhance student learning by “being in two places at the same time”.

WHAT IS THE FIT FOR HEALTHY WEIGHT TELEHEALTH CLINIC?

The UCLA Fit for Healthy Weight Clinic (Fit Clinic) has been caring for morbidly obese pediatric patients using traditional in-person ambulatory appointments since 2008. During every Fit Clinic visit, patients see a pediatrician, a dietician, and a psychologist. Each provider sees families individually and then coordinates to design a plan to guide families in making healthy lifestyle changes and managing comorbidities. Given the significant transportation barriers faced by our population, incorporating telehealth was a logical next step to increase access. Importantly, the Fit Clinic was especially amenable to telehealth technology because the services provided are primarily counseling-based, and do not necessitate physical contact with the patient. Thus, thanks to a generous grant from the UniHealth Foundation, in October 2011, the Fit Clinic began using targeted care for telehealth to patients at the Los Angeles Unified School District San Miguel Clinic in South Gate and the Venice Family Clinic Simms Mann Health and Wellness Center in Santa Monica.

Outcomes: The Fit for Healthy Weight Telehealth Clinic has found high patient and provider satisfaction as well as strong preliminary clinical outcomes. For instance, 88.3% of providers and 92% of patients reported being satisfied with the telemedicine appointment. Additionally, among patients, 92% thought talking to a doctor via telehealth was as effective as talking in person; 96% noted it was easier to have a telehealth appointment than travel to UCLA to see the specialist; and 96% of patients surveyed felt they could express themselves and talk about their health. Initial data of Fit for Healthy Weight Telehealth Clinic patients (n = 32) indicate promising clinical weight outcomes. Specifically, 82% of telehealth patients either stabilized or decreased BMI Z-score at follow-up.

Objectives
1. Identify barriers faced by patients in urban Los Angeles to access to specialty multidisciplinary pediatric obesity clinics.
2. Understand why the services offered by the Fit for Healthy Weight clinic were amenable to telehealth technology.
3. Explain patient and provider satisfaction outcomes and clinical outcomes of implementation of the Fit for Healthy Weight telehealth clinic.

TUESDAY, MAY 5, 2015
4:15 pm–5:15 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL

Session 56
Session Title: ACUTE PEDIATRIC ASSESSMENT THROUGH TELEHEALTH
Track: Pediatric Telehealth Colloquium Room 308AB

MODERATOR: James Marcin, MD, Associate Professor
University of California, Davis, Sacramento, CA, USA

USING TECHNOLOGY TO EXPAND ACCESS TO MULTIDISCIPLINARY PEDIATRIC OBESITY CARE IN URBAN LOS ANGELES

PRESENTERS AND CONTRIBUTING AUTHORS:
Miranda Westfall, MPH, RD, Program Manager & Clinic Dietitian
Mattel Children’s Hospital UCLA, Los Angeles, CA, USA

Multidisciplinary pediatric obesity care is recommended for children and adolescents who do not respond to treatment in the primary care setting, but geographic barriers can limit access to such care. Previous studies that used
TELEMEDICINE IN RURAL SETTINGS

Objectives
- Understand factors related to telemedicine adoption in pediatric emergency medicine.
- Gain insight into the relationship between clinicians’ attitudes of pediatric emergency telemedicine and beliefs of its usefulness.
- Identify strategies to improve pediatric emergency telemedicine adoption.

Results:
- In step 1 we interviewed 48 stakeholders, including clinicians, administrators, and family members. Factors influencing the adoption of pediatric emergency telemedicine were identified and categorized into three domains: contextual factors (such as regional geography, hospital culture, and individual experience); change valence (i.e. the perceived usefulness of pediatric emergency telemedicine), and change efficacy (i.e. the perceived ease of use of pediatric emergency telemedicine). In step 2 our survey yielded a response rate of 34% (N = 104). The majority of respondents (88%) endorsed the belief that their hospitals are good at identifying children in need of transfer, while 56% feel that their hospitals are well prepared for pediatric emergencies. In addition, 63% of clinicians reported wanting more pediatric education, and 73% believe that telemedicine allows for advice that improves quality of care. Survey respondents who supported pediatric emergency telemedicine were more likely to believe that their hospitals are good at identifying children in need of transfer, while 56% feel that their hospitals are well prepared for pediatric emergencies.

Conclusions:
- Effective adoption of pediatric emergency telemedicine among clinicians will require addressing perceived usefulness and perceived ease of use in the context of local factors that encourage distance-based care strategies. Future studies should examine the impact of specific identified strategies on adoption of pediatric emergency telemedicine and patient outcomes in rural settings.

CONCURRENT ORAL PRESENTATIONS ABSTRACTS

PROVIDING URGENT CHILD ABUSE CONSULTATIONS WITH TECHNOLOGY

Objectives
- To explain how the use of telemedicine for child abuse consultation can provide additional support to child protection workers and school systems.
- To illustrate the capabilities of telemedicine to provide child abuse consultation for primary healthcare providers.
- To describe how telemedicine can be a resource to emergency response workers and law enforcement agencies in the evaluation of child abuse cases.

INTEGRATING TELEHEALTH TECHNOLOGY IN A PEDIATRIC PALLIATIVE CARE PROGRAM

Objectives
- To understand factors related to telemedicine adoption in pediatric emergency medicine.
- To gain insight into the relationship between clinicians’ attitudes of pediatric emergency telemedicine and beliefs of its usefulness.
- To identify strategies to improve pediatric emergency telemedicine adoption.

Background:
- Each year, on average, approximately 500,000 children in the United States are suffering from a serious illness. Most of these children and their families caring from them are in need of adequate pain and symptom management and have little physical and financial resources to receive these services. Pediatric palliative care programs are slowly developing in major tertiary care medical centers; however, smaller community hospitals, including healthcare facilities in more rural areas may not have these highly specialized services to provide to children with life-threatening illnesses and their families. Thus, using telehealth technology becomes a beneficial means for providing palliative care consultation to healthcare providers in smaller facilities and more remote locations.
How-to Panel

Session 4
Session Title: Ensuring Your Service Is HIPAA Compliant
Track: Direct to Consumer  Room 403A

Presenter: William Mee, MS, Senior Information Security Analyst
VCU Medical Center, Richmond, VA, USA

If you hear that “security is not a product - but a process,” would your reaction be something like “Look, we have made a sizable investment for latest HIPAA compliant devices and technology” - “there’s no way we can be out-of-compliance with HIPAA - we’ve got that covered” Just because you use HIPAA compliant devices doesn’t necessarily mean your telemedicine environment is HIPAA compliant. The burden of meeting the privacy and security compliance requirements of the Health Insurance Portability and Accountability Act (HIPAA) falls squarely on the shoulders of Telemedicine practitioners as Protected Health Information (PHI) is exchanged from one site to another. The HIPAA Omnibus Final Rule reinforces the importance of effective risk management practices not only in terms of the hardware, infrastructure and services used but in the actual practice and delivery of telemedicine. This presentation clarifies what it means to be “in compliance” with the HIPAA as it relates to telemedicine.

Are there exceptions for telemedicine? Is HIPAA really applicable for a small remote site? What about wireless, cloud and other internet web services that are part of our telemedicine infrastructure? These are questions that we hear time and again and it underscores the need for those in telemedicine to have a basic understanding on HIPAA fundamental concepts. This presentation will present the “basics” of HIPAA and the Omnibus or Final Rule to answer questions like these especially in the context of telemedicine. A common sense approach often diminishes HIPAA’s perceived complexity. For example, if you understand the difference between the HIPAA privacy rule and the HIPAA security rule, it’s easier to comply with the HIPAA requirements in your day-to-day operations as well as your strategic plans. HIPAA can be perceived as either a “burden” that bogs down telemedicine or it can act as a “catalyst” to improve workflow and business processes that may not have caught up with the technology. Using a common sense approach to HIPAA also promotes other unrealized dividends. A Security Risk Assessment, for example, might double as a process and workflow improvement plan. This presentation will discuss how HIPAA compliance can achieve operational efficiencies not yet realized. Innovations in telemedicine are expanding the quality and accessibility of patient care. So, where does HIPAA appear on our patients’ radar? What role do telemedicine providers play in educating the patient? This presentation will address the importance of perceived privacy and security in the context of telemedicine delivery. As telemedicine promotes more patients to become proactive and participatory in their own healthcare management, patient trust is essential to the physician-patient relationship.

Objectives
1. Develop an understanding for best practices in using telehealth technology with vulnerable pediatric patient populations.
2. Learn about the UCLA model for integrating telehealth into Pediatric Palliative Care clinical services.
3. Improve one’s understanding of implementation strategies for piloting a small telehealth program model.

MONDAY, MAY 4, 2015
8:00 am–8:45 am  Monday, May 4, 2015

Objectives

1. Explain what it means to be HIPAA compliant in a telemedicine environment.
2. How to make HIPAA work for telemedicine.
3. Apply common sense to find HIPAA solutions.

MONDAY, MAY 4, 2015
11:00 am–12:00 pm  Monday, May 4, 2015

Individual Oral

Session 5
Session Title: Improving Commitment, Quality, and Outcomes
Track: Direct to Consumer  Room 403A

Moderator: Lisa Roberts, PhD, Senior Vice President
AMC Health, New York, NY, USA

Presenters and Contributing Authors:
Steve Creelman, MD, Director of Clinical Affairs
Careena, Seattle, WA, USA

Provider Incentives for Effective Virtual Care

The United States healthcare system is the most expensive in the world yet underperforms relative to other countries on most dimensions of performance according to the Commonwealth Fund Newsletter of 6/16/2014. The reason for such a discrepancy in the U.S. healthcare’s ailing industry is its ingrained struggle with misaligned incentives. This struggle has encouraged high utilization, financially rewarding more visits and procedures but seldom recognizing outcomes or patient benefit as an economically rewarded goal. Unfortunately virtual home-based telemedicine in its infancy may be inheriting the same struggles. Many providers of telemedicine are reimbursed based on number of patients seen. We rely on altruism and best practice philosophy to guarantee good care, yet the financial incentives focus on visit volume, not quality or satisfaction. With the increasing consumerism, success in telemedicine will only be reached as telemedicine can deliver effective compassionate care that is highly valued by patients. In addition healthcare systems are turning to telemedicine for patient acquisition and retention, as well as cost reduction and management of chronic care populations, all goals predicated on delivery of effective care with high satisfaction. It behooves the telemedicine industry to incorporate in its foundational “DNA”, proven efficacy and satisfaction if it is to thrive in the future market. Delivery of this care globally begins with the individual provider and the quality of their patient interaction. Careena Medical Providers, a dedicated telemedicine and house call group of employed medical providers based in Seattle, WA, has provided acute telemedicine over the last several years. Over the last 2 years we have developed an incentive program for our providers based on a balance of patient satisfaction, adherence to our established virtual care guidelines as well as productivity.
Bonuses are given quarterly based on these parameters with the goal to properly balance incentives. We also encourage a culture of interaction, to continuously improve our interaction skills based on each other's experiences. We have also been able to objectively measure successful patient interaction through ongoing outcome studies and patient satisfaction surveys. This talk will outline how this incentive program has been operationalized and will demonstrate the valuable impact this incentive program has had both on patient satisfaction as well as positive patient outcomes through subsequent outcome studies and survey results. Outcomes in fact that we will demonstrate rival in office care outcomes. Our outcome studies and surveys have also demonstrated areas for improving delivery of patient care. This incentive program has motivated providers to address these challenges. The medical group has developed a number of methods to allow and encourage continuous improvement in the delivery of telemedicine. These include: (1) Biweekly meetings to discuss difficult cases, (2) Continuously updated virtual practice guidelines that incorporate into EMR to allow delivery of the latest care and education to the patient, (3) Quarterly chart reviews, (4) Quarterly provider retreats, and (5) These programs will also be discussed.

Objectives

1. Understand how to align incentives for healthcare providers to promote excellent patient satisfaction and outcomes.
2. Understand how to monitor provider’s delivery of quality care with high patient satisfaction.
3. Understand how aligned incentives have allowed the development of a culture of continuous quality improvement.

EMPLOYER AND PATIENT BENEFITS FROM ONSITE EMPLOYEE VIRTUAL CARE

PRESENTERS AND CONTRIBUTING AUTHORS:
Dustin Helvey, DPT, MBA, Leader, Virtual Care Delivery
Kaiser Permanente, San Diego, CA, USA

Problem: There is a need to perform patient to physician visits at our employer group works locations, and reduce the time required by our employer group employees to see a physician. The barriers to KP in creating an employer based clinic are significant (time, cost, space). Employees planning to see a physician at a KP facility also need to accommodate large segments of missed work time due to travel time and unplanned traffic issues, resulting in employee absenteeism and non-value-added steps for the patient/member. These unnecessary factors only complicate access to Easy, Convenient, Quality care and contribute to members delaying a visit at the risk of not consulting with a physician when necessary.

Solution: Kaiser Permanente, in collaboration with the County of San Diego and Healthspot, Inc. implemented a mechanism in which employees have access to on-site medical care via Telehealth. In partnership with Healthspot Inc., the KP Healthspot Station provides the member/patient a private setting to complete the physician visit enabled with a suite of reliable Telehealth technologies to provide members with high quality virtual consultations. At the conclusion of this presentation, the audience will be able to describe the drivers for success for a successful onsite Employee Virtual Care System, discuss the outcome measures of the program since the inception and gain insight to deploy such a system within any employer site.

Objectives

1. Describe the drivers for success for a successful onsite Employer Virtual Care System
2. Discuss the outcome measures of the Kaiser Permanente Healthspot Station at the County of San Diego
3. Gain insight to deploy such a system within any employer site

CONCURRENT ORAL PRESENTATIONS ABSTRACTS

MONDAY, MAY 4, 2015
1:15 pm–2:15 pm Monday, May 4, 2015

INDIVIDUAL ORAL

Session 6
Session Title: MAINSTREAM MEDICINE MOVES INTO DIRECT TO CONSUMER HEALTH
Track: Direct to Consumer Room 401A

MODERATOR: Naomi Fried, PhD, Vice President, Medical Information, Innovation, and External Partnerships
Biogen Idec, Cambridge, MA, USA

THE FIRST OF ITS KIND: A SNEAK PEEK OF MERCY VIRTUAL CARE CENTER

PRESENTERS AND CONTRIBUTING AUTHORS:
Thomas Hale, M, MD, PhD, Executive Medical Director, Telehealth Services, Christopher Veremakis, MD, Janet Pursley, RN, BSN, MBA, Wendy Deibert, F, RN, BSN
Mercy Virtual, Chesterfield, MO, USA

Mercy Virtual, a standalone division of Mercy Health, is pioneering the use of telehealth and virtual technologies to make healthcare more available, convenient, and connected. Mercy's Board of Directors has not only endorsed this strategic shift away from the traditional care model, but also approved the construction of the world's first virtual care center—both to serve patients and foster next-generation ideas. Groundbreaking for this 120,000 square foot, four-story building took place last May. Completion is scheduled for this summer. Working with leading construction and building design experts, Mercy is creating a state-of-the-art environment to push the boundaries of innovation and transformation, with disruptive thinking and practical solutions. The 24/7 centralized operations center will house clinicians of all levels, working together to seal the cracks in patient safety and the continuum of care, and revolutionize the healthcare experience year after year. Through this new facility, the Mercy Virtual team will continue to deliver individual telehealth solutions, including teleICU, telestroke, eConsults, eA-cute, home telemonitoring, centralized care management to support ACOs and disease/population management. Through consulting services, it also helps organizations accelerate their transition to a more comprehensive virtual care model. Be the first to sneak a peek into the future of healthcare.

Objectives

1. Understand the concept, business, and opportunities of virtual care delivery across the continuum of care.
2. Describe the service lines and economies of scale that can be achieved in a virtual care center.
3. Recognize the importance and impact of innovation, collaboration, technology, and clinicians cohorted in one location.

MYCARE ONLINE: THE CLEVELAND CLINIC EXPERIENCE

PRESENTERS AND CONTRIBUTING AUTHORS:
Matthew Faiman, MD, MBA, Director, Teleprimary Care Services, Department of Internal Medicine
Cleveland Clinic Foundation, Cleveland, OH, USA

This presentation will outline the Cleveland Clinic’s experience in direct to consumer telemedicine in both acute care medicine as well as post-operative
The patient’s overall experience with the portal will be presented, along with provider’s usability and satisfaction.

**Objectives**
1. Understand the Mycare Online portal and app currently in practice at Cleveland Clinic.
2. Describe the direct to consumer practice model at Cleveland Clinic.
3. List 3 issues related to synchronous telehealth care.

**INDIVIDUAL ORAL**

**Session 7**

**Session Title:** UNDERSTANDING DIRECT TO CONSUMER URGENT CARE TELEMEDICINE

**Track:** Direct to Consumer  
**Room:** 403A

**MODERATOR:** Alan Dappen, MD, Founder  
**DocTalker Family Medicine, Vienna, VA, USA**

A COMPARISON OF REAL-TIME, DIRECT-TO-PATIENT URGENT CARE TELEMEDICINE TO BRICK AND MORTAR PRACTICE

**PRESENTERS AND CONTRIBUTING AUTHORS:**
Michael Bess, MD, MHA, National Medical Director Telehealth, Laura Ten Eyck, PhD, Associate Director Healthcare Analytics, Anant Patel, BSc, Product Specialist Consumer System Navigation

**Introduction:** Urgent care telemedicine continues to grow in the United States. As a result of technology that has brought internet and smart phone use to most Americans, there is an opportunity to change the way healthcare is delivered. As telemedicine applications are created to use these technologies, the appropriate evaluation of how telemedicine compares to traditional brick and mortar medical practice will be important.

**Objective and Hypothesis:** To compare several measures of urgent care telemedicine to brick and mortar care with respect to follow up rates for the same condition at 15 and 30 days, post visit medical costs, and prescribing rates. Our hypothesis was that patients who accessed urgent care telemedicine would have similar follow up rates for the same condition, post-index medical costs, and prescribing rates when compared to those patients who access brick and mortar care for conditions that fall within the scope of NowClinic.

**Patients and Methods:** We conducted a retrospective chart review on members of a large national health plan who accessed the NowClinic online care platform during calendar year 2013 for treatment conditions within the scope of services listed as appropriate on the NowClinic platform. Control members were selected from the same health plan’s Commercial population with the date of each NowClinic encounter in 2013 serving as the index date for target group members and the date of the NowClinic appropriate urgent care, emergency department, or office visit in 2013 serving as the index date for control group members. Inclusion criteria included health plan-eligibility, continuous enrollment in the six month pre-index period and greater than 15 days post-index enrollment. The control members resided in the same states and were matched to target group members via propensity score matching. The propensity score was created using logistic regression and was based on 62 baseline variables including member level demographics, index encounter characteristics, pre-period spend, AHRQ Chapter, and prescriptions. Final 1:1 matching resulted in a sample of 678 NowClinic patient encounters with 678 matched controls from brick and mortar practice settings.

**Results:** NowClinic users were significantly less likely to complete a follow-up visit for the same diagnosis compared to their matched controls within 15 days of the index event, 1.2% versus 2.9% (p = 0.0381). The same pattern of results occurred within 30 days following the index event. NowClinic users were significant less likely to complete a follow-up visit for the same diagnosis than their matched controls, 1.6% versus 4.2% (p = 0.0054). NowClinic users had a marginally significant lower post-index allowed medical costs than their matched controls at 15 days $53.94 versus $79.03 (p = 0.0585) and significantly lower 30 day post-index allowed medical costs than matched controls at 30 days $124.93 versus $184.83 (p = 0.0404). NowClinic users had nearly identical rate of prescribing as the matched controlled group 59.9% versus 60.0% (p = 0.9558).

**Conclusions:** NowClinic users were less likely to have a follow-up visit for the same condition, incurred lower post-index medical costs at 15 days and 30 days, and had nearly identical rates of prescriptions written when compared to the matched control group.

**Objectives**
1. Help clarify differences between urgent care telemedicine and traditional brick and mortar practice.
2. Describe the impact that urgent care telemedicine has on total medical costs for patients.
3. Demonstrate that urgent care telemedicine is not an online prescribing service, but rather, another potential venue for patients to access care for appropriate conditions.

**VIRTUAL URGENT CARE VISIT OUTCOMES**

**PRESENTERS AND CONTRIBUTING AUTHORS:**
Robert Bernstein, MD, MPH, Director for Clinical Quality
Carena, Seattle, WA, USA

Consumer access to urgent virtual care visits has grown rapidly in recent years. While many conditions are managed exclusively through these virtual visits without escalating to an in-person visit, little is known about the subsequent outcomes of these “completed” virtual visits. Carena Medical Providers is a dedicated telemedicine and house call medical group based in Seattle which partners with health systems and large employers throughout the country to provide virtual urgent care services. In late 2013 Carena piloted a program of conducting routine clinician follow-up phone calls five days after completed virtual visits. In 2014 we implemented a program to attempt five day follow up calls to all patients with completed virtual visits using a protocol to assure a representative sample to collect meaningful outcomes data. Initial results for the first 6 months of data are summarized here, and a full year of data will be presented when the study is completed. For the first 6 months of 2014, 1997 eligible completed visits were identified for follow-up out of a total 3341 virtual visits. Of the 1997 eligible visits, at least 1 attempt at contacting the patient was made for 82% of visits, and 606 (30% of eligible patients) were successfully contacted for follow up. Of all patients contacted at 5 days, 45.8% (95% Confidence Interval +/− 4.0%) reported their primary symptom resolved, 48.2% (+/− 4.0%) were better, 4.3% (+/− 1.6%) were the same, and 1.7% (+/− 1%) were worse. Of all contacted patients 82.5% (+/− 3.0%) reported not needing any subsequent care. Of the 17.5% of patients who did seek subsequent care 69.8% of those did so with their primary care provider, 15.1% at an urgent care, and only 2.8% at an emergency department. Of the 91 patients who sought subsequent care and an assessment of their subsequent diagnosis was possible, 84.6% either had the same diagnosis or a subsequent diagnosis that was on the telemedicine provider’s initial differential diagnosis. In no cases was the clinical care at the initial telemedicine visit deemed inappropriate or insufficient in retrospective review. Follow-up calls on 105 cases of acute cystitis treated via telemedicine were evaluated and 96.2% of patients reported symptoms as resolved or better at 5 days. Only 8 patients sought subsequent care, with 6 possible treatment failures including 2 possible
URGENT CARE AND TELEMEDICINE

PRESENTERS AND CONTRIBUTING AUTHORS:
Howard Reis, MBA, President
HEALTHThePRACTICES, West Nyack, NY, USA

The Journal of Urgent Care Medicine (JUCM) projects that there are now 11,000 urgent care centers throughout the United States. A recent survey of urgent care centers explores their current use and near term interest in telemedicine services. The survey was completed by 37 urgent care centers, and included several of the largest urgent care chains as well as single urgent care centers. All geographies across the United States were included and there was a good mix of urban, suburban and rural centers. The main findings of the survey include: (1) 97% of those responding (36 of 37 centers) already use telemedicine in the form of teleradiology, sending their (primarily) X-rays for interpretation by an off-site radiologist, (2) 28% of centers surveyed either offer Ultrasound exams or plan to in the next 12 months. 70% of these plan to send the exams for interpretation by an off-site radiologist, (3) 75% of centers are either using, planning to use or will consider using live video consultations in support of their current practice, (4) The two primary reasons that urgent care centers are interested in providing telemedicine services are the ability to attract new patients, and the ability to participate in a larger telemedicine network, (5) With regard to using telemedicine consults with an offsite specialist, dermatology is of greater interest (25%) than either psychiatry (14%) or neurology (11%), and (6) While no single vendor of telemedicine services has achieved significant (50%) market awareness, MD Live and MeMD are the most recognized names in the industry. Follow on interviews with several survey respondents have described a vision where telemedicine may be available to urgent care centers patients in the not too distant future:

“A patient walks into my center with a difficult condition. Rather than immediately referring that patient to a specialist, I can “click on the wall” and be presented with either a list of specialists I know, or a network of doctors who are immediately available for a consultation. I click on the doctor and we are soon engaged in a three way consultation with the patient. This will result in increased patient satisfaction and I know the patient will be back some time again and probably refer me to friends and family.”

The survey also identified the perceived barriers to further use of telemedicine in urgent care centers including lack of sufficient reimbursement (58%), and insufficient proven need (39%) leading the list. Urgent care center owners are entrepreneurs with a strong interest in growing their businesses while meeting the needs of their patients. They have an interest in delivering quality patient care at lower costs and if telemedicine will help them achieve these goals, they will be enthusiastic participants.

Objectives
1. Acquire knowledge of outcomes for virtual urgent care visits.
2. Identify common virtual urgent care diagnoses and outcomes.
3. Learn ways to track clinical outcomes with standardized clinical follow-up calls.

2. Understand the telemedicine services being used by urgent care centers today.
3. Project future opportunities for delivering telemedicine through urgent care centers.

MONDAY, MAY 4, 2015

4:15 pm–5:15 pm Monday, May 4, 2015

INDIVIDUAL ORAL

Session 8

Session Title: RETAIL TELEMEDICINE

Track: Direct to Consumer Room 403A

PRESENTERS AND CONTRIBUTING AUTHORS:
Sunil Budhrani, MD, MPH, MBA, Cofounder
CareClix Telemedicine, Vienna, VA, USA

THE RISE OF CONSUMER DRIVEN HEALTHCARE: THE GOLD RUSH TO DISRUPT THE EXISTING PRIMARY CARE PARADIGM

PRESENTERS AND CONTRIBUTING AUTHORS:
Alan Dappen, MD, Founder
DocTalker Family Medicine, Vienna, VA, USA

High-deductible health plans already affect 15% of Americans and are predicted be the fastest rising change in how Americans get their day-to-day healthcare in the next several years. The consumer spending their own money (rather than insurance) will create unique challenges and opportunities especially in primary care that has not been challenged in seventy years. The marketplace for influencing the healing environment is just beginning to heat up to what promises to be a $100 billion-plus segment of healthcare. Will you be ready to compete when the consumer says, “It’s my money and my health, now show me what you’ve got!”

Objectives
1. Understand the reasons and trends predicting the rise of high-deductible health plans.
2. Learn the language and business models emerging in the retail medicine space.
3. Review the challenges and opportunities facing primary care physicians in a changing and competitive marketplace.

DELIVERING DIRECT-TO-CONSUMER CONSULTS VIA TELEMEDICINE

PRESENTERS AND CONTRIBUTING AUTHORS:
Tobias Barker, MD, Vice President, Medical Operations
CVS MinuteClinic, Woonsocket, RI, USA

Smartphones, patient portals, and digital health devices are transforming healthcare delivery using telecommunications directly to the consumer. Dr. Tobias Barker, a leader from the growing business of retail health, will provide his perspective on the issues and opportunities in this expanding market.

Objectives
1. Understand how retail clinics are addressing consumer healthcare needs.
2. Understand the impact of retail telemedicine on cost, quality and access to care from different perspectives.
3. Understand the future of telemedicine in retail clinics.
CONCURRENT ORAL PRESENTATIONS ABSTRACTS

TUESDAY, MAY 5, 2015
11:00 am–12:00 pm Tuesday, May 5, 2015

PRESENTATION PANEL

Session 9
Session Title: A LARGE PROVIDER FOCUSES ON CONSUMERS: THE EXPERIENCE AT KAISER PERMANENTE
Track: Direct to Consumer Room 403A

MODERATOR: Jeffrey A. Benabio, MD, Physician Director of Healthcare Transformation
Kaiser Permanente, San Diego, CA, USA

PRESENTER: Jan Ground, PT, MBA, Senior Project Manager
Colorado Permanente Medical Group, Denver, CO, USA

PRESENTER: Amanda Hauser, MPH, Project Manager Lead
Kaiser Permanente’s Fontana and Ontario Medical Centers, Fontana, CA, USA

PRESENTER: John Tanouye, MPH, Project Manager - Ambulatory
Kaiser Permanente South Bay Medical Center, Los Angeles, CA, USA

Patients are embracing care delivered virtually. Adding virtual appointments improves access to providers and can lead to increased patient engagement and decreased costs. We will discuss how Kaiser Permanente is responding to changing patient needs by adding virtual delivery channels. We’ll discuss how we are adding new digital service lines that cater to both young and old. We’ll talk about why we believe this has been successful including realized savings for our members.

Objectives
1. Learn how to identify clinical encounters suitable for telehealth.
2. Understand the importance of patient-centeredness in developing and refining telehealth services.
3. Identify how telehealth services in an integrated, value-based healthcare system can create value for patients and payors.

TUESDAY, MAY 5, 2015
1:15 pm–2:15 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL

Session 10
Session Title: DESIGNING AND IMPLEMENTING SUCCESSFUL CONSUMER APPS BY MAINSTREAM PROVIDERS
Track: Direct to Consumer Room 403A

MODERATOR: Mark Blatt, MD, MBA, Worldwide Medical Director
Intel Corporation, Santa Clara, CA

DESIGNING A MOBILE APP FOR TELEMEDICINE: A MODEL FOR EVALUATION OF CRITICAL ELEMENTS

PRESENTERS AND CONTRIBUTING AUTHORS:
William Eng, MD, Assistant Professor
University of Central Florida Medical School, Orlando, FL, USA

The perpetual advance of technology has brought a multitude of benefits, but also a constant requirement to adapt. As we progressed from telephones to desktop computers to laptops to mobile smartphones, telemedicine also needs to evolve. Consider the three components: 1) the user; 2) the sponsoring organization; and 3) the software development team. For each of these critical components, there are critical elements that must be considered when creating a telemedicine mobile app. First, we will consider the user: what is their level of technological expertise? An older population who never had a smartphone may not find it intuitive to navigate through an app’s functions. Are there physical limitations? An elderly population tends to have poorer eyesight and loss of fine motor skills. Then we also consider their level of intelligence and familiarity with the English language. User accessibility considerations can include the type of smartphone they have, geographic coverage of mobile services, financial constraints of their mobile plan. Next, the sponsoring organization needs to clearly define the goals of the mobile app. Financial goals can involve selling products and services directly to the users for a business. However, an insurance company may find it more important to control costs. Medical organizations may value patient loyalty and satisfaction as their goal. Others may use the app to improve efficiency and eliminate waste. Finally, the software team must clearly understand the expectations of both the user and sponsoring organization. After this, the actual computer code writing commences keeping in mind the limitations of the mobile device and its operating system. Is the team equipped to continually update the app? User feedback is often the best source of inspiration to identify areas needing improvement. The “appeal factor” is perhaps the most difficult area to master for the software team. Not only does the appeal factor distinguishes one app from another, but it directly influences the user’s eagerness to engage with the app.

Objectives
1. Identify the steps to develop a mobile app.
2. Identify the 3 components of consideration.
3. How to execute the development of a mobile app.

THE EFFECT OF MOBILE APP HOME MONITORING ON THE NUMBER OF IN-PERSON VISITS FOLLOWING AMBULATORY SURGERY: COST-EFFECTIVENESS ANALYSIS ALONGSIDE A RANDOMIZED CONTROLLED TRIAL

PRESENTERS AND CONTRIBUTING AUTHORS:
Kathleen Armstrong, MD, Plastic & Reconstructive Surgery Resident,
Peter Coyte, MA, PhD, John Semple, MD, MSc
University of Toronto, Toronto, ON, Canada

Background: Women’s College Hospital offers specialized surgical procedures in an ambulatory setting, including breast reconstruction. Patients often travel great distances to undergo surgery. Most patients receiving ambulatory breast reconstruction have a low rate of post-operative events necessitating clinic visits. However, regular follow-up is still considered important in the early post-operative phase. Increasingly, telemedicine is used to overcome the distance patients must travel to receive specialized care. Telemedicine data suggests that mobile monitoring and follow-up care is valued by patients and can reduce costs to society. Currently, Women’s College Hospital is using a mobile application (QoC Health Inc., Toronto) to replace in-person post-operative follow-up care for breast reconstruction patients. A pilot study evaluating the quality of recovery for these patients using this mobile device at home has been completed.

Hypothesis: We hypothesize mobile app follow-up care is more cost-effective than conventional, in-person follow-up care in ambulatory breast reconstruction patients.

Objective: To conduct a prospective control trial that compares mobile app follow-up care to conventional in-person follow-up care from a societal perspective over a time horizon of one month. A societal perspective incorporates all costs irrespective of the payer. Previous studies list the main stakeholders as: the patient, caregiver, employer, and government.
TELECONSULTATION IN SEXUAL AND REPRODUCTIVE HEALTH FOR YOUNG ADULTS THROUGH MOBILE DEVICES: EXPERIENCE IN COLOMBIA

PRESENTERS AND CONTRIBUTING AUTHORS: Catalina Lopez, MD, MSc, Assistant Director, Center for Health Innovation and Education1, Daniel Ramirez, MD1, Jose Ignacio Valenzuela, MD, MSc1, Arturo Arguello, MD, EdM1, Juan Pablo Saenz, MSc1, Stephanie Trujillo, MD1, Dario Correal, PhD2, Roosevelt Fajardo, MD, MBA1, Cristina Dominguez, MD1
1Fundacion Santa Fe de Bogota, Bogota, Colombia, 2Universidad de los Andes, Bogota, Colombia

Background: Sexual risk behaviors associated with poor information on sexuality have contributed to major public health problems in the area of sexual and reproductive health in teenagers and young adults in Colombia.

Objective: To report the use of a mobile application as a means of sexual health education in a community.

Methods: A mobile application that allows patients to ask about sexual and reproductive health issues was developed. Sexual and reproductive risk behaviors in a sample of young adults were measured before and after the use of the application.

Results: A total of 257 subjects met the selection criteria. The main sexual risk behaviors detected among them were drug use, lack of information on sexual and reproductive health issues, and the strategies taken to overcome them.

Conclusions: The use of mobile applications as a means of sexual health education has the potential to improve access to information and reduce sexual risk behaviors.

TUESDAY, MAY 5, 2015
3:00 pm–4:00 pm
Tuesday, May 5, 2015

PRESENTATION PANEL

Session 11

Session Title: TELEMEDICINE: OPTIMIZING THE PATIENT EXPERIENCE

Track: Direct to Consumer Room 403A

MODERATOR: Andrew Field, Producer / Writer, President Andrew Field Associates, Pittsburgh, PA, USA

PRESENTER: Stephen Q. Sponsel, Director, Media Support Services Mayo Clinic, Rochester, MN, USA

PRESENTER: Robert Nicholson, PhD, LCP, FAHS, Director, Behavioral Medicine, Mercy Clinic Headache Center Mercy Health, Chesterfield, MO, USA

PRESENTER: Amnon Gavish, PhD, Senior Vice President, Vertical Solutions VIDYO, Hackensack, NJ, USA

Healthcare providers are deploying video-based telemedicine services at a quickening pace, seeking to capitalize on its potential to expand access, contain costs, and improve outcomes. The result has been a steady rise in telemedicine investment. Despite the increased focus and investment in video-based telemedicine, one of the most crucial business success factors—how to deliver a compelling, high-quality experience to the customer, the telemedicine patient—has been relatively ignored. Today, it is axiomatic that in nearly every field of business creating a great customer experience is vitally important to achieving market success. This is especially true for new businesses and technologies when potential customers are rendering initial impressions and judgments. To realize video telemedicine’s full strategic potential, millions of consumers will have to change long-accustomed behaviors. Through a lifetime of doctor visits, consumers view medical care as a brick and mortar, face-to-face experience. Asking consumers to willingly choose an alternative way of receiving care will require that the telemedicine application, leaving an effective population of 58 subjects for analysis. 53% (N = 31) were women, and 47% (N = 27) were men. The mean age was 21 years, ranging between 18 and 29 years. The differences between the answers from both surveys were not statistically significant. The main sexual risk behaviors identified in the population were homosexual intercourse, non-use of condoms, sexual intercourse with non-regular and commercial partners, the use of psychoactive substances, and lack of knowledge on symptoms of sexually transmitted diseases and HIV transmission.

Conclusions: Although there were no differences between the pre- and post-intervention results, the study revealed different risk behaviors among the participating subjects. These findings highlight the importance of promoting high impact educational strategies on this matter and the importance of providing teenagers and young adults with easily accessible tools with reliable health information, regardless of their socioeconomic status.

Objectives
1. To report the use of a mobile application as a means of sexual health education in a community.
2. To summarize risk behaviors detected in a third-country community and the strategies taken to overcome them.
3. To gain insights into the importance of promoting high impact educational strategies on sexual health and the use of innovative mobile strategies.

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experience be extremely appealing. To address the existing gap in knowledge and insights regarding the telemedicine patient experience, a multi-disciplinary, multi-institutional collaboration including leading health systems, telemedicine equipment and software vendors, and experts from film and television, experience design, and brand communications was convened for the “Telemedicine: Designing the Patient Experience” project. The goal: to identify the essential elements of a video-based telemedicine patient experience sufficient to capture the public imagination, spark a viral word-of-mouth effect, and accelerate consumer adoption. The consortium’s findings, insights, and vision will be highlighted in this panel presentation. Specifically, the panel will: 1) review the quantitative and qualitative findings regarding the technical, aesthetic, and performance factors that shape the patient’s telemedicine experience; 2) discuss consumer demands and expectations for online service experiences and where the bar for telemedicine has been set; 3) identify the powerful capabilities of television, video, and online applications that can be leveraged to create a unique and compelling telemedicine experience; and 4) review the lead time required for prospective vendors to modify and adapt current technologies to enable the delivery of a sufficiently compelling telemedicine experience.

Objectives
1. Review the quantitative and qualitative findings emanating from a multi-disciplinary, multi-institutional study of experts regarding the technical, aesthetic, and performance factors that shape the patient’s telemedicine experience.
2. Analyze the current “state” of the telemedicine experience from a patient’s perspective, focusing on those factors that impact the patient perception of, satisfaction with, and loyalty to telemedicine.
3. Formulate a vision for leveraging the inherent multi-media power of telemedicine technology to create an engaging, informative, customizable, transformative, patient healthcare experience.

TUESDAY, MAY 5, 2015
4:15 pm–5:15 pm Tuesday, May 5, 2015

HOW-TO PANEL
Session 12
Session Title: INTEGRATING TELEMEDICINE INTO AN ESTABLISHED HEALTHCARE DELIVERY MODEL
Track: Direct to Consumer Room 403A

PRESENTER: Braden McLellan, BA, Director of Telehealth Product and Operations
Optum, Eden Prairie, MN, USA

PRESENTER: Eugene Somphone, MD, Medical Director
Southwest Medical Associates, Las Vegas, NV, USA

Southwest Medical Associates (SMA) has been providing services to the Las Vegas community for 40 years. SMA is a multispecialty group with over 250 providers consisting of 60% primary care, nine medical and two surgical subspecialties, adult and pediatric hospitalist groups, urgent care clinics, and an ambulatory surgery center. SMA’s five urgent care centers and four convenient care centers are part of its On-Demand Medicine offering. In an effort to impact access for consumers to its on demand care product, SMA officially launched a direct-to-patient urgent care telemedicine program on January 1st, 2013 for 320,000 Health Plan of Nevada and Sierra Health and Life members. An initial work group was created in June 2013 to create a comprehensive project plan to successfully implement the urgent care telemedicine offering that included evaluation of legal, IT, human capital, marketing, staffing, training, operations, quality, and reporting requirements. Additionally, site visits from telehealth specialists, technology vendor, and NowClinic operations team enabled SMA to develop a comprehensive plan for implementation. Utilization projections were established after establishing that the urgent care telemedicine offering would be an embedded benefit with lowest Tier copay, have mobile device functionality, be heavily marketed to brokers and customers, and SMA would have the ability to direct patients to NovClinic platform. SMA next established training, staffing, quality, marketing, and operations planning for the telemedicine urgent care offering. The initial staffing group would include a group of dedicated and per-diem providers to meet additional professional staffing requirements. The additional staffing included two physician providers, five physician assistants, and two nurse practitioners on a full time or per-diem basis. Clinical and leadership oversight would be available on a scheduled bases, quality review would be 100% during implementation and 25% of cases ongoing, mock visits were performed during pre-launch and ongoing, as well frequent team meetings to discuss best practices. The marketing plan included multiple access points to patients through flyers, emails, videos, enrollment campaigns, and direct mail postcards. SMA’s operational support was provided by the NowClinic team that included “queue monitoring” for patients and providers, utilization trends, scheduling, customer service, and reporting. SMA On-Demand Medicine has now completed thousands of virtual visits. Operational metrics include an average speed to answer of less than 5 minutes, patient satisfaction rate of over 90%, and average consult length of approximately 8 minutes. Diversion rates for patients that access the system from higher costs of care is at 87%. By adding this as another point of contact for patients, telemedicine has created the ability for SMA to use this application as another way to close gaps in care. Additionally, SMA has started implementing other use cases for the technology within its care delivery model.

Objectives
1. Review objectives from technology, provider and patient perspective.
2. Demonstrate successful implementation of telemedicine into an existing acute care model.
3. Describe the impact of adding to an existing healthcare delivery model for patients and provider.

MONDAY, MAY 4, 2015
8:00 am–8:45 am Monday, May 4, 2015

INDIVIDUAL ORAL
Session 13
Session Title: IMPLEMENTATION STRATEGIES FOR SUCCESSFUL CHRONIC CARE MANAGEMENT
Track: Chronic Care Room 406AB

MODERATOR: Joseph Kvedar, MD, Vice President
Center for Connected Health at Partners HealthCare, Boston, MA, USA

DEVELOPMENT OF SCIENCE-BASED CONNECTED HEART HEALTHCARE PLANS FOR POST-ACUTE CARE

PRESENTERS AND CONTRIBUTING AUTHORS:
Pat Dunn, MBA, MS, Manager, Health Innovation, Adam C. Tiner, MA
American Heart Association, Washington, DC, USA

A key strategy of the Affordable Care Act is the Accountable Care Organization, designed to improve the quality of care, promote population health and reduce costs by making healthcare providers more accountable for health outcomes. With the increasing pressure to simultaneously improve care and reduce the overall cost of care, there is increasing need for better care coordination, especially for patients that are high risk for readmissions and poor
health outcomes, to stay connected with their healthcare provider outside of the healthcare setting. The use of digital tools and mobile technology, for example smart phones, tablets, and devices that can monitor biometric data, such as blood pressure, heart rate, and calories, has fundamentally changed how individuals with chronic health conditions find and use health information. An increasing number of patients are using Web-based tools to find information on diseases, conditions, and treatments, and mobile devices to track their results and communicate with their healthcare team. To achieve the goal of improving the cardiovascular health of all Americans and reducing the burden of cardiovascular disease the American Heart Association has engaged leaders in cardiology, lifestyle, behavioral sciences, and technology in the development of care plans designed to help patients manage their health as they transition from acute care to the home. These care plans are designed to connect the patient to their healthcare team outside of the healthcare system through the use of digital tools and technology platforms. By creating this bridge between patients and their physicians, hospitals and accountable care organizations can facilitate better care and reduced costs by giving patients and their care givers personalized tools and guidance to help them adopt self-management skills and healthier lifestyle, all based on American Heart Association Guidelines and Scientific Statements. Currently 1 in 4 heart failure patients and 1 in 5 heart attack survivors are readmitted to the hospital within 30 days. Care plans have been developed for heart failure, cardiac rehabilitation, coronary artery disease, stroke, high blood pressure, and atrial fibrillation. These care plans focus on post-acute and transitional care because that is where the needs are the greatest. A Scientific Advisory Panel of leading experts in cardiovascular disease management have been involved in all aspects of developing, translating, and evaluating the care plans into a system that can be used by patients and care givers. New American Heart Association guidelines for cholesterol and blood pressure management, lifestyle, obesity, and risk assessment have been incorporated into these guidelines. By working with technology platforms quantitative data, such as blood pressure, weight, and physical activity, and qualitative data, such as nutrition and social support, symptom and medication management can be uploaded to an electronic health record and shared with the healthcare team. The care plans allow for a daily assessment of the patient’s health status, secure messaging between the patient and the healthcare team, and an educational plan designed to build knowledge, health literacy skills, navigation, communication, and decision making skills.

Objectives
1. Understand the process for developing science based, patient facing and patient focused care plans designed to improve knowledge, health literacy, and self-management skills in patients with cardiovascular disease.
2. Learn how digital tools and technology platforms can be used to engage and motivate patients outside of the healthcare system through evaluation, education, and communication.
3. Gain insights into how care plans deployed through technology platforms can play a role in improving the quality and reducing the cost of healthcare, and improving the overall health of the population.

THE REALITY OF IMPLEMENTING TELEHEALTH PROGRAMS FOR PATIENTS WITH CHRONIC CONDITIONS

PRESENTERS AND CONTRIBUTING AUTHORS:
Melissa Palacios, RN, BSN, PHN, Project Manager
Sharp Rees-Stealy, San Diego, CA, USA

Sharp Rees-Stealy (SRS) is known throughout the state for implementing successful care management programs that focus on helping patients to self-manage their chronic conditions. Currently, the department has four telehealth programs with three different vendors that focus on heart failure, diabetes, asthma, and blood pressure self-management with future plans to expand telehealth programs for other chronic conditions focusing on COPD and behavioral health. In collaboration with the Right Care Initiative and in partnership with 9 other San Diego based medical groups, SRS was awarded a CMMI innovative health care grant to provide telehealth blood pressure monitoring to 1000 SRS patients. As the leading partner of this grant, SRS is providing consultation and recommendations to grant directors and partners based on the successful implementation of numerous telehealth programs. Sharp Rees-Stealy’s robust heart failure program has shown to prevent hospital readmissions through early interventions utilizing an interactive telescale in the patient’s home. To further reduce hospital readmissions, SRS is currently focusing on innovative outreach strategies for newly discharged patients with chronic conditions and patients with CHF, COPD, diabetes, asthma, and hypertension. Also, the Population Health Department has been selected for interactive discussions with CMS for the positive outcomes achieved in working with seniors with complex needs in care management programs. Through care manager engagement with telehealth programs, the Population Health Department has been successful at reducing hospital re-admissions, improving outcomes, and empowering self-care of patients with chronic conditions. There is much to learn about the reality of choosing telehealth programs, choosing your population, implementing the program, engaging patients and the education of the partners involved in delivering care. This talk will focus on these challenges, barriers and ultimately achieving success with positive outcomes.

Objectives
1. Gain insights into choosing the right telehealth program, establishing a criteria for a patient population, and implementation strategies for a successful chronic disease telehealth program.
2. Identify the barriers and challenges associated with implementing a successful telehealth program.
3. Achieving positive outcomes with chronic disease telehealth programs.

MONDAY, MAY 4, 2015
11:00 am–12:00 pm Monday, May 4, 2015

PRESENTATION PANEL
Session 14
Session Title: USING TELEMEDICINE TO REDUCE HOSPITAL READMISSIONS FOR CHRONIC DISEASES PATIENTS
Track: Chronic Care Room 406AB

MODERATOR: Laurie A Poole, BScN, MHSA, Vice President Ontario Telemedicine Network, Toronto, ON, Canada
PRESENTER: Kirby K. Farrell, MBA, President and CEO Broad Axe Technology Partners, Charlotteville, VA, USA
PRESENTER: Alexis A. Silver, RN, MBA, Health Technology Consultant Consultant, NYC, NY, USA
PRESENTER: Rhonda A. Wilson, BSc, Executive Project Lead Ontario Telemedicine Network, Toronto, ON, Canada

Transformational initiatives involving new models of patient care in a complex healthcare system take time and require the input of multiple stakeholders. Remote monitoring is a “transformation” initiative that depends on collaboration across health care systems. It requires healthcare providers to refer their patients to a new service, offered by an alternative care provider, to help them better manage their own health. This presentation will describe three programs that have launched and successfully sustained remote monitoring programs. Each panelist will outline the critical success factors that enabled their program to achieve reductions in hospital readmissions and high levels of patient satisfaction. Leveraging lessons learned, the panelists will...
describe their tools as well as the key elements for implementation and sustainability, most notably: leadership, adoption strategies, service delivery, clinical model, patient engagement, evidence, technology, ROI model and integration. All three panelists, including the moderator, are actively engaged in leading large scale remote initiatives and will share their experiences. Following brief presentations, a panel discussion will take place with an emphasis on the practical considerations to take remote monitoring programs from pilot to scale, with a description of the key critical success factors. Featured panelists include a representative from University of Virginia (UVA) Health System/Broad Axe Care Coordination, which is achieving a 10.4% readmission rate for patients enrolled in remote monitoring, which is 50% lower than UVA’s historical CMS readmission rate of 23.1%. The second panelist is a representative from the Ontario Telemedicine Network, which has launched a provincial remote monitoring program, enrolled 3200 patients and has seen a 44%-57% reduction in readmissions. The third speaker, a telehealth consultant from NYC, has launched several remote monitoring programs in NY state and was instrumental in achieving legislation for Medicaid reimbursement for remote monitoring.

Objectives
1. Learn how three programs have successfully scaled their remote monitoring programs and demonstrated reductions in readmissions and high levels of patient satisfaction.
2. Achieve a better understanding of the clinical, business and technology requirements.
3. Obtain a better understanding of the critical success factors that are required to move from a pilot to a large scale implementation.

MONDAY, MAY 4, 2015
1:15 pm–2:15 pm Monday, May 4, 2015

PRESENTATION PANEL

Session 15
Session Title: A NEW MODEL FOR REMOTE DIABETES CARE BEST PRACTICES
Track: Chronic Care Room 406AB

MODERATOR: Karissa Price-Rico, BA, PhD, Chief Marketing Officer Intel-GE Care Innovations, Roseville, CA, USA

PRESENTER: Kristi Henderson, DNP, NP-BC, FAEN, Chief Telehealth & Innovation Officer University of Mississippi Medical Center, Jackson, MS, USA

PRESENTER: Marcus Grindstaff, BE, Director of Strategic Planning Intel-GE Care Innovations, Roseville, CA, USA

PRESENTER: Terrell Knight, BA, VP Government and Economic Development C Spire, Ridgeland, MS, USA

Two prominent barriers to keeping patients with chronic conditions healthy are providers’ intermittent contact with patients and an incomplete picture of patient data. Remote care management (RCM) addresses these barriers. RCM facilitates increased collaboration with patients and clinicians, which is particularly important for patients living in rural areas who may not get the support needed in the traditional care delivery system. For example, if during a patient’s regular well care visit, the physician asks the patient to have her A1c tested, after that patient had already driven the 50 miles to the doctors office, there is not a high level of motivation encouraging the patient to make the trip again to get blood work done the next day. With more than 373,000 adults in Mississippi living with some form of diabetes, the Governor of Mississippi, in partnership with the University of Mississippi Medical Center (UMMC), North Sunflower Medical Center (NSMC), GE Healthcare, Care Innovations, and C Spire, have launched the Diabetes Telehealth Network in 2014 to offer people with diabetes more consistent and timely access to clinicians through the use of the Intel-GE Care Innovations Guide in their homes. Mississippi is ranked as the state with the worst overall health and has the second highest incidence of diabetes, so this is a big step on the part of the state government and the state’s only academic medical center to improve the health status of Mississippians. In fact, UMMC believes this program has the potential to be a model that can be expanded throughout the state and with other chronic conditions. The project is designed to measure the impact of connecting rural diabetics in their homes with remote care managers. Daily “sessions” or interactions with each patient in the patient’s home will be conducted via a tablet from Care Innovations that records a daily question and answer session with the patient. These questions and answers change each day, provide the patient with key educational content and are designed to teach the patient self-management skills over time as well as monitor their daily health conditions. The tablet also collects data from the patient’s glucometer. This vital sign and subjective data are monitored by a remote care manager who intervenes as necessary when data or answers to questions are outside normal thresholds. The study will include 200 participants in a very rural and under-served area of Mississippi where diabetes is significantly more prevalent than normal. Key points that will be discussed in this session include: (1) Barriers to implementing a telehealth program in a rural environment, (2) Guidance on how to implement a successful telehealth program, including measuring ROI, (3) Working with various partners, including government officials, in getting the program approved and launched, (4) Preliminary study data and implications for applying this model of care to other costly, chronic conditions, such as heart failure, COPD, etc.

Objectives
1. Learn how a public-private partnership in a state with a high incidence of diabetes took an innovative approach to help patients better manage their diabetes.
2. Articulate preliminary qualitative and quantitative feedback from a remote care management program via telehealth technology with diabetes patients in a rural location.
3. Share best practices to integrate this program design into the audience’s own approach.

MONDAY, MAY 4, 2015
3:00 pm–4:00 pm Monday, May 4, 2015

PRESENTATION PANEL

Session 16
Session Title: THE IMPACT OF TECHNOLOGY AS A GAME CHANGER IN CHRONIC DISEASE MANAGEMENT
Track: Chronic Care Room 406AB

MODERATOR: Herbert Rogove, DO, FCCM, FACP, President C3O Telemedicine, Ojai, CA, USA

PRESENTER: David Sachs, PhD, Professor Pace University, New York, NY, USA

PRESENTER: Hector Rodriguez, Director, HLS Industry Technology Unit, Microsoft

PRESENTER: David Putrino, PhD, Director, Burke Rehabilitation Center Weil Cornell Medical College, New York, NY, USA

PRESENTER: David Lindeman, PhD, Director of Healthcare CITRIS University of California, Berkeley, Berkeley, CA, USA

With half of the American population afflicted with at least one chronic disorder, the question of how technology impacts chronic disease management is very
relevant. In an attempt to understand both current and future developments in technology’s role in chronic disease management, the panel will analyze and answer questions about: current models, newer innovations, enhanced care of the elderly, closing the healthcare gap for minorities, cloud solutions, consumer expectations, and future directions. Recently, emerging technologies and innovations for chronic disease management have emerged. What are those developments? Which are the latest game changers? What is the role of preventive medicine in dealing with chronic disease management? What will the future look like? Where, if anywhere, does big data fit into this equation? How is cloud-based technology an important part of the future in this model of healthcare delivery? Current models dealing with population management of those who develop chronic medical problems will be dissected. For the growing population of the elderly and the increasing number of the young who develop diabetes, the expert panel will dissect what works and what does not work. What is the role for hospitals in the telehealth era? What are the strategies for full-scale deployment of telehealth at community hubs? With increasing number of elderly patients requiring surgery or developing Parkinsons Disease, what are the usability concerns for telerehabilitation systems? How do you build scalable telerehabilitation systems? There has been much national debate regarding the inequity of care across the country. Whether it is related to race or geographic location or age the gap continues to increase as chronic diseases continue to consume a larger portion of healthcare dollars. Will telemedicine be an equalizer that allows minorities, rural communities, and the elderly to obtain the much needed healthcare they deserve? If so, how will this occur? What will it look like? What are the barriers? As consumers with these chronic disorders, what should their expectations be? Will their personal health records integrate new disease specific data to help with their chronic disease management? What will this mean for personalized health care? How does that translate into better homecare models for those with higher acuity problems? Deliberate analysis is urgently needed as the population of patients with chronic diseases will effect a larger number of the world’s population and can no longer be ignored. Telemedicine may be an important part of managing this problem.

**Objectives**

2. An overview of technology game changers for chronic diseases.
3. Review what consumer expectations should be for chronic disease management.

**MONDAY, MAY 4, 2015**

4:15 pm–5:15 pm  Monday, May 4, 2015

**PRESENTATION PANEL**

**Session 17**

**Session Title:** THE SENSOR REVOLUTION: HOW REMOTE PATIENT MONITORING CAN SCALE POPULATION HEALTH

**Track:** Chronic Care  Room 406AB

**MODERATOR:** Martin Kohn, MD, Chief Medical Scientist

Jointly Health, San Juan Capistrano, CA, USA

**PRESENTER:** Raj Khandwalla, MD, Director, Cardiovascular Education, Cedars-Sinai Medical Care Foundation, Cardiologist

Cedars-Sinai Medical Center, Beverly Hills, CA, USA

**PRESENTER:** David Ramirez, BA, MD, Chief Quality Officer

CareMore, Cerritos, CA, USA

**PRESENTER:** Anne DeGheest, MBA, Founder and Managing Director

Health Tech Capital, Los Altos, CA, USA

Chronic diseases account for 75% of US healthcare spending, a $1 trillion annual bill that is driving the transition to value-based reimbursement. The rapid evolution of cheap, accurate, and ubiquitous wireless biometric sensors promises to be an important tool in helping healthcare organizations keep patients with chronic conditions healthier. However, adoption of first-generation remote patient monitoring (RPM) has been stymied by a range of factors including device availability, device and service regulation, and most importantly, a failure to make the influx of raw data from first-generation RPM devices easy for providers to leverage in improving patient care. Future RPM models will require collecting data on multiple variables such as disease state, comorbidities and exacerbations, as well as advanced analytics. Transforming the mass of sensor data into actionable information on not just dozens but millions of patients at a time— the foundation of population health management— will require an entirely new technological approach. Panel members will share case studies addressing the limitations of first-generation RPM and attempts to utilize the technology for population health management. Moreover, they will discuss how technologies such as predictive alerting and risk stratification offer the opportunity to minimize the consumption of scarce healthcare resources while improving access to care. Dr. Ramirez will discuss findings from a Remote Patient Monitoring and Analytics Project at CareMore – a Wellpoint Medicare Advantage Plan – that is designed to rigorously evaluate whether an RPM program for patients with chronic obstructive pulmonary disease (COPD) can reduce unnecessary hospitalizations. The program is testing the effectiveness of predictive analytics by comparing results for four test groups of 500 members each – 1,000 test members and 1,000 control members. Project objectives are to reduce bed days, reduce ER visits, and measurably increase the efficiency and effectiveness of nurse practitioners, case managers and other healthcare professionals involved in the management of test group members.

**Objectives**

1. Review the pros and cons of current remote patient monitoring technology, with a focus on how the approach can be scaled to the population level.
2. Share results and insights from Wellpoint’s CareMore Remote Patient Monitoring and Analytics Project that will have broad applicability for reducing costs, hospital readmissions and improving patient satisfaction for at-risk/capitated organizations.
3. Discuss the results from Affinity Health Plan’s formal test of remote patient monitoring, designed to reduce ED admissions and improve the productivity of care managers.

**TUESDAY, MAY 5, 2015**

11:00 am–12:00 pm  Tuesday, May 5, 2015

**HOW-TO PANEL**

**Session 18**

**Session Title:** UTILIZING INTERACTIVE VOICE RESPONSE (IVR) AND TELEMONITORING TO REDUCE HOSPITAL ADMISSIONS AND READMISSIONS FOR HEART FAILURE PATIENTS

**Track:** Chronic Care  Room 406AB

**PRESENTER:** Jonathan Shankman, MBA, MPH, Senior VP, Clinical Innovation

AMC Health, New York City, NY, USA

Discuss the results from Affinity Health Plan’s formal test of remote patient monitoring technology, with a focus on how the approach can be scaled to the population level.
CONCURRENT ORAL PRESENTATIONS ABSTRACTS

PRESENTER: Doreen Salek, RN, CCS/CPC, CPC-P, Director, Population Health Business Intelligence
Geisinger Health Plan, Danville, PA, USA

Approximately 5.1 million U.S. adults have chronic heart failure (HF) and with more than 650,000 new cases diagnosed each year current estimates project a 25% increase by 2030. HF accounts for 1.801 million physician visits, 668,000 ED visits, and 293,000 OP visits annually, and more than 1 million patients are hospitalized each year making HF the leading cause of hospitalization among patients 65 years and older. In 2013 it’s estimated that the cost of providing healthcare for HF patients was $32 billion, which is projected to increase nearly 120% to $70 billion by 2030. Heart failure was one of the three original chronic conditions identified in the ACA’s “Hospital Readmission Reduction Program” that penalized hospitals for excessive 30-day readmissions. Additionally, the transition to value-based care that encompasses risk-sharing and capitated and bundled payment arrangements is also driving the need to reduce the cost of HF care while improving quality. Executives from the Geisinger Health Plan (GHP) and AMC Health will present study results showing how the addition of Blue-tooth-enabled telemonitoring devices as well as an Interactive Voice Response (IVR) system to GHP’s well-established case management program helped to significantly reduce hospital admissions and readmissions as well as the cost of caring for members previously diagnosed with HF. The study included 541 participants who were at least 65 years old with a high prevalence of comorbid conditions who incurred a significant cost of care. Among the results that will be detailed are: participants lowered their odds of a hospital admission in any given month by 23%; 30-day readmissions were reduced 44%, while 90-day readmissions dropped 38%; and the implementation of the program yielded approximately 11% cost savings during the study period as well as an ROI of 3.3:1 (for every $1 spent to implement the program, GHP saved roughly $3.30). One of the key elements of GHP’s case management is timely and appropriate member follow-up. The presentation will address how the technology was incorporated into GHP’s already well-established case management program and the questions that that GHP and AMC Health developed to detect changes in members’ physical condition indicating exacerbation, and how patients were trained and engaged. With the telemonitoring technology providing near real-time data, case managers could easily identify when biometric readings or IVR responses fell outside of specific ranges and create appropriate, prioritized interventions before further exacerbation occurred. Rather than having to check in manually with every participating patient, the technology and alerting freed case managers to manage patients by exceptions and devote more attention to those who needed it most. The presentation will also provide a brief overview about other successful IVR and remote patient monitoring programs incorporated into GHP’s case management program such as one that lowered 30-day all-cause readmissions among Medicare beneficiaries by 19.5%.

Objectives
1. Demonstrate how IVR and remote patient monitoring can be used to lower admissions and readmissions for patients with chronic diseases as part of an overall case management program, based on the experiences of Geisinger Health Plan.
2. Achieve a better understanding about the processes, tools, training, resources and personnel required to develop and maintain an effective IVR and remote patient monitoring program.
3. Gain insights into how IVR and remote patient monitoring can reduce costs for treating patients with heart failure and other chronic conditions.

TUESDAY, MAY 5, 2015

INDIVIDUAL ORAL

Session 19
Session Title: FOSTERING PATIENT ENGAGEMENT AND IMPROVING OUTCOMES IN DIABETES CARE DELIVERY
Track: Chronic Care  Room 406AB

MODERATOR: Pramod K. Gaur, PhD, Adjunct Professor
Pace University, White Plains, NY, USA

LESSONS LEARNED FROM CMMI: ADOPTION OF REMOTE MONITORING EQUIPMENT AND VIDEO CONNECTIONS

PRESENTERS AND CONTRIBUTING AUTHORS:
Neal Sikka, MD, Associate Professor, Emergency Medicine, Chief, Innovative Practice, Manya Magnus, PhD, Teena Cherian, BS, Mona Hariri, MPH, Susie Lew, MD, The George Washington University - Medical Faculty Associates, Washington, DC, USA

Background: End stage renal disease (ESRD) represents a significant source of morbidity and mortality in the United States, with more than 427,340 requiring dialysis annually. Among these, approximately 7.4% opt to utilize peritoneal dialysis (PD) opposed to hemodialysis, providing them with increased autonomy and home-based delivery. Given the need for home monitoring, PD offers a unique population in which to evaluate telemedicine. The purpose of this three-year study is to evaluate a telemedicine intervention that provides real-time blood pressure, weight, and glucometer readings as well as patient-provider video chats. Telemedicine-based home monitoring has the potential to reduce morbidity, mortality, and costs associated with ESRD.

Methods: To date 399 PD patients were approached for the study and 283 have been enrolled. Subject were approached by trained research coordinators, provided informed consent and completed a technology survey. 215 subjects have been provided a wireless scale and blood pressure cuff that transmits readings in real time to a telemedicine monitoring center. Diabetic patient were provided a cord to plug their existing glucometer into the transmitter hub to send glucose readings. All patients were offered a free secure video software (Digigone) and based on the technology survey were provided at no cost any items they did not currently own such as a webcam, laptop/tablet, and internet connectivity.

Results: To date 93 subjects have installed the video chat software and only one patient has completed a video interaction. In the first 6 months of the study 32,878 blood pressure and pulse measurements were transmitted by 262 participants.

Discussion: The PD population was chosen for this technology based intervention because of their comfort with the use of technology at home such as home blood pressure and weight monitoring as well as use of a cycler machine. Uptake of the remote monitoring equipment has been quite robust with the majority of patients submitting data frequently. However, uptake of the
video chat availability has been much less. While patient are comfortable with home biometric monitoring, they are less comfortable with the use of video. Many subjects site privacy issues as a main concern as well as lack of comfort using the computer or the software. We believe there are a variety of challenges to connecting patients by video, but also strategies to demonstrate value and increase adoption.

Objectives
1. Discuss challenges and strategies for patient adoption of remote monitoring technologies.
2. Discuss challenges and strategies for patient adoption of video connection technologies.
3. Describe patient concerns regarding privacy and security.

COLLABORATIVE WISDOM: REMOTE MONITORING TECHNOLOGY FACILITATES E-PATIENT AND DIABETES EDUCATOR ENGAGEMENT

PRESENTERS AND CONTRIBUTING AUTHORS:
Deborah A. Greenwood, PhD, RN, CDE, BC-ADM, FAADE, Diabetes Program Coordinator
Sutter Health, Roseville, CA, USA

Patient engagement has been cited as being the blockbuster drug of this century. Identifying opportunities to increase patient-provider communication will foster engagement and improve outcomes in type 2 diabetes. Data generated from people with diabetes need to be actionable, create an opportunity to problem solve and generate input from the diabetes educator. This process requires a complete feedback loop made possible with remote monitoring technology and electronic health records. The data collected must be actionable so the e-patient can initiate behavior changes and engage in shared decision making practices when treatment adjustments are necessary. Ongoing feedback and discussion between the diabetes educator and the person with diabetes is required for data to be analyzed against evidence based goals and then appraised. This case study presents a model for the development of collaborative wisdom when an e-patient and diabetes educator share data and solve problems remotely supported by telehealth technology. The e-patient was enrolled in a randomized clinical trial with remote glucose monitoring and daily education using a complete feedback loop. The participant uploaded structured glucose data daily, a regimen called “Paired Testing,” and engaged in “weekly experiments” to identify glucose monitoring patterns and how behaviors impacted post meal glucose excursions. Weekly virtual visits and electronic feedback, including both automated systematic data analysis and personalized care coordination, between the e-patient and the diabetes educator were conducted via electronic health record and personal health record secure message system. The e-patient and the diabetes educator used data, information, knowledge, and wisdom to problem solve and facilitate a change in treatment. Telehealth technology and virtual communication enabled a collaborative wisdom greater than individual wisdom and fostered the development of a productive relationship with support and guidance to improve outcomes. At 12 weeks a clinically meaningful decrease in A1C of 0.7% occurred along with increased knowledge, physical activity, patient engagement, and patient empowerment. A1C improvement continued at 6 and 9 months requiring a decrease in medication. The e-patient has since become a speaker and diabetes advocate. When both an e-patient and a diabetes educator collaborate through technology and implement a complete feedback loop collaborative wisdom is possible.

CONCURRENT ORAL PRESENTATION ABSTRACTS

TECHNOLOGY-ENABLED INTERVENTIONS FOR MODERATE RISK INDIVIDUALS

PRESENTERS AND CONTRIBUTING AUTHORS:
Neal D. Kaufman, MD, MPH, Chief Medical Officer
DPS Health, Los Angeles, CA, USA

Behavior change is a challenging process for anyone, made all the more difficult when the behaviors are long-standing and the environment makes healthy choices difficult to implement. Decades of research demonstrate that individuals are more likely to adopt and sustain health promoting behaviors when they are provided with personalized over-time interventions designed for the specific targeted population and for specific behaviors. The universal challenge is to make these effective behavior change interventions affordable (at a reasonable price with a good Return on Investment), and scalable (engaging, efficient and using minimal personnel time). While mHealth approaches demonstrate promise, currently most mHealth applications are technology-enabled monitoring and educational approaches rather than fully developed interventions. This presentation will use obesity and diabetes treatment as a model for behavior change interventions which prevent or treat chronic diseases. Over the past decade a number of theory-based and research proven behavioral approaches helping individuals eat better, be more active and lose weight have been developed. All of them require a large allocation of staff time making them impractical for large scale population health approaches. If mHealth approaches can faithfully transform interventions which have been proven in rigorous research to be effective with a specific target population, mHealth can succeed where others have failed to go to scale. This presentation will: (1) highlight the principles of technology-enabled, self-management support interventions which have been proven to be effective when automating most of what had previously been provided in person; (2) explain how to create and evaluate affordable and scalable behavior change interventions; and (3) summarize the 7 year experience within a variety of health settings (health plans, medical providers and employers) with a year-long online version of the NIH’s Diabetes Prevention Program for overweight or obese adults with, or at risk for, type 2 diabetes and other obesity-related co-morbidities. Below is a summary of the results:

- ≥20,000 users to date; 25 sites
- ≥30% with type 2 diabetes / others at risk
- BMI 35 (average)
- Age 55 (+/- 20 or so years)
- ≥40% still engaged at 1 year
- 4-5% of body weight loss overall
- Body weight loss
  - ≥50% > 2.5%; ≥35% > 5%; ≥25 > 7%

Objectives
1. Acquire a deeper understanding of the core elements of technology-enabled behavior change interventions.
2. Be able to determine the benefits of using technology to bring effective interventions to scale.
3. Be familiar with the range of approaches available which impact moderate risk individuals.
Marshfield Health Systems Telehealth program has been in existence since 1999, providing care remotely to 75 different sites in 45 different clinical services, serving about 5,000 patients per month. Nowhere is telehealth more important for improving the patient experience, improving quality, and reducing the overall cost of care than in populations with chronic conditions. Through an innovative and unique partnership between telehealth, the Heart Failure Center, and nurse triage, Marshfield Clinic Health System (MCHS) has gotten the attention of a local health plan. With an experience of using telehealth for initial and follow-up visits plus nurse education in HF for over 100 visits, MCHS was able to use big data and data mining to develop a case for the Heart Failure Center expansion through an efficient, effective, and cost-effective model. MCHS’s Heart Failure Center proceeded with enrolling patients as long as the patient was a part of a MCHS primary care practice, cardiology practice, or health plan member. General outcome data is shared from MCHS to the health plan and the health plan shares cost data, traditionally a hard sell between these types of health care organizations. The value-based care model puts the Heart Failure Center in a position to expand to see more patients in a large geographical rural area. One of the keys to success in the program is the ability to provide care through the use of telehealth. Included in each telehealth visit is a complete physical exam, patient education, and a pharmacist consult. Patients geographically removed from the physical location of the service have been able to be served, without adding any additional staff to the HFC. The care approach includes remote monitoring for specific patients identified by the nurse educator or the nurse practitioner. After-hours support to the patient is provided by nurse triage, a medical protocol and guideline driven practice supported by MCHS physicians. This presentation covers the development of the program, the clinical protocols and operationalizing of the program, as well as patient feedback, clinician experiences, and patient outcomes. The participants will learn how a technology-supported comprehensive strategy can lead to financial success and sustainability for not only a clinical department typically posed as a cost center, but for a Telehealth initiative as well. MCHS has been able to reach out to patients that would not have been served prior to using Telehealth. MCHS did not add staff, just added patients! The presentation will include pictures from actual telehealth encounters, interviews with patients, and feedback from the Nurse Practitioner led program.

**Objectives**

1. Understand the process of care via telehealth for patients with Congestive Heart Failure.
2. Describe a successful strategy for shared savings in a population with CHF care via telehealth.
3. Discuss the synergy between telehealth, nurse triage, and the Heart Failure Center in relation to expanding access to care and improving patient outcomes.
TELEMEDICINE and e-HEALTH A-59

MONDAY, MAY 4, 2015
8:00 am–8:45 am Monday, May 4, 2015

INDIVIDUAL ORAL
Session 22
Session Title: STREAMLINING ACCESS TO QUALITY CARE THROUGH TELETRIAGE
Track: Critical and Acute Care Room 402AB
MODERATOR: Jill Berg, PhD, RN, FAHA, Dean and CEO/Professor Columbia College of Nursing, Glendale, WI, USA

TELEDERMATOLOGY TRIAGE IN A STATE SAFETY NET CLINIC SYSTEM
PRESENTERS AND CONTRIBUTING AUTHORS:
Roy Colven, MD, Professor of Medicine, Division of Dermatology, Cara Towle, RN, Dorothy Hardin, MD1
1University of Washington, Seattle, WA, USA, 2Community Health Plan of Washington, Seattle, WA, USA

CONCURRENT ORAL PRESENTATIONS ABSTRACTS

Patients and healthcare professionals were able to communicate with each other using the PHR. The patients measured their own blood pressure, pulse, and weight twice a week and steps everyday. The patients also had access to Activeheart.dk, a digital toolbox with information on rehabilitation themes, activities and videos on exercises after surgery, etc. In this presentation, healthcare professionals describe their experiences working in an interdisciplinary TRP.

Methods: A triangulation of data collection techniques was used. Documents were studied, participant-observation was carried out (n = 45 hours) at interdisciplinary meetings of the TRP team, workshops, etc. Qualitative interviews were carried out with nurses at the hospital (n = 8), doctors at hospitals (n = 2), nurses at the healthcare centers (n = 6), physiotherapists (n = 5) and nurses at the call center (n = 2). The interviews took place at the end of the project and lasted 55–75 minutes and were transcribed. A theoretical framework of inter-organizational theory was applied. All data were analyzed in NVivo 10.

Findings: The healthcare professionals experienced that the TRP had facilitated interdisciplinary communication and coordination so that the rehabilitation had become more individualized for the patients. In their view, the organization of the TRP had made it possible to prevent “silo thinking” and create a shared vision about rehabilitation of cardiac patients across medical specialties and healthcare sectors. The healthcare professionals also reported that they could advise patients regardless of time and place; for example, patients who had returned to their jobs could now maintain their rehabilitation activities.

Conclusions: In the opinion of the healthcare professional, a TRP makes it possible to share, communicate and coordinate rehabilitation activities for the benefit of patients. The organization of an interdisciplinary TRP makes it possible to create a shared vision regarding rehabilitation of cardiac patients across medical specialties and healthcare sectors.

Objectives
1. Interdisciplinary telerehabilitation program is fruitful.
2. TRP facilitates joint visions across sectors.
3. TRP makes it possible to share, communicate, and coordinate rehabilitation activities for the benefit of patients.
Background/Rationale: Dermatology services are generally considered to be in short supply and high demand, especially for uninsured and underinsured patients. Access to in-person services for uninsured and Medicaid-sponsored patients is limited to a small number of practices, often with a disproportionate burden of time and/or distance for the patient. Likewise, consultative support for primary care physicians and other providers for this population is limited. When an in-person referral can occur, there is typically a long delay, allowing conditions, including skin cancers, to advance. Also, this long delay between referral and feedback sent back to the referring provider leads to a loss of consultative value. Timely feedback to the referrer enhances valuable practice-based learning for the PCP. In Washington State, many uninsured and underinsured patients are served for primary care needs by the Community Health Plan of Washington (CHPW), which serves as a safety net system for this underserved population. These patients have high rates of unemployment and are both rural- and urban-based. Unfortunately, the waiting time for a new dermatology patient appointment is 3–4 months or longer, and triage of patients deemed in need of urgent referral can be problematic. We initiated a teletriage service to better prioritize patients referred from CHPW clinics. The service needed to be easy to access, HIPAA-compliant, allow rapid assessment and feedback to the PCP, low cost, serve to optimize referral number, and enhance PCPs’ ability to determine urgency and to initiate management of skin disease at their primary clinics, perhaps obviating the need for referral. AccessDerm was launched by the American Academy of Dermatology in collaboration with Vignet specifically to help unburden and support clinic providers working in resource-poor healthcare settings in the US and abroad. AccessDerm is a Web-based platform that allows providers to send clinical information and digital images efficiently and securely to a registered teledermatologist who can then render a diagnostic opinion and treatment plan asynchronously.

Methods: Using AccessDerm as a tool, we began to conduct dermatologic teletriage to determine urgency or need for referral, and to help PCPs initiate therapy for skin-diseased patients in the CHPW. Six PCPs from the CHPW sent 100 referrals over an eight month period. Prior to using AccessDerm, all PCPs took a dermatology practical knowledge quiz at baseline, and repeated the quiz at the end of the study period.

Results: The vast majority of telereferrals could be confidently diagnosed and managed remotely and did not need in-person management by a dermatologist. PCP and teledermatologist concordance in diagnosis increased with increasing use of AccessDerm, and the referring PCPs all increased their practical knowledge quiz scores by study’s end.

Conclusion: Dermatologic teletriage is a practical and efficient way to handle PCP referrals in an underserved health system. Most referrals can avoid an in-person visit with the specialist. Further, timely consultation enhances both diagnostic concordance and practical knowledge of the referring PCPs.

Objectives
1. Consider applying teletriage as a viable tool to streamline access to specialty healthcare.
2. Understand the educative value of timely teleconsultation to the referral healthcare provider.
3. Appreciate the healthcare needs and barriers to access of patients within a safety net health system.

Preeclampsia, a hypertensive disorder that occurs during pregnancy, complicates about 5–8% of pregnancies in the U.S. Traditionally, pregnancies complicated by preeclampsia are monitored inpatient for additional days following delivery. If a patient’s BP is elevated and antihypertensive medications are started, it often takes days to titrate the medicine to stabilize BP before discharge. If preeclamptic women could be safely managed post-delivery outpatient—rather than inpatient—the healthcare savings could be significant. As a means to pilot this concept, a mobile health (mHealth) home monitoring program was launched in May 2014. This clinical program is part of ANGELS’ telemedical offerings at UAMS and ANGELS has five mHealth devices. ANGELS provides a home monitoring device that records blood pressure, body weight and pulse oxygen level as well as asking a series of questions. This data is sent via portal to the ANGELS Call Center nurses who are alerted if one of the parameters is out of range. If a reading is out of range, the women are then called by the ANGELS Call Center nurse. The nurse does an initial triage assessment and asks the woman to repeat her vital signs. If the reading still remain out of range, a maternal fetal medicine physician is contacted and provides additional instructions related to care, such as titration of medications or if the woman needs to be seen sooner in the clinic. The women are monitored for 14 days and then go for a postpartum blood pressure visit two weeks after delivery. The equipment is returned during the clinic appointment. To date, 6 women have completed the 14-day monitoring program.

Objectives
1. Recognize the important role mHealth plays in post-partum treatment of women with preeclampsia.
2. Understand the model provided through this pilot program.
3. Identify ways in which mHealth reduces costs of care for preeclamptic women in the postpartum period.

INDIVIDUAL ORAL
Session 23
Session Title: Employing Utilization and Cost Effectiveness Models in Telestroke Networks
Track: Critical and Acute Care
Room 402AB

Moderator: Bart Demaerschalk, MD, MSc, FAHA, FRCP(C), Professor of Neurology
Mayo Clinic College of Medicine, Phoenix, AZ, USA

A Predictive Model of Service Utilization in an Academic Medical Center-Driven Telestroke Network

Presenters and Contributing Authors:
Juan J. Estrada, MBA, MSc, Program Director, Anand Viswanathan, MD, PhD, Adam B. Cohen, MD, Lee H. Schwamm, MD
Massachusetts General Hospital, Boston, MA, USA

Background: Stroke is the 4th leading cause of death in the United States and the primary cause of disability. The MGH Telestroke Network, with support from the Brigham and Women’s TeleStroke program, provides 24/7 acute stroke coverage to 30 community hospitals in New England, caring for over 1200 patients every year. Annual case numbers fluctuate significantly at any given hospital. Despite caseload fluctuation, most TeleStroke network costs (technology services and infrastructure, physician coverage, administration)
are fixed. Therefore, volatility in service use poses challenges to balancing revenue income in the setting of constant operating costs. Another challenge of caseload fluctuation and service utilization is determining fair service costs for potential telestroke service recipients.

Methods: Using 2012 data from our telestroke network, we developed a multiparameter regression model to predict service utilizations of prospective programs. Examples of the data inputs include publicly available clinical data: hospital bed capacity, ED visit volume, admission volume, and county-based demographics including income, persons per household, race/ethnicity, state where the community hospital is located and population density. In addition to the regression model, a correlation matrix and qualitative experiences were used to determine variables that predict overall volume, while simultaneously minimizing individual hospital forecast deviations.

Results: These multivariate analyses showed that hospital bed capacity and state where the community hospital is located were combined, the best predictors of service utilization: \( R^2 = 0.57 \), Root MSE = 15.04. The predictive model had a 13% error in its prediction of total cases when comparing its prediction to service use during the following year, 2013. With this predictive model in place, we were able to categorize the hospitals in our network and leverage that categorization to distribute the operational costs for our network under a Fair Market Value framework. This work also allowed us to predict service utilization for prospective clients and consistent cost estimations for their telestroke services subscription, since the state where these prospects are located and their bed census is publicly and readily available information.

Conclusion: These linear models are valuable tools to further understanding of telestroke network economics and utilization, but also represent simplifications that may not completely describe all aspects of systems with non-linear behavior. Future work will include incorporate data from further experience with telestroke use.

Objectives

1. Understand the applicability of predictive models in developing sustainable telehealth models and making informed decisions.
2. Understand the logic behind the methodologies of each of the models.
3. Review the differences in applicable models for episodic care versus population health management.

### Table 1. Incremental Cost-Effectiveness Ratios by Spoke Facility Characteristics

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<tr>
<th>STROKE VOLUME PER YEAR</th>
<th>DISTANCE TO HUB</th>
<th>BED SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 25 STROKES (N = 14 HOSPITALS)</td>
<td>&lt; 130 MILES (N = 8 HOSPITALS)</td>
<td>&lt; 70 BEDS (N = 12 HOSPITALS)</td>
</tr>
<tr>
<td>&gt; 25 STROKES (N = 2 HOSPITALS)</td>
<td>&gt; 130 MILES (N = 8 HOSPITALS)</td>
<td>&gt; 70 BEDS (N = 4 HOSPITALS)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Percentage of implementation cost paid by spoke</th>
<th>ICER*</th>
<th>ICER</th>
<th>ICER</th>
<th>ICER</th>
<th>ICER</th>
<th>ICER</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>Dominant**</td>
<td>Dominant</td>
<td>Dominant</td>
<td>Dominant</td>
<td>Dominant</td>
<td>Dominant</td>
</tr>
<tr>
<td>50%</td>
<td>$24,223</td>
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<td>Dominant</td>
<td>Dominant</td>
<td>$27,274</td>
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<td>$10,788</td>
<td>$26,981</td>
<td>$18,126</td>
<td>$26,865</td>
<td>$70,543</td>
</tr>
</tbody>
</table>

*ICER = incremental cost/incremental QALY

**Dominant = Telestroke leads to lower costs and greater QALYs compared with no telestroke

### TELESTROKE NETWORK COST-EFFECTIVENESS IN THE PACIFIC NORTHWEST: GEOGRAPHY AND FACILITY SIZE SUPPORT A COST-SHARING MODEL BETWEEN HUB AND SPOKE

**PRESENTERS AND CONTRIBUTING AUTHORS:**

Nicholas J. Okon, DO, Northwest Stroke Solutions, PLLC\(^1\), Richard Nelson, PhD\(^2\), Jennifer Majersik, MD, MS, FAHA\(^3\), Alyx Lesko, BS\(^1\), Archit Bhatt, MD, MPH, FACP, FAHA\(^1\), Elizabeth Baraban, MPH, PhD\(^1\)

\(^1\)Providence Brain and Spine Institute Oregon, Portland, OR, USA, \(^2\)University of Utah Division of Epidemiology, Department of Internal Medicine, Salt Lake City, UT, USA, \(^3\)University of Utah Department of Neurology, Salt Lake City, UT, USA

**Background:** Stroke care in the Pacific Northwest (PNW) is challenging due to vast distances between small facilities and stroke experts. Regional stroke centers have adopted telestroke to meet this challenge, but often bear the entire cost burden. We sought to determine the effect of distance and facility size on cost-effectiveness of telestroke implementation within our PNW Telestroke Network.

**Methods:** We used a decision analytic model with input parameters obtained from patient-level clinical and hospital costs and reimbursements from the Oregon Providence Telestroke Network using pre- and post-telestroke implementation data. Using a one-year time horizon, we calculated the cost-effectiveness of telestroke for spoke facility characteristics of: (1) stroke volume \( (\&lt;\&gt; 25/yr) \), (2) distance to hub facility \( (\&lt;\&gt; 130 \text{ miles}) \), and (3) number of hospital beds \( (\&lt;\&gt; 70) \). Data included all acute ischemic stroke patients presenting at the spoke hospitals within 4.5 hours of symptom onset. Probability inputs included IV-tPA treatment rates and transfer status. Effectiveness, measured as quality adjusted life years (QALYs), and costs, were combined to calculate incremental cost-effectiveness ratios (ICERs) for the spoke hospitals. ICER's of \&lt;\$50,000-\$120,000/QALY are considered cost-effective. Outcomes were stratified by percentage of cost burden for implementation by the spoke.

**Results:** See Table 1.

**Conclusions:** Our results suggest that despite the unique characteristics of the PNW, telestroke remained cost effective and the cost effectiveness of telestroke was not affected by bedsize, distance from hub or stroke volumes. Thus, a cost-sharing model may be a feasible solution to telestroke network economic sustainability.
CONCURRENT ORAL PRESENTATIONS ABSTRACTS

Objectives
1. Appreciate the unique challenges facing stroke care in the Northwest
2. Understand the factors influencing network costs of telestroke delivery within a mature telestroke network
3. Have an appreciation of cost-effectiveness modeling for telestroke

DRIVING CHANGE AND INNOVATION THROUGH EFFECTIVE TELEMEDICINE SERVICE DELIVERY

PRESENTERS AND CONTRIBUTING AUTHORS:
Jim Roxburgh, RN, MPA, Director
Dignity Health Telemedicine Network, Carmichael, CA, USA

Health systems across the country are beginning to understand the value proposition for telehealth and telemedicine service delivery as new economic drivers incentivize population management, quality outcomes, and better value. Many, however, have no or minimal experience in development, implementation, and maintenance of a highly effective, multiple-specialty telemedicine network. Over the last five years, Dignity Health Telemedicine Network has managed change and innovation while rapidly adopting new technology for care delivery across the entire continuum. The presenter will discuss Quality Metrics & Outcome Measures including dashboard development and continuous quality improvement and feedback tools utilized to manage and improve their telemedicine network.

Objectives
1. Identify successful strategies to develop and sustain an effective telestroke network.
2. Identify telehealth growth opportunities beyond telestroke and how to effectively manage.
3. Identify key indicators for success in the collaboration between the hub and partner sites.

MONDAY, MAY 4, 2015
1:15 pm–2:15 pm Monday, May 4, 2015

INDIVIDUAL ORAL
Session 24
Session Title: IMPROVING PATIENT OUTCOMES THROUGH ADVANCED TECHNOLOGIES FOR TELESTROKE
Track: Critical and Acute Care Room 402AB

MODERATOR: Alex Nason, MBA, MHA, Vice President, Service Development
Specialists On Call, Reston, VA, USA

TELESTROKE: EXPEDITING CARE WHEN MINUTES COUNT

PRESENTERS AND CONTRIBUTING AUTHORS:
Carol Oliff, RN, MSN, CCRN-E, NEA-BC, Director Critical Care and TeleICU
John Muir Health, Concord, CA, USA

Stroke is the third leading cause of death and the primary cause of serious, long-term disability in the United States. Each year, approximately 795,000 people suffer a stroke and more than 140,000 people die. The delivery of appropriate stroke care involves rapid assessment, diagnosis and intervention within a specified timeframe. The establishment of a telestroke program provides rapid access to stroke experts who expedite the processes of acute stroke episodes. It has been established that the timeline from patient presentation in the ED to treatment is significantly improved through the provision of immediate access to remote neurology specialists.

Telestroke programs maximize resources, facilitate bedside care and extend the availability of neurologist and other stroke specialists to a broader patient population. The advanced computer and audio/visual technology supports a partnership between the emergency department, teleICU center and remote stroke expert (neurologist or nurse practitioner). The telestroke team supports patient evaluation and treatment during the time-sensitive acute stroke phase using best practice guidelines, and provides continuity of care if the patient is admitted to a networked critical care or step-down unit. A telestroke program was implemented at John Muir Health in August, 2012. This program has been vital in successfully improving health system metrics that are in alignment the American Heart Association/American Stroke Association’s Get With The Guidelines® - Stroke Quality Achievement indicators. Since implementation of telestroke, John Muir Health has realized a steady improvement in performance metrics, including timing of care delivery, team collaboration, and patient satisfaction. As a result, John Muir health received the Get With The Guidelines® Gold-Plus and Target Stroke Quality Awards in June, 2014. The use of telehealth technology enhances care delivery workflows for physicians, nurses and support staff, and ultimately improves patient outcomes. The success of a telestroke program is based on the professional relationship between the ED clinicians, teleICU nurses and off-site neurologists or nurse practitioners. These relationships rely on teamwork, professional collaboration and effective communication, with a shared goal of improving patient outcomes through the use of advanced technology.

Objectives
1. Describe two benefits of a telestroke program from either the patient or care provider perspective.
2. Describe the role of the remote teleICU nurse (eRN) during a telestroke episode.
3. Describe two barriers (and methods to overcome those barriers) in implementing a telestroke program.

TELESTROKE IN NEW BRUNSWICK

PRESENTERS AND CONTRIBUTING AUTHORS:
Krisan Palmer, RN, Regional Telehealth Manager,
Patti Gallagher, RN, BN, MSN
Horizon Health Network, Saint John, NB, Canada

The goal of the Provincial Telestroke initiative is to provide a solution that allows every New Brunswick citizen who is experiencing an acute stroke the potential to receive the medication known as rtPA. The real issues arise with correctly identifying candidates who would benefit from rtPA, as well as having a system that is equipped to respond in the rapid manner required, and with the additional opportunity to provide this treatment at remote or rural locations and centers that do not have ready access to physicians who are comfortable offering this medication. Until now, consultations via phone with the neurologist for any on call have left them with little to no documentation around these processes. Interestingly, in the course of performing telestroke environmental scans across Canada and the USA, it was discovered that the most difficult and disjointed part of the process for Telestroke Service Delivery, was that of timely, accurate, organized, and accessible documentation. It is for this reason that due diligence has been performed and an integral part of New Brunswick’s telestroke Initiative is that of centralized telehealth documentation. The solution discussed in this presentation provides neurologists the ability to visually assess potential stroke patients via telehealth. Neurologists connect to the hospital network using a virtual private network (VPN) from their home or office to review the CT image, document the necessary clinical assessment they perform while connected via real time interactive audio and video to the emergency department (ED) where the patient has presented. There are ten sites within New Brunswick participating...
in this initiative. All twelve neurologists within New Brunswick, concentrated in the southern part of the province, participate. It is our intent that by doing this, an increase in delivery of the drug known as rtPA can be achieved; thus, resulting in statistically significant improved clinical outcomes for this patient population. Telestroke went live in New Brunswick September 15, 2014. The processes leading up to same, as well as near show stoppers and major lessons learned will be discussed in conjunction with the actual technology utilized.

**Objectives**

1. Gain further insight into the rural complexities of telehealth service delivery.
2. Acquire an understanding of technologies utilized in this initiative.
3. Benefit from a frank and open sharing of lessons learned to date.

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**TELENEUROSONOLOGY: A NOVEL APPLICATION OF TRANSCRANIAL AND CAROTID ULTRASOUND**

**PRESENTERS AND CONTRIBUTING AUTHORS:**

Mark N. Rubin, MD, Assistant Professor, Hospital & Vascular Neurology

Kevin M. Barrett, MD, MSc

W David Freeman, MD

Joyce K. Lee-Iannotti, MD

Dwight D. Channer, MS

Alejandro A. Rabinstein, MD

Bart M. Damaerschak, MD, MSc, FRCP (C)

1Mayo Clinic, Scottsdale, AZ, USA, 2Mayo Clinic, Jacksonville, FL, USA, 3Mayo Clinic, Rochester, MN, USA

**Objective:** To demonstrate the technical feasibility of interfacing transcranial Doppler (TCD) and carotid duplex ultrasonography (CUS) peripherals with telemedicine endpoints to provide real-time spectral waveform and duplex imaging data for remote review and interpretation.

**Methods:** We performed remote TCD and CUS examinations on a healthy volunteer employee from our institution without known cerebrovascular disease. The telemedicine endpoint was stationed in our institution’s hospital where the neurosonology examinations took place and the control station was in a dedicated telemedicine room in a separate building. The examinations were performed by a post-graduate level neurohospitalist trainee (MNR) and interpreted by an attending vascular neurologist, both with experience in the performance and interpretation of TCD and CUS.

**Results:** Spectral waveform and duplex ultrasound data were successfully transmitted from TCD and CUS instruments through a telemedicine endpoint to a remote reviewer at a control station. Image quality was preserved in all cases and technical failures were not encountered.

**Conclusions:** This proof-of-concept study demonstrates the technical feasibility of interfacing TCD and CUS peripherals with telemedicine endpoints to provide real-time spectral waveform and duplex imaging data for remote review and interpretation. Medical diagnostic and telemedicine devices should be equipped with interfaces that allow simple transmission of high-quality audio and video information from the medical devices to the telemedicine technology. Further study is encouraged to determine the clinical impact of teleneurosonology.

**Objectives**

1. Know the importance of telestroke for acute stroke evaluation and management.
2. Understand the importance of diagnostics to supplement an acute stroke evaluation.
3. Acknowledge the potential public health impact of teleneurosonology.

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**INDIVIDUAL ORAL**

**Session 25**

**Session Title: APPLYING CARE IN NOVEL MODELS OF NON-ACUTE TELENEUROLOGY**

**Track:** Critical and Acute Care  
**Room:** 402AB

**MODERATOR:** Curtis Lowery, MD, Medical Director  
*University of Arkansas for Medical Sciences, Little Rock, AR, USA*

**TELENEUROLOGY BEYOND ACUTE CARE: OUTPATIENT CLINICS AND INPATIENT WARDS**

**PRESENTERS AND CONTRIBUTING AUTHORS:**

Adam B. Cohen, MD, Teleneurology Director; Inpatient Neurology Director, Juan Estrada, MBA, Anand Viswanathan, MD, PhD, Soren Capawanna, BA, Lee Schwamm, MD  
*Massachusetts General Hospital, Boston, MA, USA*

**Background:** The origins of teleneurology are in acute stroke management. Telestroke programs are now widespread, improving patient outcomes and appropriate use of thrombolysis. New models of teleneurology will include non-acute care in neurology.

**Results:** Our center commenced three new non-acute teleneurology programs, which are distinct from telestroke. These programs serve within-institution established outpatients as virtual follow-ups (program 1), within-institution new outpatient referrals (program 2), and out-of-institution new inpatient referrals (program 3). The within-institution programs rely on financial support from our physician’s organization and the hospital telehealth initiative, both aiming to improve consultation cost efficiency, including...
patients contained in “at risk” contracts, such as the Medicare Shared Savings Program. The out-of-institution payment model depends on financial agreements between referring and consulting institutions. The largest volume of video consultations occurred within program 1, where 20 neurologists across 10 subspecialties have participated since program initiation (August 2013). All patients had at least one initial office visit. About 150 encounters occurred for over 100 patients. From a consecutive sample of 94 consecutive encounters, 100% of respondents would recommend the program to family and friends. From a sample of 26 consecutive encounters, the median duration of the encounters was 15 minutes (range: 8–40). The median “saved” round trip travel distance and time to our hospital was 69 miles (range: 3–344) and 74 minutes (range: 10–336) per patient. 84% of encounters were general “check-ins,” 13% were triggered by a new event, and 5% were conducted for data reviews. The most common clinical conditions were: seizure (24%), headache (20%), cerebrovascular (12%), ALS (12%), other (12%), myopathy (8%), white matter disease (8%) and movement disorders (4%). 51% of the encounters resulted in a change in medication, 35% resulted in a behavioral change recommendation (e.g. diet modification), and 25% resulted in the order of an image or lab test. Follow-up plans included an office visit (42%), another virtual visit (33%), and no further visits (13%). Program 2 provides outpatient consultations to three internal medicine (one on-site, and two off-site) practices. Our teleneurology providers are on-call for these practices, providing same day video consultation between referring provider, patient, and consultant. Since it began in 2013, there have been 20 consultations, spanning a wide range of conditions, but dominated by headache referrals (55%). Program 3 provides same-day teleneurology inpatient consultations to an internal medicine hospitalist group in an underserved part of our state. Since it began in October 2012, there have been 21 consultations. Volumes increased after the initiation of a dedicated tele-medicine clinical coordinator at the referring institution site. Consultations also spanned a wide range of neurologic conditions. 95% of the patients remained at the referring institution, while 5% were transferred to our facility for tertiary level care.

Conclusions: All programs saw a full range of neurological conditions. The different programs called for different payment models and had different challenges for adoption and sustainability. Survey and encounter results indicated that program 1 visits impacted the care of our patients. Future studies and data collection will focus on patient outcomes.

Objectives
1. Understand new methods of telemedicine for neurological ambulatory setting patients and inpatients.
2. Understand practical process and economic challenges faced with these models.
3. Understand prospective neurological conditions amenable to these methods of telemedicine care.

ONLINE SPEECH TREATMENT FOR PARKINSON’S DISEASE IN THE HOME: A NONINFERIORITY RANDOMIZED CONTROLLED TRIAL

PRESENTERS AND CONTRIBUTING AUTHORS:
Deborah Theodoros, BSpThy, PhD, Professor of Speech Pathology, Anne Hill, BSpPath, PhD, Trevor Russell, BPPhysiotherapy, PhD
University of Queensland, Brisbane, Australia

Introduction: The speech disorder associated with Parkinson’s Disease (PD) is a chronic communication disorder prevalent in up to 90% of people with PD. Access to evidence-based speech treatment for people with PD presents a major challenge where distance, resources, physical mobility, and costs impede intervention in a timely manner. The primary aim of this study was to determine the validity of an online home-based intensive speech treatment for people with PD compared to conventional FTF intervention. As broadband connectivity in non-metropolitan areas may differ to those in metropolitan locations, a second aim of the study was to determine if online treatment outcomes differed according to location.

Methods: The study employed a single-blinded, prospective, randomized, controlled non-inferiority trial involving two independent groups. Group 1 (Metro Online) comprised participants living in a metropolitan area who received speech treatment online in the home while Group 2 (Metro FTF) consisted of participants who received treatment FTF. A third non-randomized independent group (Group 3 Non-metro Online) of participants outside the metropolitan area provided comparison with respect to location. Fifty-two participants were included in the study. The mean age of the cohort was 70.36 years (SD = 9.12). Thirty-one participants were randomized to either Group 1 (Metro Online) or Group 2 (Metro FTF). A total of 15 participants were allocated to Group 1 (Metro Online) and 16 participants were allocated to Group 2 (Metro FTF). Twenty-one participants were recruited to Group 3 (Non Metro Online). The assessment and treatment protocol involved two baseline assessments, 16 one hour sessions of speech treatment (LSVT®LOUD), followed by two post-treatment assessments. Perceptual (paired comparison and communication partner ratings), acoustic (vocal sound pressure level (SPL)), and quality of life measures (Dysarthria Impact Profile, PDQ-39) were used to evaluate treatment outcomes. The primary outcome measure was mean change in speech sound pressure level (SPL) during a 1.5 minute monologue task pre to post-treatment.

Results: For the primary outcome measure, the non-inferiority analysis for the metropolitan online and FTF treatment environments revealed the upper 95% confidence interval (3.70 dB) for the treatment difference was within the non-inferiority margin of ± 4.24 dB and zero. The non-inferiority of the online treatment modality was confirmed. Similarly, the non-inferiority analysis pertaining to location revealed that the upper 95% confidence interval (2.56 dB) for the treatment difference was within the non-inferiority margin of ± 4.24 dB and zero. A linear mixed model analysis identified a significant fixed effect for time (p < .001) but no significant group-time interaction effect (p = .791) indicating improvement pre- to post-treatment across the groups but no significant difference in mean change between the groups. For the secondary outcome measures, no significant group-time interaction effects were identified. Significant improvements pre- to post-treatment were identified in some, but not all acoustic, perceptual, and quality of life measures.

Conclusion: The results of the study supported the noninferiority of the online treatment of the speech disorder in PD in the home regardless of location.

Objectives
1. Describe a randomized controlled noninferiority clinical trial of a speech intervention.
2. Describe the online delivery of LSVT®LOUD into the home for Parkinson’s Disease.
3. Discuss the clinical implications of online speech treatment for people with PD.

DEVELOPING AN INTERDISCIPLINARY MODEL FOR TELEHEALTH IN A NURSE MANAGED HEALTH CENTER

PRESENTERS AND CONTRIBUTING AUTHORS:
Allen V. Prettyman, PhD, APRN, Director, Nurse Managed Health Center University of Delaware, Newark, DE, USA

As many as one million Americans live with Parkinson’s disease. Although there is currently no cure for Parkinson’s disease, research demonstrates that PD patients benefit greatly from multidisciplinary medical care. However, access to such care is limited outside of large urban settings. Despite recruitment attempts, Delaware does not have a Movement Disorder Center or a Movement Disorder Specialist (MDS). Many patients that are cared for by local neurologists are often referred to a MDS out of state for diagnosis and
recommendations for treatment. The usual wait time for such an appointment is nine months and the travel distance can be as much as 200 miles. Oftentimes, patients do not make the trip leaving them vulnerable to sub-optimal care. In response to the identified need for enhanced healthcare for Parkinson’s disease the University of Delaware Nurse Managed Health Center (NMHC) collaborated with Parkinson’s disease patients, and their families, to create a novel multidisciplinary Parkinson’s disease (PD) telehealth clinic which serves PD patients and their caregivers throughout Delaware providing much needed access to affordable, quality healthcare. To connect patients with a movement disorder specialist the PD clinic utilizes cutting edge telehealth equipment linked to a high-end, internet-based video network housed in the University of Delaware’s computing center. This helps to ensure that patient and provider interactions are of the highest quality, thus enabling the diagnosis, treatment, and ongoing management of Parkinson’s disease. The PD clinic also utilizes a state of the art electronic medical record to track and monitor patients’ physical and psychosocial status, as well as caregiver burden, mood and quality of life. This gives clinicians, patients, and caregivers unprecedented information on the progression of disease and effectiveness of their treatment regimen. Our healthcare delivery model will be shared and can be replicated in outpatient offices and clinics across the nation to enhance the lives of people living with Parkinson’s disease and other chronic diseases.

Objectives
1. Participants will learn the process used to develop an interdisciplinary patient centered telehealth clinic.
2. Participants will learn about integrating research and outcomes measurements into a telehealth clinic.
3. Participants will learn about the technology related to establishing a telehealth clinic.

MONDAY, MAY 4, 2015
4:15 pm–5:15 pm Monday, May 4, 2015

INDIVIDUAL ORAL
Session 26
Session Title: DELIVERING TELEICU SERVICES: IMPROVING CLINICAL, OPERATIONAL, AND FINANCIAL OUTCOMES
Track: Critical and Acute Care Room 402AB
MODERATOR: Yulun Wang, PhD, Chairman and CEO
InTouch Health, Santa Barbara, CA, USA

NONINVASIVE LUNG WATER DETERMINATION USING NOVEL RADIOFREQUENCY TECHNOLOGY: CLINICAL VALIDATION

PRESENTERS AND CONTRIBUTING AUTHORS:
Michael Jonas, MD1, Kent Volosin, MD2, Physician, Assaf Nini, MD1, Michal Shohat, DMD3, Nimrod Adi, MD4, Galia Karp, MD5
1Kaplan Medical Center, Rehovot, Israel, 2Big Sky Cardiology, Moorestown, NJ, USA, 3Kyma Medical Technologies, Los Altos, CA, USA

Pulmonary congestion/edema is an acute increase in extravascular lung water (LVW). No direct, reliable, simple, and non-invasive method is available for accurate assessment of LW. A small Kyma external patch device, which monitors LW by analyzing radiofrequency (RF) signals propagated through pulmonary tissue was tested. This study compared non-invasively determined RF Fluid (RFF) measurements with invasive assessment of extravascular lung water (EVLW) in ICU patients.

Methods: Patients in ICU with a clinical indication for invasive PICCO monitoring were studied. Kyma’s wireless patch was placed on the patients’ left chest. This patch emits low energy radiofrequency waves ( < 10 milliwatts) that reflect from the lung tissue back to the patch. These return signals can be used to estimate LW. Kyma’s RF determination was compared to invasive EVLW measurements from 36 patients (20 male; age 63 ± 13, range 27–90 years). Measurements of EVLW, cardiac output, systolic and diastolic BP, HR were recorded every 30 minutes.

Results: The Kyma patch demonstrated good usability and no safety concerns in the ICU environment. There were no patient or other ICU issues related to the RF energy or wireless transmission of data. A direct linear correlation (r = 0.86) between measurements of invasive EVLW and non-invasive RFF Index was found. RFF measurement sensitivity to LW volume change was 90ml, while the change in fluid content between normal and congested lungs historically ranges between 250–500ml. LW did not correlate with SBP, DBP, HR, CO or CI (range r = 0.12–0.54).

Conclusions: An externally applied patch using low energy radiofrequency waves to assess pulmonary congestion was tested in man. RFF measurements had excellent correlation to invasive standard measurement, demonstrating its potential use for high resolution thoracic fluid monitoring.

Objectives
1. Present data supporting non-invasive assessment of lung water levels in the ICU setting.
2. Demonstrate the safety and accuracy of this technology in a hospital environment.
3. Establish the use case for this non-invasive monitoring method: pulmonary congestion management in the ICU.
Results: 419 mobile cart activations for critical care support were initiated by RRTs and 417 completed (>99%). For recorded gender and age, 156 patients (49.8%) were male and 157 (50.2%) were female. Mean recorded age was 69 + 16 yrs (median 71 yrs). For 419 calls, the most common clinical findings were respiratory distress (133, 32%), altered mental status (94, 22%) and hypotension (45, 11%). The most common interventions were medication orders (159, 38%), laboratory studies (126, 30%) and patient monitoring pending previously arranged ICU transfer (110, 26%). No adverse patient events were reported. No technical issues were reported for 314 calls (75%). Cost avoidance data is summarized in Table 1. The addition of telecritical care support for calendar year 2012 increased cost avoidance from unnecessary ICU transfers ranging from by a mean of 58% above the 2009 baseline and for 2013 by a mean of 41% above the 2009 baseline.

Conclusion: Mobile teleICU is an effective means of delivering patient care while reducing critical care costs.

Objectives
1. Review data on the mobile critical care program.
2. Understand the clinical impact of linking teleICU with mobile platforms.
3. Recognize the financial impact of linking teleICU with mobile platforms.

HOW TO WORK WITH A TELEICU PARTNER, OPTIMIZING CLINICAL, OPERATIONAL, AND FINANCIAL OUTCOMES

PRESENTERS AND CONTRIBUTING AUTHORS:
Lou Silverman, MBA, Chairman and CEO
Advanced ICU Care, St. Louis, MO, USA

The operation of intensive care units (ICUs) represents some of the highest costs for hospitals and the highest mortality risks for patients. Research has shown that while ICU’s account for ten percent of hospital beds, they typically generate over thirty percent of a hospital’s costs. Consequently, the ICU’s performance has a significant impact on a hospital’s financial performance. In addition, the ICU’s clinical capabilities correlate with the hospital’s ability to support higher acuity service lines. With a scarcity of critical care specialists – and the increasing cost of recruitment and retention – teleICU is demonstrating clinical, operational and financial benefits which is leading a growing number of hospitals to evaluate and ultimately implement this solution. As with any new offering, thoughtful consideration is required in the selection of an appropriate teleICU partner as well as collaboration on program goals and the development of clinical best practices to achieve optimal outcomes for all stakeholders. Attaining the best performance from a teleICU partnership and creating a robust teleICU program requires a holistic approach to engagement. Specifically, the teleICU partner should demonstrate a clear and insightful understanding of the initial engagement steps, which involves structuring successful clinical partnerships with the critical care bedside teams. The needs, concerns, roles, and responsibilities of the bedside team must be addressed and incorporated into the operating plan. Obtaining bedside team buy-in and active engagement is a precursor to a successful partnership. A successful teleICU program extends the care clock with a 24/7 active engagement model, provides support and relief for the bedside staff, while providing an improved outcome from a clinical and operational perspective. However, a return on investment, or more appropriately, a return on partnership should not be measured in purely financial terms. Rather, in addition to financial measures, success should also be defined from a clinical outcomes perspective. Current research indicates that with an effective teleICU program, mortality rates will typically decrease and be sustained over prior rates and over APACHE predicted rates. Decreases in length of stay (LOS) are also consistently demonstrated and sustained, providing an improved clinical outcome. A teleICU program is governed in large part by partner collaboration, a consistent implementation of best practices and a joint commitment to enhancing patient outcomes. The financial benefits that accrue
ENABLING VIRTUAL VISITS TO THE ICU AT APOLLO HOSPITALS, CHENNAI, INDIA

PRESENTERS AND CONTRIBUTING AUTHORS:
Ganapathy Krishnan, MCH, FACS, PhD, President, Kevin Devasia, BE, MBA,
Yogesh Kumar, BE
Apollo Telemedicine Networking Foundation, Chennai, India

Introduction: Reducing physical visits to the ICU, contributes to reduction of ICU infection. Many ICU’s enforce a protocol of changing attire and scrubbing before entering the ICU. However relatives still wish to see their sick near and dear often and get constant updates. To bridge this void the I SEE U Service was conceptualized and implemented, enabling Virtual Video Visits from anywhere in the world.

Objectives: (1) To provide a highly secure, reliable, state of the art method to enable Virtual Video Visits from anywhere in the world, to authorized relatives and friends of an ICU patient, (2) To facilitate multi point VC with relatives, with duty doctor at the ICU patient’s bedside, for real up-time updates, and (3) To help physicians make additional professional visits virtually from home, office or while travelling and to directly visualize monitors in the ICU.

Methodology: Training sessions were initially conducted for all stakeholders. Billing was integrated with the HIS. An introductory I-SEE-U coupon was provided to every ICU patient’s relative during admission, detailing the following steps: Call Apollo Call Centre only from the registered mobile number (for security and privacy) to initiate the I See U Service, and agree on time of Virtual Visit (VV).

Once the VV has commenced the Apollo Call Center will enable an audio call with the duty nurse/duty doctor and if clinically permitted with the patient also.

After VV time is reconfirmed by ICU cubicle nurse, SMS and email will be sent to registered mobile number giving the OTP, specific to the cubicle camera, used in the URL (www.iseeu.apollo.net.in). OTP can be shared by registered mobile number and registered email giving the OTP specific to the cubicle camera.

The use of this information also enables both the provider and patient to decide on the best course of action based on expert consultation. Lastly this allows rural veterans access to the expertise of a university teaching emergency medicine department without leaving their local area, and adds support and education to the rural veterans in rural CBOCs serving veteran patients for emergency treatment and transfer decisions. Components of care include protocols, training, call routing based on acuity, medication and equipment adjuncts for care, and telemedicine equipment alternatives to adapt to the rural clinic operational structure and patient. This program gives rural veterans access to the expertise of a university teaching emergency department without leaving their local area, and adds support and education to the local providers dealing with a variety of complex emergency healthcare conditions.

As the largest integrated healthcare system in the U.S. with a comprehensive electronic health record, the VA offers multiple opportunities for collaboration between Emergency Medicine and Primary Care. Patients can present with complaints referable to an emergency department in many different locations given the wide geographic distribution of VA Community Based Outpatient Clinics (CBOC). The Department of Emergency Medicine at the State University of New York at Buffalo has been involved in the provision of emergency telemedicine care to over 45,000 patients across New York State for the last 15 years and recently became involved in providing emergency department services for the VA in Buffalo. This presentation will outline the application of lessons learned in providing emergency telemedicine services to supporting access to emergency care in rural CBOCs serving veteran patients for emergency treatment and transfer decisions.

Conclusions: With nominal charges, no consumable items, high level of privacy and security, increasing utilization and an “excellent experience,” Virtual Visits will become self sustaining.

Objectives
1. Understand necessity for enabling Virtual Visits in ICU.
2. Technical details of ICU Virtual Visits.
3. VAS which Virtual Visits to ICU provide.

TUESDAY, MAY 5, 2015
11:00 am–12:00 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL
Session 27
Session Title: IMPLEMENTING EMERGENCY CARE TELEMEDICINE TO SAVE LIVES
Track: Critical and Acute Care
ROOM: 402AB

MODERATOR: Ed Brown, MD, CEO
Ontario Telemedicine Network, Toronto, ON, Canada

IMPLEMENTATION OF EMERGENCY TELEMEDICINE IN A VA COMMUNITY-BASED OUTPATIENT CLINIC SETTING

PRESENTERS AND CONTRIBUTING AUTHORS:
David G. Ellis, MD, Chief, Emergency Medicine; Associate Professor, Clinical Emergency Medicine1, Paul J. Galantowicz, BS2,
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As the largest integrated healthcare system in the U.S. with a comprehensive electronic health record, the VA offers multiple opportunities for collaboration between Emergency Medicine and Primary Care. Patients can present with complaints referable to an emergency department in many different locations given the wide geographic distribution of VA Community Based Outpatient Clinics (CBOC). The Department of Emergency Medicine at the State University of New York at Buffalo has been involved in the provision of emergency telemedicine care to over 45,000 patients across New York State for the last 15 years and recently became involved in providing emergency department services for the VA in Buffalo. This presentation will outline the application of lessons learned in providing emergency telemedicine services to supporting access to emergency care in rural CBOCs serving veteran patients for emergency treatment and transfer decisions.

Components of care include protocols, training, call routing based on acuity, medication and equipment adjuncts for care, and telemedicine equipment alternatives to adapt to the rural clinic operational structure and patient. This program gives rural veterans access to the expertise of a university teaching emergency department without leaving their local area, and adds support and education to the local providers dealing with a variety of complex emergency healthcare conditions. The use of this information also enables both the provider and patient to decide on the best course of action based on expert consultation. Lastly this allows for more effective use of health care dollars, by properly triaging the veteran to the local and regional VA and non-VA care he/she requires at that time.

Objectives
1. Acquire an understanding of the goals of emergency telemedicine to VA CBOC.
2. Understand system requirements for the VA CBOC program.
3. Gain knowledge in emergency telemedicine systems.
TELETRIAGE FOR FIRST RESPONDERS AND EMERGENCY DEPARTMENTS

PRESENTERS AND CONTRIBUTING AUTHORS:
YiDing Yu, MD, Clinical Fellow1, Eugene Duffy, EMTP2, Brian B. O’Neil, EMTP2, Jake Kushkuley, EMTP3, Jason Tracy, MD2
1Brigham and Women’s Hospital, Boston, MA, USA, 2South Shore Hospital, South Weymouth, MA, USA, 3University of Massachusetts, Worcester, MA, USA

Introduction: First responder reports provide crucial information to Emergency Departments (ED), allowing doctors to mobilize critical resources ahead of patient arrival. However, standard calls via radio or telephone can be time-intensive, have variable audio quality, provide limited point of care data, and result in unreliable estimated time of arrival (ETA), leading to compromise in patient care.

Objective: To conduct a proof-of-concept implementation of a novel cloud-based teletriage platform for community first responders and ED providers at a Level 2 Trauma Center.

Methods: Twelve paramedics were trained in the use of either mobile or web software. The teletriage platform allowed paramedics to relay audio, photos, videos, EKGs, and clinical severity securely using a smartphone or Google Glass. ED physicians and dispatchers used a Web-based dashboard that provided a centralized summary of all incoming ambulance data. A retrospective chart review of all cases was conducted using de-identified data.

Results: Over the course of a 1-month implementation period, 28 pre-hospital entry notifications were sent by paramedics electronically using dedicated smartphones. In total, 1055 GPS coordinates were sent identifying the location of ambulances to dispatchers. Average duration of time from case start to arrival at the ED was 16 minutes. Critical cases (Priority Level 1) accounted for 37.5% of all cases sent. Priority 1 cases included multiple trauma, seizure, and heart attack. In addition to audio entry notification, 28 photos and ten 12-lead EKGs were sent.

Conclusion: We demonstrate that paramedics can use a novel cloud-based telemedicine platform on mobile devices to transmit real-time clinical reports, including photos and EKGs. In cases of heart attack, stroke, and major trauma, timely notification from first responders can allow EDs to mobilize life-saving interventions prior to patient arrival to improve patient outcomes. Future studies are needed to evaluate whether use of teletriage improves clinical outcomes, patient and provider satisfaction, and disaster preparedness.

Objectives
1. Understand the use case of teletriage for first responders and emergency departments.
2. Gain insights into helpful teletriage practices which may improve patient outcomes for heart attacks, strokes, and trauma.
3. Learn how teletriage can be implemented for community first responders and emergency departments.

COST-BENEFIT ANALYSIS OF AN E-AMBULANCE PROJECT IN KOCHI PREFECTURE, JAPAN

PRESENTERS AND CONTRIBUTING AUTHORS:
Masatsugu Tsuji, PhD, Professor1, Yoshihisa Matsumoto, MS2, Masaru Ogawa, PhD3
1University of Hyogo, Kobe, Japan, 2Graduate University for Advanced Studies, Tokyo, Japan, 3Kobe Gakuen University, Kobe, Japan

Objective: Obstacles for further implementation of e-Health are the legal framework, economic foundations of implementations, and other regulations. To overcome these, e-Health has to demonstrate that it promotes efficiency of medical services provision and enhances wellness of people. One measure is to prove its cost-effectiveness by comparing its benefits and costs, but measuring concrete benefits in monetary terms is analytically difficult. This study aims at evaluating the economic effect of an e-Ambulance project, or emergency telemedicine in the rural areas in Kouchi Prefecture, Japan. Ambulances equipped with ICT including cameras and an image transmitting system which enable to connect to doctors in the accepting hospital are focused on. Doctors can monitor a patient and prepare for necessary treatment prior to arrival. They thus save time and effort.

Data and Methods: The benefits of e-Ambulance to residents include direct services of being transferred to tertiary emergency hospital and indirect physiological effect such that residents feel more comfort since e-Ambulance is stationed closer to. In measuring benefit, the CVM (Contingent valuation method) is applied and WTP (willingness to pay) is used as an index of benefit of residents which is estimated from surveys to residents. CVM which has been widely adopted in the fields of health or environmental economics evaluates benefits in terms of WTP, which is the monetary amount that residents want to pay for receiving the service. The surveys were conducted to residents of three communities in the prefecture in June, 2014, and the number of respondents is 164. Questions were pertaining to WTP, effectiveness, experience of usage; and (d) properties such as age, gender, income, education, and health condition.

Results: Based on the surveys, the WTP estimated based on the logistic curve is JPY1,747 (USD174.70) per resident per year. The population of three communities is 36,147. Multiplying WTP by total population yields total benefits of the project per year; JPY63,148,089 (USD631,480.89). Since the project period is three years, the present value of three years’ benefits amounts to JPY175,243,694 (USD1,752,436.94). The total cost of the system consists of initial fixed and annual operating costs. The former covers that ICT hardware, ambulance, and software amounts to JPY231,459,775 (USD2,314,597.75). The latter contains salaries of ambulance crew, maintenance fees, gasoline for ambulances, and communications charges. The annual operational costs amount to JPY9,990,328 (USD99,903.28) and total operating costs over three years are JPY 150,332,453 (USD1,503,324.53). Therefore total cost is JPY 381,792,228 (USD3,817,922.28).

Conclusion: The B/C ratio over three years is 0.459; benefits are about half of costs. However, from the view of local governments which implement the project, they bear only operating costs, since initial costs are borne by the central government. The B/C ratio calculated is 1.166 indicating that benefits exceed its costs. Thus from the view of local governments, this project is favorable and worthy to implement. This B/C ratio obtained is similar to those estimated in our previous research on other e-Health project. These results indicate that WTP can be an indicator of potential effectiveness of regional health policy.

Objectives
1. Understand how to evaluate e-Health project.
2. See a good practice of m-Health which promote residents’ medical environment.
3. Help to apply ICT to promote residents’ health in the rural areas.

TUESDAY, MAY 5, 2015
1:15 pm – 2:15 pm Tuesday, May 5, 2015

PRESENTATION PANEL

Session 28
Session Title: NEUROSURGERY-ANEURYSM VIRTUAL VISITS: LINKING PROVIDERS TO PATIENTS IN HOME SETTINGS
Track: Critical and Acute Care Room 402AB
CONCURRENT ORAL PRESENTATIONS ABSTRACTS

MONDAY, MAY 4, 2015
8:00 AM–8:45 am Monday, May 4, 2015

HOW-TO PANEL

Session 31
Session Title: ESTABLISHING A PROGRAM TO REDUCE READMISSIONS AND COSTS IN THE AMBULATORY SETTING: A CALIFORNIA SUCCESS STORY
Track: Clinical Services Case Studies Room 409AB

PRESENTER: Kathleen Sullivan, RN, MSN, Vice President, Post Acute Services
Dignity Health, Santa Maria, CA, USA

PRESENTER: Krista Kelly, BSN, Account Manager
Philips Hospital to Home, Framingham, MA, USA

Background: Dartmouth-Hitchcock's Virtual Neurosurgery-Aneurysm Clinic offers patient care to be delivered remotely and is focused on improving the overall lives of the patients in the region. Patients are referred to the clinic and given instructions how to link with the customized video connection system. Once connected to the virtual waiting room, the patient previews educational video content which explains aneurysms in general, pathophysiology, risk factors-size, type, location, explaining the various different treatment options/procedures, and management approaches. Following this, the patient advances to their interactive video session with the surgeon, who explains the specifics about their condition, reviews imaging and other materials with the patient. Then the patient and the provider collaborate to determine the appropriate course of treatment for that individual case.

Summary: Establishing a programmatic structure for conducting patient encounters in their residential locations can enhance the delivery of services, improve outcomes, strengthen patient relationships, and generate a positive fiscal impact. This project was implemented because the value proposition offered a significant benefit; the clinical requirements for an effective encounter were detailed and assessed; the technical and logistical elements were able to be assembled readily; and the evaluation process facilitates continued improved. This approach is being employed on a repeated basis for each project within the Center for Telehealth.

Objectives
1. Understand the process for conducting a value assessment of telehealth project
2. Understand the clinical elements associated with virtual visits for aneurysm cases
3. Gain an understanding about the use of a video connection center system

MONDAY, MAY 4, 2015
11:00 am–12:00 pm Monday, May 4, 2015

PRESENTATION PANEL

Session 32
Session Title: CUTTING EDGE RESEARCH INNOVATIONS AND HIGHLIGHTS: WHAT DOES THE EVIDENCE SHOW?
Track: Clinical Services Case Studies Room 409AB

CO-MODERATORS: Peter Yellowees, MBBS, MD, Director of Informatics University of California, Davis, Sacramento, CA, USA
Ronald C. Merrell, MD, FACS, Professor of Surgery Virginia Commonwealth University, Richmond, VA, USA
John Whited, MD, MHS, Associate Chief of Staff, Research and Development at Department of Veterans Affairs Durham VA Medical Center, Durham, NC, USA

This panel will focus on a fast paced presentation of the latest research findings in as many areas of teledicine as possible over the previous year. Each of the highly experienced academic moderators from different medical backgrounds will present two papers. The papers will be those that they
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consider to be the most influential research or policy initiatives, or disruptive technologies or processes described in the previous year either published in the scientific literature, or publically available on the internet.

Objectives
1. Increase the understanding of research innovations and highlights throughout the field of telemedicine that occurred during 2014
2. Increase the understanding of how new technologies are expanding access to best practices through telemedicine and of the similar themes and issues affecting multiple disparate health disciplines
3. Provide an engaging and fast paced summary of research highlights in many areas of telemedicine

MONDAY, MAY 4, 2015
1:15 pm–2:15 pm Monday, May 4, 2015

PRESENTATION PANEL

Session 33
Session Title: EXPANDING SURGICAL TELEMENTORING OUTCOMES AND EXPERIENCE IN THE ERA OF ACCOUNTABILITY IN HEALTHCARE
Track: Clinical Services Case Studies Room 409AB

MODERATOR: Andrew Watson, MD, Vice President, International Division; Medical Director, Telemedicine
University of Pittsburgh Medical Center, Pittsburgh, PA, USA

PRESENTER: James Rosser, MD, FACS, General Surgeon
Celebration Health, Celebration, FL, USA

PRESENTER: Todd Ponsky, MD, FACS, Pediatric Surgeon
Akron Children’s Hospital, Akron, OH, USA

PRESENTER: Steven S. Rothenberg, MD, Pediatric Surgeon
Rocky Mountain Hospital for Children, Denver, CO, USA

PRESENTER: Todd Ponsky, MD, FACS, Pediatric Surgeon
Akron Children’s Hospital, Akron, OH, USA

Surgical telementoring has two primary forms: remote training of known surgeons and an emergency “help” button to allow for immediate intra-operative assistance. This interactive live video telemedicine modality holds tremendous potential in the changing era for healthcare that focuses on patient safety and physician accountability.

Objectives
1. Provide an overview of the different forms of telementoring.
2. Discuss the use of telementoring to provide ongoing instruction in minimally invasive surgery.
3. Learn about the potential significance that telementoring plays in increased patient safety and physician accountability.

MONDAY, MAY 4, 2015
3:00 pm–4:00 pm Monday, May 4, 2015

PRESENTATION PANEL

Session 34
Session Title: eTUMOR BOARDS: BEST PRACTICES AND LESSONS LEARNED
Track: Clinical Services Case Studies Room 409AB

MODERATOR: Alexander G. von Bormann, MSc, MBA, Operations Administrator
Mayo Clinic, Rochester, MN, USA

PRESENTER: Sara Blouin, MS, Associate Project Manager
Mayo Clinic, Rochester, MN, USA

PRESENTER: Charles Erlichman, MD, FACP, FRCPC, Professor & Deputy Director of Clinical Research
Mayo Clinic, Rochester, MN, USA

PRESENTER: Julie Hobbs, PT, DPT, PhD, Operations Manager
Mayo Clinic, Rochester, MN, USA

PRESENTER: Angela Mathew, BS, RN, MBA, Director of Clinical Operations, Department of Surgery
University of Minnesota Physicians, St. Paul, MN, USA

Background: Mayo Clinic provides innovative and high value care to patients from across the world. Mayo Clinic has strategic partnerships with members of the Mayo Clinic Care Network (care network), which includes over 30 affiliated institutions in the United States and Mexico. Through these relationships, as well as the multiple Mayo Clinic facilities in five states in the U.S., Mayo Clinic impacts numerous patient lives through onsite and telehealth healthcare delivery mechanisms.

The American College of Surgeon’s Commission on Cancer recognizes that tumor boards are an essential component of cancer care. eTumor boards are multispecialty conferences in which patients with challenging cancer diagnostic and treatment needs are discussed and options are considered through telehealth technology. A key strategy for Mayo Clinic is to collaborate with care network members to enhance local care thereby keeping patients close to home. In alignment with this strategic initiative and to enhance collaborative care across the Mayo Clinic Enterprise, Mayo Clinic Rochester hosts multidisciplinary eTumor boards. Technology enhanced platforms facilitate synchronous discussions of patients with complex cancer conditions in six different tumor types. Cases are presented by onsite Mayo Clinic providers as well Mayo Clinic and care network providers who participate remotely. Current Mayo Clinic eTumor Boards include breast, colorectal, lung, genitourinary, and hepatobiliary, and lymphoma covering approximately 70% of the types of cancers in the United States. Boards consist of medical oncologists, radiation oncologists, radiologists, pathologists, and surgeons, and others as relevant to the case. A highly structured and streamlined process that includes electronic transfer of protected health information and materials is utilized for submitting and receiving patient cases. This system provides relevant information for case preview and enables physicians to efficiently discuss diagnostic and treatment considerations during the board.

Outcomes/Discussion: Mayo Clinic eTumor Boards served approximately 180 patients during the first half of 2014. In addition to Mayo Clinic remote sites, 15 care network institutions have participated remotely, and each board averages approximately 25 participants on site and up to 25 participants off site. Mayo Clinic eTumor Boards are valuable to both healthcare providers and patients. Internal and external stakeholder feedback indicates high satisfaction with Mayo Clinic eTumor Boards; the multidisciplinary approach to patient care through telehealth technology has undoubtedly impacted many lives. During this interactive panel discussion, the audience receives key lessons learned, best practices, value based outcomes, and impactful patient stories. Processes for patient case submission and review, as well as technological and audiovisual components required to produce Mayo Clinic eTumor Boards will be discussed.

Objectives
1. Describe at least five best practices critical for eTumor board development.
2. Summarize at least three high value outcomes of eTumor boards.
3. Analyze practice readiness for establishing eTumor boards.
CONCURRENT ORAL PRESENTATIONS ABSTRACTS

MONDAY, MAY 4, 2015
4:15 pm–5:15 pm Monday, May 4, 2015

INDIVIDUAL ORAL

Session 35
Session Title: NOVEL APPROACHES FOR REMOTE RETINAL SCREENING
Track: Clinical Services Case Studies Room 409AB

MODERATOR: Edward Chaum, MD, PhD, Plough Foundation Professor
University of Tennessee, Memphis, TN, USA

THE USE OF CROWDSOURCING TO RAPIDLY GRADE FUNDUS PHOTOGRAPHS FOR DIABETIC RETINOPATHY

PRESENTERS AND CONTRIBUTING AUTHORS:
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Andrea C. Villanti, MPH, PhD1, Jennifer L. Pearson, MPH, PhD1,2
Thomas R. Kirchner, PhD1, Ingrid E. Zimmer-Galler, MD1
Chirag P. Shah, MD, MPH1,4, Omesh P. Gupta, MD, MBA2

1Johns Hopkins University, Baltimore, MD, USA, 2Wills Eye Hospital, Philadelphia, PA, USA, 3Schroeder Institute for Tobacco Research and Policy Studies, Legacy, Washington, DC, USA, 4Ophthalmic Consultants of Boston, Boston, MA, USA

Methods: Crowdsourcing has been used in many contexts to harness distributed human intelligence for the completion of small tasks including image categorization. Our hypothesis is that crowdsourcing can be used as a rapid, accurate method for fundus photography grading. An interface for fundus photo classification was developed for the Amazon Mechanical Turk (AMT) crowdsourcing platform. Nineteen expert-graded images were posted for grading by Turkers, with 10 repetitions per photo for an initial proof-of-concept (Phase 1). Turkers were paid $0.10 per image. In Phase 2, one prototypical image from each of the 4 grading categories received 500 unique Turker interpretations. Fifty draws of 1-50 Turkers were then used to estimate the variance in accuracy derived from randomly drawn samples of increasing crowd size to determine the minimum number of Turkers needed to produce valid results. In Phase 3, the interface was modified to attempt to improve Turker grading. In Phase 4, 400 images from the MESSIDOR public dataset of non-mydratic fundus photos were posted using the refined interface from Phase 3, asking graders to categorize the images as normal or abnormal. The main outcome measure was proportion of images with correct grading by Turker and expert/gold-standard score.

Results: Across 230 grading instances in the normal vs. abnormal arm of Phase 1, 187 images (81.3%) were correctly classified by Turkers. Average time to grade each image was 25 seconds, including time to review training images. With the addition of grading categories, time to grade each image increased and percentage of images graded correctly decreased. In Phase 2, area under the curve (AUC) of the receiver-operator characteristic indicated that sensitivity and specificity were maximized after 7 graders for ratings of normal versus abnormal [AUC = 0.98]. With improvements to the interface in Phase 3, correctly classified images by the mean Turker grade in 4-category grading increased to a maximum of 52.6% from 26.3%. In Phase 4, Turkers graded 274 out of 400 (68.5%) of images correctly. Excluding the first two MESSIDOR disease categories, level 1 (<5 microaneurysms [MA]) and level 2 (<15 MA or <5 hemorrhages), percent correct increased to 80.9% with a sensitivity of 92.4% and specificity of 78.0%. Four out of 53 cases (7.5%) of level 3 (>15 MA or ≥ 5 hemorrhages or neovascularization) retinopathy were missed.

Conclusions: With minimal training, the AMT workforce can rapidly and correctly categorize fundus photos of diabetic patients as normal or abnormal when moderate to severe levels of disease are present, though further refinement of the methodology is needed to improve Turker ratings of the degree of retinopathy. That worker accuracy was preserved using a different dataset than that with which the interface was developed is a critical validation. Images were interpreted for a total cost of $1.10 per eye. Crowdsourcing may offer a novel and inexpensive means to reduce the skilled grader burden in telemedicine programs, and increase screening for diabetic retinopathy.

Objectives
1. Acquire an understanding of prior uses of crowdsourcing.
2. Learn about the application of crowdsourcing to diabetic retinopathy telemedicine.
3. Develop an understanding of future applications of crowdsourcing in teleophthalmology.

TELEDIABETIC RETINOPATHY SCREENING IN CHINA

PRESENTERS AND CONTRIBUTING AUTHORS:
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The prevalence data shows that DM prevalence in China is 11.6% (114 millions) of adults, among whom 30% will have DR. Glaucoma prevalence in rural Guangdong is nearly 3%. The E-network system, which is fully automated, is designed to serve as a model for DR and glaucoma care in rural China. Its key functionality is to support comprehensive eye examinations for all persons aged > 40 years, and has four main elements:

1. EMR (Electronic Medical Record), which records the comprehensive eye examination results and fundus pictures of patients at 10 rural county hospitals comprising the CREST (Comprehensive Rural Eyecare Service and Training) network, allowing monitoring of physician examination completeness.
2. Telemedicine network, through which the fundus pictures of all 10 rural hospitals are transmitted to a grading center at ZOC (Zhongshan Ophthalmic Center), which can determine if the diagnosis carried out by the rural eye doctors is accurate.
3. Automated SMS reminders: The EMR automatically send SMS messages to patients 1 week and 1 day prior to their follow-up appointments, to maximize long-term compliance.
4. Calendar system, for scheduling follow-up examinations, as this scheduling capacity is currently not available in rural hospitals in China, and is crucial for monitoring of chronic eye disease.

After piloting the system for an year at ten rural hospital, we have seen 10 patients/day/hospital (who were eligible to receive comprehensive examinations (aged >40 years), among which 10% patients needed referrals to the training medical teams from ZOC for further laser treatment or surgery at the rural hospital.

Objectives
1. Setting up telemedicine based diabetic retinopathy screening in large through put locations
2. Gain knowledge about telemedicine software implementation for large through put screenings
3. Understand the image reading issues
Background: The incidence of diabetes in rural America is 17% higher than in urban settings, with the rural counties in the southeast having the highest prevalence of disease. The high prevalence of health disparity communities in this region, where healthcare access, services, and resources are typically scarce makes diagnosis and management of diabetic complications such as diabetic retinopathy (DR) particularly problematic. Treatment for DR is available; our challenge lies in finding a cost-effective approach to identifying those who are at the highest risk of vision threatening disease. Non-image clinical data (metadata) has been shown to be relevant to DR incidence and severity in addition to glycemic and blood pressure control. These studies suggest that management of diabetic eye disease may be enhanced through efficient data mining and analysis, reducing the need for equipment and referrals by identifying those patients who are at highest risk of vision loss.

Objectives: The primary goal of this study was to correlate DR disease states in a retinal image dataset with specific patient metadata profiles, using non-image clinical and contextual data to identify patient profiles that are highly correlated with DR presence, trajectory, and progression. We used Bayesian analytical and PCA methods to provide the framework for developing multi-dimensional outcome correlations to predict which patients were most likely to have DR.

Methods: Under a University of Tennessee IRB-approved protocol, we collected and anonymized historical retinal image and metadata sets from over 800 patients in collaboration with the Delta Health Alliance (DHA), a nationally recognized model for the implementation of telehealth and evidence-based medical practice in rural communities in the Delta. Retinal images were obtained and graded by a Retina expert for presence and severity of DR. Defined metadata profiles were also obtained from these patients using the TRIAD telehealth network in primary care settings.

Results: We used Bayesian network approaches to define conditional independence relationships and structures between metadata variables of interest and the distribution of DR severity. As expected, not all clinical features provided differentiating evidence of disease outcomes in patients. Significant correlations were determined using principle component and linear discriminant analysis. These statistical feature analysis methods identified correlations between observations of disease duration, age and disease impact, and identified a window of time during the natural history of the disease during which DR was most likely to occur.

Conclusions: We performed predictive modeling and Bayesian analysis of the clinical metadata to identify patients at risk of DR due to specific co-morbidities in the metadata. With more comprehensive longitudinal histories and datasets we predict that we will be able to apply this approach to predict the likely window of time and other metadata features which are predictive of disease detection, the enhancement of screening outcomes and efficiencies.

Objectives
1. Describe the application of metadata analytics to telemedical screening programs.
2. Describe the implementation of a telehealth program for health disparity populations.
3. Evaluate potential opportunities for data analytics in telehealth programs.
**CONCURRENT ORAL PRESENTATIONS ABSTRACTS**

**Tuesday, May 5, 2015**

**3:00 pm–4:00 pm Tuesday, May 5, 2015**

**Indirect Oral**

**Session 38**

**Session Title: IMPLEMENTING SUCCESSFUL CLINICAL SPECIALTY PROGRAMS: BURNS, INFECTIOUS DISEASES, AND GENETICS**

Track: Clinical Services Case Studies  Room 409AB

**Moderator:** Richard S. Bakalar, MD, Managing Director, Advisory Services; Specialist in Healthcare Clinical Intelligence and Telehealth, Global Center of Excellence for Health

**KPMG, LLC, Denver, CO, USA**

**Telehealth + mHealth = Triple Aim Success**

**Presenters and Contributing Authors:**

Taylan Bozkurt, MBA, Operations and Financial Specialist, Department of Surgery

Massachusetts General Hospital, Boston, MA, USA

Massachusetts General Hospital’s Division of Burn Surgery is one of two adult burn centers verified by the American Burn Association in the state of Massachusetts. As such, the catchment zone for burn patients spans the entire region of New England, which is approximately equal to the square mileage of Washington state. Over the past sixteen months, the practice has incorporated telerounding as a standard of care for patients discharged to Spaulding Rehabilitation Hospital, developed ten AMA PRA Category 1 Accredited multidisciplinary on-line lectures and began performing follow-up consultations at Cooley-Dickinson hospital in Western Massachusetts. This fall the practice will be launching two mHealth pilots that will enable patients to proactively manage their conditions from home and our clinicians will begin performing at-home clinical and psychiatric consultations.

The telerounding program has successfully demonstrated a reduction in length of stay and re-admissions, while eliminating costs associated with patient transport between the two institutions. It has increased both inpatient and outpatient capacity, while increasing physician efficiency.

In performing follow-up patients at community hospitals, the practice has primarily focused on the patient impact and experience. We’re measuring the delta on time, distance, and money spent on travel by patients that receive follow-up care in their local community opposed to our main campus in downtown Boston. To ensure we maintain our standard of care for follow-ups performed at distance, we schedule clinical education at MGH’s main campus for those providers who will be performing baseline care, such as debridement and dressing changes. We also incorporate our on-line education seminars to enhance the baseline understanding of basic thermal injury and wound care.

With mHealth, the practice is looking to study the impact that remote patient monitoring can have on the necessity and frequency of follow-up appointments, both in the clinic setting and through synchronous telehealth communication. Frequent follow-up appointments are necessary for patients with low-risk burns and chronic wounds. However, these visits are often burdensome for patients and their care team as they lead to time away from school and/or work, resulting in unnecessary and avoidable financial burdens.

When each modality of telehealth and mHealth are incorporated into care delivery, it leads to true continuity in patient care and enables a clinical service to achieve the triple aim of population health, experience of care and per capita cost of care.
TELEGENETICS IN THE UNITED STATES: A NATIONAL SURVEY

PRESENTERS AND CONTRIBUTING AUTHORS:
Sylvia Mann, MS, NCC Telegenetics Workgroup Chair
1National Coordinating Center for the HRSA Regional Genetic Service Collaboratives, Bethesda, MD, USA, 2Western States Regional Genetic Services Collaborative, Honolulu, HI, USA

Background: A priority for the Health Resources and Services Administration (HRSA) funded National Coordinating Center for the Regional Genetic Service Collaboratives (NCC) is to develop activities to increase access to genetic and newborn screening services to underserved populations. One strategy that has been proposed to expand access is to use telegenetics. In order to determine who is currently using telegenetics, how often, and how they are using it, the NCC Telegenetics Workgroup developed and implemented a national survey of genetic service providers.

Methodology: A survey was developed by the NCC Telegenetics Workgroup. The survey was tested within each of the seven Regional Genetic Service Collaborative and revised until a final survey was approved by the workgroup. The final survey was administered on-line using SurveyMonkey. The survey was advertised by e-mail and listervs of clinical geneticists, genetic counselors, metabolic geneticists, and public health genetics providers. Respondents with a high number of telegenetics sessions were contacted by telephone for a follow-up interview to collect more information about their practice.

Results: There were 233 respondents to the survey with 35% (81) reporting that they use telegenetics in their practice. The majority of telegenetics users are genetic counselors. Most respondents use dedicated videoconferencing equipment for video consultations. Not surprisingly, the most common type of visits are for outpatient evaluation and management and prenatal patients.

Discussion: Information about telegenetics providers and their practices across the United States will be presented. Next steps to expand telegenetics also will be discussed.

Objectives
1. Describe how telegenetics is used to provide genetic services in the United States.
2. Discuss how to increase access to genetic services for underserved populations using telegenetics.
3. Gain insight into how one subspecialty is utilizing telemedicine in various platforms and settings.

TELEGENETICS IN THE UNITED STATES: A NATIONAL SURVEY OF GENETIC PROVIDERS

PRESENTERS AND CONTRIBUTING AUTHORS:
Kyle Hall, BS, Telehealth Program Coordinator
Nebraska Medicine, Omaha, NE, USA

This presentation will demonstrate how Nebraska Medicine improved patient care in infectious disease environments by implementing the best use of available telemedicine technology. The technology became a natural fit to help our staff overcome some of the communication challenges that come from delivering care in the bio containment unit. Use of the technology directly benefited the patient experience, and also became a seamless extension of the staff that used it to deliver care. Implementing our telemedicine technologies in the bio containment unit has given us an improved perspective on our approach to patient care in isolation environments.

Objectives
1. Teach the audience how our staff overcame some of the challenges presented by PPE equipment and the infectious disease care environment.
2. Educate the attendees on our best practices with the technology.
3. Encourage the attendees to think about how we can use these telemedicine technologies (and the technology they already own) in distant locations to improve the safety of healthcare workers around the world.
CHRONIC DISEASE TELEHEALTH COMMERCIAL AND BUSINESS MODEL

Some of the key learning’s from our consumer survey about the behaviors are very unique to Indians with chronic diseases Other stakeholders in consideration during this survey are Health Insurance Companies, Medical Device Manufacturers (SMD), Retail Pharmacies, Diagnostic Centers, etc.

**Services:** 40–50% of respondents were very interested in the chronic disease management services, and a pilot was conducted to elicit the interest levels and the impact of the services in India.

**Pilot Studies:** A multi-pronged approach that included a choice of medical systems, diet and exercise supported by call center (manned by doctors, dietitians) focused on disease management improved several diabetes-specific outcomes in a pilot study conducted at APTA healthpod, Bangalore, India. An intervention included the following, improved diabetes-specific outcomes in 126 patients in a period of 12 months.

- Tendency to discount the value of improved health in the future
- Propensity to drop out of programs even after paying for them

Some of the key learning’s from our consumer survey about the behaviors are very unique to Indians with chronic diseases Other stakeholders in consideration during this survey are Health Insurance Companies, Medical Device Manufacturers (SMD), Retail Pharmacies, Diagnostic Centers, etc.

**Objectives**

1. Gain insights into the chronic disease management opportunities and challenges in India.
2. Better understanding of the chronic disease management market in India.
3. Understanding the operations of CDM services.

**CONCURRENT ORAL PRESENTATIONS ABSTRACTS**

**THE EXPERIENCE OF THE TELEHEALTH NETWORK OF MINAS GERAIS, BRAZIL**

**PRESENTERS AND CONTRIBUTING AUTHORS:**

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Maria Beatriz Moreira Alkmim, MD, MSc1, Milena Marcolino, MD, PhD1,
Cristiane Guimarães Pessoa, MSc1, Daniel Neves, BSc1,
Leonardo Bonisson, BSc1, Andre Antunes, MD1, Clareci Cardoso, PhD1,
Daniel Cunha, MD, PhD1, Fabio Nunes, MD, PhD1, Elminio Resende, MD, PhD1,
Adelson Resende, MD1, Antonio Luiz Pinho Ribeiro, MD, PhD1

1Universidade Federal de Minas Gerais, Belo Horizonte, Brazil, 2Telehealth Network of Minas Gerais, Belo Horizonte, Brazil

**Background:** In Brazil, specialized healthcare is concentrated in large cities turning difficult and expensive the referral of patients from primary care settings in small municipalities. Telehealth can be an effective method to increase access to specialized healthcare, especially for geographic remote areas.

**Objectives:** To report a successful and sustainable experience of a large scale telehealth service in support of primary care health professionals, the Telehealth Network of Minas Gerais (TNMG).

**Methods:** Minas Gerais is a state in the Brazilian southeast with 20 million inhabitants and 853 cities. The network was implanted by public funds mainly from the state government and research development agencies to connect specialists from six public universities to primary health caregivers in remote municipalities. The project began in 2006 with 82 remote points and was expanded several times, reaching 722 municipalities and 938 remote points in 2014. The main activities developed by the service were tele-electrocardiography (EKG) and teleconsultations. Primary-care professionals can use the network’s website to address questions in areas such as medicine, nursing, dentistry, physiotherapy, nutrition, pharmacy, psychology and audiology.

Satisfaction of health professionals was systematically evaluated. A detailed cost evaluation was performed in order to allow the calculation of return of investment of the service.
CONCURRENT ORAL PRESENTATIONS ABSTRACTS

**Results:** Near 100 employees work at TNMG, considering technical-administrative staff and clinical team, including several specialists, to attend the EKGs exams and teleconsultations. Since 2006, the activities realized by the TNMG exceeded 1.8 million EKGs and 60,000 teleconsultations (figure). Currently, the TNMG is performing the average of 2,000 EKGs and 40 teleconsultations per day. In 2014, the mean percentage of satisfaction was 96%. In relation to EKGs, about 60% of the total indicated normal data. The teleconsultations questions were 82% associated with a clinic case (most of them, pharmacological treatment - 39%) and 18% were theoretical questions. Cost analysis identified that the activities averted potential referrals for specialized healthcare services by 80%. Considering these data and calculating the total activities realized in these 8 years, the return on investment was 3.8 for every US dollar invested. The TNMG maintains international cooperation agreement with America Latina, European and African countries and currently coordinates several research projects.

**Conclusion and Discussion:** Based on the network experience, some factors in- nates several research projects.

**Conclusions:**

- The TNMG facilitates universality, equality and integrality in the Minas Gerais public healthcare system as well as contributes to improved care quality.
- TNMG facilitates universality, equality and integrality in the Minas Gerais public healthcare system as well as contributes to improved care quality.
- TNMG facilitates universality, equality and integrality in the Minas Gerais public healthcare system as well as contributes to improved care quality.
- TNMG facilitates universality, equality and integrality in the Minas Gerais public healthcare system as well as contributes to improved care quality.
- TNMG facilitates universality, equality and integrality in the Minas Gerais public healthcare system as well as contributes to improved care quality.

**Objectives**

1. To report a successful and sustainable experience of telehealth in support of primary care health professionals, in Brazil.
2. To describe the telehealth system role as tool in aiding healthcare professionals in remote areas.
3. To describe the cost analysis of the telehealth activities.

**MONDAY, MAY 4, 2015**

**11:00 am–12:00 pm** Monday, May 4, 2015

**PRESENTATION PANEL**

**Session 40**

**Session Title:** COMMUNITY-BASED TELEMENTAL HEALTH: PARENT-CHILD INTERACTION THERAPY IN LOS ANGELES COUNTY

**Track:** Mental Health  Room 306AB

**MODERATOR:** Anthony Joseph Urquiza, Ph.D., Director

**University of California, Davis Medical Center, Sacramento, CA, USA**

**PRESENTER:** Susan Timmer, PhD, Director of PCIT Training

**University of California, Davis Children’s Hospital, Sacramento, CA, USA**

**PRESENTER:** Lindsay Forte, BA, BS, PCIT Training Coordinator

**University of California, Davis Children’s Hospital, Sacramento, CA, USA**

**PRESENTER:** Deanna Boys, MA, PCIT Data Manager

**University of California, Davis Children’s Hospital, Sacramento, CA, USA**

**INTRODUCTION:** UC Davis PCIT Training Center has been training therapist to conduct Parent-Child Interaction Therapy (PCIT) since 2000. Training for this evidence-based intervention for young children with disruptive behavior problems was traditionally conducted in monthly day-long visits to agencies. Recent innovations in telehealth technology allowed this training to occur via videoconferencing. Trainers could hear and see therapists as they coached parents playing with their children from the other side of a two-way mirror, and provide coaching/consultation to the trainee therapists as they worked. This presentation describes the PCIT program and the plan for implementing PCIT in Los Angeles County, including a description of the multiple uses of telehealth technology in training, the effects of telehealth on training and sustainment, and preliminary outcomes.

**MODEL DEVELOPMENT AND TESTING:** Although the mental health field has long developed effective evidence-based treatments, there has been a lag in implementation of these treatments to community mental health settings. This presentation describes development of a Trainer-of-Trainees (ToT) model for the implementation of PCIT. The model provides for the training of a select group of therapists within a community mental health agency, who then provide training for additional therapists within this agency. These trainers, identified as ToTs, then provide a means to sustain treatment within the agency and become a resource for new PCIT therapists. Such a model requires a sophisticated and highly effective training model to train ToTs and provide ongoing support for their future training efforts in the sustainment of their program. This project utilized a mixed-model approach to train ToTs and provide this ongoing support. This model included:

- Basic Web-based training information
- Comprehensive online training materials
- In vivo training (via telemedicine) of ToTs training clients (~90% of training is conducted via telemedicine; coaching therapists while they are treating clients)
- Strategic on-site training
- Advanced group training of ToTs

With $20,000,000 funding from First5LA, the UC Davis PCIT Training Center and L. A. County Dept. of Mental Health recently initiated the largest PCIT implementation effort ever undertaken. The goals of this effort were to train 100 community mental health agencies with four identified therapists at each site over a period of five-years. PRESENTATION: This presentation will provide an overview of PCIT, a description of the training model, the effects of telehealth on training, and preliminary outcome data. Specifically, both process and outcome data will be presented on the effects of telehealth technology on training and implementation. We also discuss the effects of telehealth on the sustainment of fidelity of new trainees to the evidence-based PCIT protocol, which we believe will be instrumental in insuring long-term treatment effectiveness.

**Objectives**

1. Attendees will have an understanding of the value of a Trainer-of-Trainers implementation model for comprehensive implementation.
2. Attendees will be able to describe three benefits for a competency-based Trainer-of-Trainers implementation model.
3. Attendees will describe the three benefits of a telemedicine-based in vivo training model (use of telemedicine technology to provide live coaching of trainees).

**MONDAY, MAY 4, 2015**

**1:15 pm–2:15 pm** Monday, May 4, 2015

**INDIVIDUAL ORAL**

**Session 41**

**Session Title:** USING MOBILE APPS IN YOUR PSYCHIATRIC PRACTICE

**Track:** Mental Health  Room 306AB

**MODERATOR:** Elizabeth Brooks, PhD, Assistant Professor

**University of Colorado Denver, Aurora, CO, USA**

**Objectives**

1. Attendees will have an understanding of the value of a Trainer-of-Trainers implementation model for comprehensive implementation.
2. Attendees will be able to describe three benefits for a competency-based Trainer-of-Trainers implementation model.
3. Attendees will describe the three benefits of a telemedicine-based in vivo training model (use of telemedicine technology to provide live coaching of trainees).
The current recommended medical practice for communicating with patients who speak a language other than English is the use of live human interpreters to bridge both language and cultural gaps. While medical interpreting certification is available, no national mandate requiring such certification exists, and thus not all clinics or hospitals require it. And, in-person medical interpreters are not always available depending on health system resources. Even with the availability of live interpreters by phone, the use of such services increases the encounter time required for both provider and patient. One potential area of exploration to improve communication is the use of automated computing language services. Machine translation, text-to-speech, and voice dictation services are technologies that have been around for decades. More recently, automated consecutive interpreting apps, such as Google Translate, combine the aforementioned technologies. These have the potential to be used in clinical settings. We propose a new clinical workflow that allows healthcare providers to use an app that automatically transcribes and translates a patient’s spoken words into English captions. This will allow health professionals who don’t speak the patient’s language to understand the patient interview. This transcription and translation technology will be applied towards both (1) patient videos for use within an asynchronous telepsychiatry workflow, and (2) Google Glass heads-up display devices for mental health professionals during patient interviews. Our team’s goal is to boost access for minority patients and bridge the language disconnect.

**Objectives**
1. To review current literature on foreign language interpretation in medical and psychiatric patient-doctor encounters.
2. To understand the clinical process of using automated machine translation software versus other modalities using human interpreters.
3. To demonstrate the feasibility of an automated machine translation process using Google Glass and mobile apps.
IMPROVING ACCESS TO PSYCHIATRY SERVICES IN RURAL NURSING HOMES THROUGH TELEMEDICINE

PRESENTERS AND CONTRIBUTING AUTHORS:
Leena Krishnaswami, MS, CEO
CareNow Services, Roswell, GA, USA

Psychiatric care is difficult to obtain for nursing home residents in rural areas. Due to mobility issues, and shortage of trained geriatric mental health providers, rural nursing homes receive limited or no access to psychiatry services. This leads to costly in-patient admissions/emergency room visits, increased use of anti-psychotics, and higher transportation costs. Telepsychiatry is a cost effective and acceptable alternative for nursing home staff, residents, and providers. CareNow Services received a Civil Money Penalty grant from the Center for Medicare and Medicaid Services to improve access and quality of care via telemedicine for nursing facilities located in underserved areas of Georgia. Telepsychiatry services were implemented and evaluated using criteria that included timeliness of the consult, acceptance of the process and technology, preference for telemedicine, access and quality of provider, quality of care and the use of anti-psychotics. Key stakeholder perspectives included nursing home residents and families, nursing home staff, and providers. The operational aspects were transitioned to the individual nursing homes that are now independently managing telepsychiatry programs. This session will focus on reviewing key findings from the year long telepsychiatry program in a rural nursing home setting.

Objectives
1. Understand the challenges associated with access to mental health and quality of care for geriatric residents at rural long term care facilities.
2. Learn about the successes/barriers to the adoption of telemedicine in rural nursing homes.
3. Discuss the lessons learned from the telepsychiatry program.

ASYNCHRONOUS TELEPSYCHIATRY: FEASIBILITY AND SUSTAINABILITY IN PRIMARY CARE

PRESENTERS AND CONTRIBUTING AUTHORS:
Peter Yellowlees, MBBS, MD, Professor of Psychiatry¹, Michelle Burke Parish, MA¹, Steven Chan, MBA MD¹, Alberto Odor, MD¹, Anna-Maria Iosif, PhD¹, Jay Shore, MD¹, Don Hilty, MD¹
¹University of California, Davis, Sacramento, CA, USA

We are undertaking a five-year randomized controlled clinical trial funded by a $2.5 million grant from the Agency for Healthcare Research and Quality to study whether viewing digitally recorded interviews of patients (English and Spanish speaking) to assess them, and guide their mental health treatment as delivered in primary care, is more cost-effective, and results in better patient outcomes and satisfaction, than in person telepsychiatry evaluation. The study also seeks to refine the technical approaches to asynchronous telepsychiatry in a clinical setting, identify which are the most clinically and cost-effective techniques to use, examine patient and provider satisfaction, and whether particular patient groups benefit more than others. We will present examples of the consultations and early results of the first 80–100 patients enrolled in this long-term study that promises to develop and prove the efficacy of an entirely new model of mental health practice: asynchronous telepsychiatry. Transcultural psychiatry made simple –asynchronous telepsychiatry as an approach to providing culturally relevant care.

Objectives
1. To describe the technical and clinical integration of Synchronous and Asynchronous Telepsychiatry into a large multi-site healthcare system.  
2. To demonstrate the feasibility and sustainability of telepsychiatry to implement a consultation liaison model of care within a large healthcare system.
3. Understand how health services research methods may be applied to telemedicine.
The delivery of psychiatric services in the future. We anticipate that telepsychiatry will be an increasingly important means for satisfaction with the care provided. We have also collected data on our program who provide ongoing psychiatric care to eight remote clinical sites using established best practice guidelines. Our telepsychiatry program also incorporates advanced psychiatric residents as providers of care, as we anticipate that telepsychiatry will be an increasingly important means for the delivery of psychiatric services in the future.

Objectives
1. Identify telepsychiatry as a practical solution to deliver psychiatric care to underserved areas and understand how to establish a telepsychiatry clinic using established best practice guidelines.
2. Identify potential tools for assessing patient and practitioner outcomes.
3. Consider models for involvement of advanced psychiatry trainees in the provision of care via telepsychiatry.

TUESDAY, MAY 5, 2015
11:00 am–12:00 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL

Session 44
SESSION TITLE: ADVANCING PRIMARY CARE THROUGH TELEPSYCHIATRY
Track: Mental Health Room 306AB

MODERATOR: Robert L. Caudill, BA, BS, MD, Associate Professor
University of Louisville, Louisville, KY, USA

TRANSLATING MODELS OF INTEGRATED BEHAVIORAL HEALTHCARE IN PRIMARY CARE FOR TELEHEALTH

PRESENTERS AND CONTRIBUTING AUTHORS:
Jay Shore, MD, MPH, Director of Telemedicine Depression Center1, Alexander Vo, PhD2, Jeannette Waxmons, PhD3, Marshall Thomas, MD4
1 University of Colorado Denver, Denver, CO, USA, 2Colorado Access, Denver, CO, USA, 3University of Colorado Denver, Aurora, CO, USA, 4University of Colorado Denver, Aurora, CO, USA

Access to appropriate and timely behavioral health treatment is challenging. Lack of behavioral health access causes disproportionate illness burden for those with behavioral health problems with an even greater impact on healthcare disparities for minority and rural populations. Substantial literature has demonstrated the benefits of the integration of behavioral health treatments into primary care settings. The impetus for care integration arises from the recognition that the majority of patients with mental illness do not receive treatment, access to behavioral healthcare providers is limited, and the primary point of contact for all patients including those with behavioral health issues within the healthcare system is in primary care settings. There are multiple definitions that describe the provision of behavioral health treatments in primary care settings, these include the terms such as “coordinated,” “co-located,” and “integrated” to describe a continuum of collaboration and integration of behavioral health treatment into primary care settings.

Models of integration range from remote infrequent education and consultation to fully integrated and available care. Disease specific models have been shown to improve outcomes but are limited in the scope of conditions addressed. Broader models of integrated psychiatric care embedding teams of behavioral health providers in primary care settings have demonstrated success at providing treatments that realize cost savings and increased access and quality of care. This approach, however, is limited to practices large enough to generate sufficient workload volume to support the behavioral health created efficiency within this model. Telebehavioral health, in the form of live interactive video conferencing, has a burgeoning evidence base over the past two decades in its ability to increase access and quality of care specifically in primary care. Initial projects focused on the provision of direct consultation between primary and behavioral healthcare providers with recent studies and programs piloting models of integrated telebehavioral health treatments into primary care. This presentation will review the prominent models for behavioral health treatments in primary care settings as well as the evidence and models to date from telebehavioral projects in this area. A synthesis between models of telebehavioral health and integrated behavioral treatment in primary care will be offered. A framework for assessing the strengths, weaknesses and capability of integrated care models for translation into telebehavioral health treatments, programs and services will then be presented. This framework will include a step-wise and systematic approach for assessment, adaptation, translation and implementation of integrated behavioral treatment in primary care via telebehavioral health. Important next steps for research and project development will be proffered to support continued advancement of the promise of telebehavioral health to improve access and quality of treatments in primary care settings.

Objectives
1. The audience will become familiar with prominent models for behavioral health treatments in primary care settings and the evidence and models for telebehavioral programs in this area.
2. The audience will learn a framework for assessing the strengths, weaknesses and capability of integrated care models for translation into telebehavioral health.
3. The audience will consider important next steps need for research and project development to support continuing advancement of telebehavioral health promise to improve access and quality of treatments in primary care.
INTEGRATION OF TELEPSYCHIATRY INTO PRIMARY CARE: BETTER CARE, BETTER HEALTH, AND LOWER COST

PRESENTERS AND CONTRIBUTING AUTHORS:
Barb Johnston, MSN, MLN, CEO
HealthLinkNow, Sacramento, CA, USA

HealthLinkNow (HLN) was granted a $7.7m Center for Medicare Services Innovation Grant in 2012 to allow it to use telemedicine to meet the three aims of the Accountable Care Act- BETTER HEALTH, BETTER CARE, LOWER COSTS. HLN’s network of psychiatrists and other healthcare providers, supported by virtual care navigators, have expanded telepsychiatry services across Wyoming, Montana and Washington State primarily targeting Medicaid and Medicare recipients in rural and underserved communities. HLN has used its fully integrated and HIPAA compliant telepsychiatry platform which includes videoconferencing, scheduling, practice management and electronic health records in one seamless online clinic solution. This grant has allowed our telepsychiatrists to work collaboratively with primary care physicians and their clinic staff to treat patients in over 60 clinics across all three states and to meet Federal “Meaningful Use” requirements while practicing fully online. This presentation will include data from thousands of consultations on health outcomes, our high rates of patient and provider satisfaction, and an analysis of the return on investment for implementing an integration of psychiatry via telemedicine into primary care on a large scale. The plan for continued growth and expansion of our patient-centered model of care and the vital role of care navigators for the success of this model of care will be described in detail. The main focus of this presentation will be on the lessons learned and the practical implementation challenges that have been overcome within a primary care environment as telepsychiatry services have been scaled up over the past year. These include change management, training, workflow management and technology adoption issues within the local clinics, and more broadly licensing, credentialing and reimbursement issues across state lines. Telemedicine is proving to be highly effective for providing mental health services direct into primary care clinics and is scalable in a private sector environment.

Objectives
1. Describe the return on investment of implementing telepsychiatry into primary care.
2. Understand the role of a virtual care navigator.
3. Achieve a better understanding of change management issues of a scalable patient centered model of mental healthcare.

AN INTEGRATED, SUSTAINABLE MODEL OF CONSULTATION BASED TELEPSYCHIATRY IN PRIMARY CARE

PRESENTERS AND CONTRIBUTING AUTHORS:
Michelle B. Parish, MA, C.Phil, Research Project Manager, Doctoral Student, Steven R. Chan, MD, MBA, Peter Yellowlees, MD, MBBS
University of California, Davis, Sacramento, CA, USA

Mental health management, particularly prescribing and managing psychiatric medications, by primary care providers (PCPs) is a rapidly growing practice in the United States. While more than 70% of mental healthcare patients in the U.S. receive their psychiatric medication through their PCP, two-thirds of PCPs report poor access to mental health services for patients and limited support for treating patient mental health needs from specialists such as psychiatrists. As a result of poor access to specialists as well as limited psychiatric training for treating PCPs, the mental healthcare needs of those reliant on primary care to provide mental health services may not be adequately met. Coordinating patient care between psychiatrists, mental health specialists and PCPs is an essential step in improving patient care and mental health outcomes for those receiving their mental healthcare in primary care. Health IT applications such as telepsychiatry may overcome many of the barriers to accessing mental health specialty consultation in primary care at the patient, provider and administrative level. In this study we seek to evaluate psychiatric consultation to primary care for patients receiving mental health management in primary care using telepsychiatry and the consultation-liaison model of care. We will present a sustainable model of synchronous and asynchronous telepsychiatry consultation to primary care that we have developed (in collaboration with the Center for Health and Technology and IT department at UC Davis) and integrated within the existing health IT infrastructure in the UC Davis Health System.

Objectives
1. Understanding of the technical integration of Synchronous and Asynchronous Telepsychiatry into a large multi-site healthcare system utilizing the existing technological infrastructure.
2. Knowledge of the feasibility and sustainability of telepsychiatry to implement a consultation liaison model of care within a large healthcare system.
3. How to use the EMR-EHR to conduct telepsychiatry consultations in primary care.

TUESDAY, MAY 5, 2015
1:15 pm–2:15 pm Tuesday, May 5, 2015

PRESENTATION PANEL
Session 45
Session Title: CULTURAL “FIT” AND SELECTION OF THE “BEST” MODEL FOR TELEMENTAL HEALTH
Track: Mental Health Room 306AB

MODERATOR: Rick Mendoza, MD, Director, Telepsychiatry
Los Angeles County Department of Mental Health, Los Angeles, CA, USA

PRESENTER: Rick Mendoza, MD, Director, Telepsychiatry
Los Angeles County Department of Mental Health, Los Angeles, CA, USA

PRESENTER: Peter Yellowlees, MD, MBBS, Professor & Vice-Chair
University of California Davis, Sacramento, CA, USA

PRESENTER: Edward Kaftarian, MD, Director, Telepsychiatry, CDRC
California Department of Corrections & Rehabilitation, Sacramento, CA, USA

PRESENTER: Don Hilty, MD, Professor and Vice-Chair of Education, USC
USC Department of Psychiatry, Los Angeles, CA, USA

In California, video teleconsulting (VTC) is emerging as a powerful tool to enhance cultural competency. Across the state, in systems of care that leverage this technology, ethnic minority patients and patients with unique cultural requirements are gaining access to mental health professionals better equipped to meet their needs. Federal, state and local regulatory agencies mandate mental healthcare organizations to provide culturally competent care. Among the various standards that have been put forth to accomplish this goal is the provision of Language Assisted Services (LAS). Emphasis has been placed on quality interpreter services, both on-site and telephonic, but the literature reveals limitations in this modality, especially when compared to the care that can be provided by a trained mental health professional that is linguistically and culturally matched to the client. In the context of a large correctional system, the concept of culturally competent mental health care has a much broader meaning and encompasses more than language and ethnicity. Prison culture is influenced by gang affiliation among inmates, along with the correctional officers and healthcare staff that comprise the workforce. And while LAS remain important in the prison setting, inmate specific themes such as malingered and expression of sexuality create additional challenges. Conference attendees will learn about various California Telemental health initiatives aimed at enhancing cultural...
competency. The California State Department of Corrections employs a large bank of telepsychiatrists to deliver mental health services across 10 different institutions. Since the care provider is operating from a distance, he/she can adopt a more objective and neutral stance, staying clear of the sometimes challenging culture that can develop in correctional facilities. In Los Angeles County (LAC), the nation’s largest public mental health system has created an urban telemental health network among its directly operated ambulatory care clinics. Over 30 languages are spoken by the psychiatrists who are employed by the LAC Department of Mental Health and this affords the opportunity to provide live interactive, linguistic and culturally matched mental health care, regardless of where the client might reside. In central California, the University of California at Davis has received NIMH funding to research its telemental health program efforts aimed at providing asynchronous case consultations to the ethnically diverse rural population of the Central Valley. Any telemental health business enterprise contemplating providing culturally competent care as part of their service delivery package would do well to conduct a survey to accurately assess the particular ethnic and cultural needs of their connecting endpoints.

Objectives
1. To identify common a platform, method and approach that facilitates clinical care to culturally diverse populations, including urban, rural and forensic settings.
2. To demonstrate the potential advantages of stepped models of care - using synchronous video, asynchronous telepsychiatry (ATP), in-person, phone/email and other technologies – to provide culturally-specific care.
3. To facilitate the growth of telemedicine to urban, rural, international and other settings when congruent with the ATA mission.

TUESDAY, MAY 5, 2015
3:00 pm–4:00 pm Tuesday, May 5, 2015

PRESENTATION PANEL

Session 46
Session Title: IMPLEMENTING SAFETY RISK MANAGEMENT AND TELEBEHAVIORAL HEALTH FOR SPECIAL POPULATIONS
Track: Mental Health Room 306AB

MODERATOR: Eve-Lynn Nelson, PhD, Professor and Director
University of Kansas Medical Center, Fairway, KS, USA

PRESENTER: Eve-Lynn Nelson, PhD, Professor and Director
University of Kansas Medical Center, Fairway, KS, USA

PRESENTER: David D. Luxton, PhD, Research Health Scientist
Naval Health Research Center, San Diego, CA, USA

PRESENTER: Marlene M. Maheu, PhD, Executive Director
TeleMental Health Institute, San Diego, CA, USA

Background: Safety planning is a critical and necessary component of competent and ethical telebehavioral health in supervised and unsupervised/home settings. Safety planning involves identifying steps and procedures for addressing situations that present a risk to the safety of clients/patients and/or other persons such as family members or clinical staff members during the course of telebehavioral health services. These risks may include the harm to self or others, worsening of symptoms that may contribute to heightened risk (e.g., suicidal ideation) as well as medical emergencies. The anxiety and concern about liability issues among individual practitioners and healthcare organization can be a barrier to telehealth adoption.

Objectives: The presenters will first present a general telepractice safety plan framework for videoconferencing services. They will then apply the model to pediatric, military/veteran, and chronically ill populations. They will highlight services to the home, including mobile videoconferencing.

Findings: The presenters will highlight practical, step-by-step information about developing and implementing safety procedures and emergency protocols across settings (e.g., hospitals/clinics, private practice, other practices). Treatment session checklists will be emphasized in order to decrease teleprovider anxieties. They will also underscore the importance of knowledge of the local setting, including civil commitment procedures and local emergency response services. They will then apply the model to different populations using case-based approaches to engage the audience. Child psychologist Dr. Nelson will present pediatrics specific examples, emphasizing ongoing collaboration among the therapist, the patient/family, the care setting, and the community. She will describe additional safety planning in school and home settings, as well as considerations around mandated reporting responsibilities. Dr. Luxton will describe established standard operating procedures (SOP) in military and Veterans Affairs settings. He will draw from safety plan lessons learned in a home-based depression treatment study. He will illustrate determining risk level and developing a detailed safety plan with the patient, including identification of safe coping strategies, working with the patient to remove lethal means, and involving support persons in the plan. Dr. Maheu will present safety-related examples from telebehavioral health services with chronically ill patients, in both individual and group settings. She will focus on safety concerns specific to private practice clinicians. She will conclude with an eating disorder case that underscores the safety needs of behavioral health populations with acute health concerns.

Conclusion: The presenters will conclude with a question/answer period focused on the legal, operational, and clinical issues related to the safety plan framework in supervised and unsupervised settings.

Objectives
1. Acquire an understanding of a telepractice safety plan framework for videoconferencing services.
2. Gain insights into applying the telepractice safety plan framework with pediatric, military/veteran, and chronically ill populations.
3. Achieve a better understanding of implementing safety procedures and emergency protocols across clinician settings (e.g., hospitals/clinics, private practice, other practices).

TUESDAY, MAY 5, 2015
4:15 pm–5:15 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL

Session 47
Session Title: DEVELOPMENT AND EXPANSION OF TELEPSYCHIATRY PROGRAMS
Track: Mental Health Room 306AB

MODERATOR: Carolyn Turvey, PhD, Professor, Department of Psychiatry
University of Iowa, Iowa City, IA, USA

PRESENTERS AND CONTRIBUTING AUTHORS:
Matthew D. Jeffreys, MD, VA Texas Valley Coastal Bend
Jennifer A. Wood, PhD
1VHA, San Antonio, TX, USA, 2VHA, Harlingen, TX, USA

A CLINICAL MODEL FOR TELEPSYCHIATRY SERVICES

Background: Telepsychiatry provides needed mental health services such as pharmacotherapy and psychotherapy to patients in geographically remote areas. Patients benefit from more accessible care and endorse high levels of
satisfaction with telepsychiatry. Research shows equivalent outcomes for a variety of treatment modalities through telehealth, and these may be delivered at lower cost and with higher treatment fidelity than those provided in person to patients in rural areas. This presentation focuses on the development of a telepsychiatry service for the lower Rio Grande Valley of Texas serving four Veterans Health Administration (VHA) clinics during fiscal year 2014. Implementation of the program will be described along with program monitoring, strengths, challenges, and lessons learned.

Program Description: The telepsychiatrist provides services to 4 VA clinics using a Tandberg EX 90 unit at the patient site and at the provider site. Staff is trained in telehealth and emergency procedures, and patients provide informed consent for the telehealth clinical encounter. The electronic health record allows documentation consistent with on-site care as well as a full pharmacy and lab menu. Instant messaging is used to communicate between the patient site and the provider site. Patients have the option of using a secure patient portal to message the psychiatrist between appointments. The primary services provided are psychiatric assessment and pharmacotherapy, though additional services such as prolonged exposure therapy for PTSD, education, and supportive therapy are provided also. Quality and outcome measures include symptom self-report scales recorded in the electronic medical record and a patient satisfaction survey recorded at each encounter.

Outcomes: Initial establishment of the program required approximately one month due to required computer access, credentialing, training, and staff and referral source education. Demographically, the group is predominantly male and Hispanic. The most common diagnoses are posttraumatic stress disorder, major depressive disorder, and alcohol use disorder. Patients endorsed high levels of satisfaction with telepsychiatry based upon the customer satisfaction surveys across the 4 clinical sites for differing service eras. Many of the patients demonstrated improvements in their clinical rating scales, though others did not which is consistent with clinical practice.

Discussion: Telepsychiatry proved to be a viable alternative for providing psychiatric services to veterans in rural areas. Patients expressed high satisfaction with the services provided, and demonstrated clinical improvement in some cases. Additional advantages included improved continuity for patients moving from one site to another within the system and the flexibility of moving the psychiatric services to needed clinics based upon staffing needs. Facilitative factors included a staff accustomed to providing telehealth services, the electronic health record, and high quality video teleconferencing (VTel) equipment. Barriers included logistical issues related to equipment availability and working through legal questions about VTel versus face-to-face services. This telepsychiatry service could be implemented at other sites needing specialty mental health services.

Objectives
1. Identify essential elements of a successful telepsychiatry program.
2. Describe patient outcomes and satisfaction for telepsychiatry.
3. Increase knowledge of facilitating factors and barriers to telepsychiatry.

Telebehavioral health, in the form of live interactive video conferencing, has promise as a tool to facilitate integrated care between behavioral and medical treatments while decreasing overall medical costs. This is especially salient for rural and underserved populations who already face challenges in access to quality and timely behavioral health services. The University of Colorado’s Depression Center in partnership with the Department of Family practice has implemented a telepsychiatry service pilot to refine practices and funding models for integrated telepsychiatry services. The pilot, which began in 2014, virtually embeds psychiatric providers into an existing integrated care team at a large local primary care practice. The service uses a cloud-based virtual telemedicine platform that is a real-time, video-based treatment Multi-Point Telemedicine platform specifically built for behavioral care integration/collaboration into primary care. The psychiatric providers offer three services which include: 1) E-consults, Utilizing secure email to provide brief consultation and support psychiatric medication adjustments and questions to PCPs; 2) Direct Psychiatric Care: Provide direct psychiatric care and evaluation including co-consultations to patients as part of and coordinated with the overall care team; 3) Consultations: Direct provider to provider, provider to team consultations around behavioral health issues. This presentation will provide a structured overview of the process used to development and implement this service to guide others in developing similar programs. These steps include needs assessment, technology integration, workflow integration, and development of an array of potentially sustainable funding models. Lessons learned to be presented include virtual integration components and both success and challenges in workflow adaptation will be presented. Initial outcomes form the service including service use and the impact this use on broader medical utilization across the clinic will be discussed. The demonstration clinic has been funded by a collaboration of healthcare plans and organizations. The funding model for this service is driven by the supposition that telepsychiatric services in the pilot clinic will demonstrate significant cost savings through decreased and more appropriate medical service utilization. Current costs and utilization data will be presented for the clinic and correlated with the funding model supposition. This information will inform an exploration of long-term sustainability of integrated telebehavioral health based on current structural model and its implications for healthcare funders.

Objectives
1. The audience will learn about the structure, development and implementation of the University of Colorado Depression Center’s Integrated Care Pilot project intended to provide telepsychiatry into a primary care setting.
2. The process of embedding telebehavioral health consults and direct care efficiently and effectively into the systemic workflow of a primary care clinic is a core element in the development of successful integrated care.
3. The audience will learn about the programmatic, clinical and economic outcomes of the pilot with emphasis on components that lend themselves to ongoing sustainability within the current healthcare funding climate.

UNIVERSITY OF COLORADO DEPRESSION CENTER INTEGRATED CARE PILOT: LESSONS IN TELEPSYCHIATRY FOR PRIMARY CARE

PRESENTERS AND CONTRIBUTING AUTHORS:
Jay Shore, MD, MPH, Director of Telemedicine Depression Center1, Alexander Vo, PhD2, Christopher Schneck, MD1, Jacqueline Calderone, MD1, Corey Lyon, MD1, Shandra Brown Levey, PhD1, Frank DeGruy, MD2, Marshall Thomas, MD1
1University of Colorado Anschutz Medical Campus, Aurora, CO, USA
2Colorado Access, Denver, CO, USA

There is a growing recognition of the importance of integrating behavioral health treatments into primary care settings. Untreated and undertreated behavioral health issues increase cost burdens on the overall medical care system. Telepsychiatry can be a profit center for all participants, patients, hospitals, clinics, and providers; however, to do so requires building a system that has the right incentives directed at the right players. For years, telepsychiatry has been dependent upon grant funding, foundation support or charity care funding in order to survive. However, the past few years have seen increasing reimbursement for telepsychiatry, both by government and commercial payors. In addition, by bridging the market between underserved patients and

NOT JUST SUSTAINABLE BUT ALSO STICKY: HOW TO BUILD TELEPSYCHIATRY PROGRAMS THAT DELIVER 200% FINANCIAL ROI AND ACHIEVE 85% PATIENT FOLLOW-UP RATES

PRESENTERS AND CONTRIBUTING AUTHORS:
Samar Malik, MBA, CEO
1DocWay, New York, NY, USA

Telepsychiatry is a profit center for all participants, patients, hospitals, clinics, and providers; however, to do so requires building a system that has the right incentives directed at the right players. For years, telepsychiatry has been dependent upon grant funding, foundation support or charity care funding in order to survive. However, the past few years have seen increasing reimbursement for telepsychiatry, both by government and commercial payors. In addition, by bridging the market between underserved patients and
under-utilized hospital beds, telepsychiatry can be used to create competitive advantages for hospitals willing to participate. The environment has been primed for telepsychiatry to take off. The right business model now exists to promote the sustainable use of telepsychiatry to improve access and outcomes. These models are driven by two key economic factors: firstly, delivering telepsychiatry can be reimbursed, helping cover the costs of delivering care into underserved communities; secondly, providing telepsychiatry can deliver considerable downstream value to providers in both fee-for-service and at-risk payment models. At-risk providers benefit from the considerable clinical benefits demonstrated through telepsychiatry, including reduced ED usage and inpatient hospitalizations by patients who have access to telepsychiatry. In doing so, we have importantly seen a level of stickiness and patient engagement that demonstrates the model’s sustainability. Eighty-five percent (85%) of the 12,000 patients we have treated come back for follow up visits. Clinics renew monthly contracts at a 98% rate, and increase provider utilization 50% year over year. Our proposed model has treated tens of thousands of patients in 8 states and delivered considerable ROI to its users. Building a hub-and-spoke model of telepsychiatry that focuses on reimbursement has created over $400,000 in new revenue, at an ROI over 133% for the hub hospitals delivering these services. Given the opportunity to treat new patients (83% of our patients were not seeking any services prior to telepsychiatry), create new revenue, and expand footprint, provider systems now have the opportunity do well by doing good through telepsychiatry. Telepsychiatry no longer has to be a subsidized or charitable endeavor.

**Objectives**

1. Build telepsychiatry programs that financially and clinically reward all stakeholders.
2. Ensure patients receive consistent follow-on and emergency care.
3. Invest in telepsychiatry as a profit center, without grant funding.

**MONDAY, MAY 4, 2015**

8:00 am–8:45 am Monday, May 04, 2015

**INDIVIDUAL ORAL**

**Session Title:** LEARNING OPPORTUNITIES FROM LARGE SCALE TELEMEDICINE INITIATIVES

**Track:** Successful Business Strategies **Room** 408A

**MODERATOR:** Nancy Vorhees, RN, MS, Chief Administrative Officer
Inland Northwest Health Services, Spokane, WA, USA

**PRESENTERS AND CONTRIBUTING AUTHORS:**
David Willis, PBDM, MBA, Manager, Telepsychiatry–Telemedicine
Program HSC, Umesh Jain, MD, PhD, MEd
Hospital for Sick Children, Toronto, ON, Canada

**Background:** The Hospital for Sick Children (HSC) is a World Health Organization Center of Excellence and the main tertiary care pediatric facility for the Province of Ontario (the largest and most populous province in Canada) and a teaching hospital for the University of Toronto. As over 80% of the population live along the border to the U.S., the rest of the province is sparsely populated making service delivery costly and transportation difficult. Considerable evidence points to the cost-effectiveness of using a publicly funded telepsychiatry to reach remote areas and to the utility of assessing and treating patients and families via this portal. This is largely the result of significant improvements in broadband speed, technical advances, camera optics and the acceptance of this medium to the public. But what’s the difference if the client is 1,000 miles away or 10,000 miles away? Or why stop at just mental health agencies and not to peripheral services (e.g., schools, children’s welfare services, youth justice facilities etc)? As long as the remote site is technically supplied, then there is no obstacle in service delivery. Therefore it was a natural extension to take HSC Tele-Link Mental Health program out of it’s major mental health hub to both other public service providers and to international clients. Moreover, expanding the service was profitable.

**Objectives:** After over 15 years of rapid expansion, Tele-Link Mental Health service has begun expansion plans to outside of its normal territory, both to healthcare organizations and others, including territorial governments and regions and service organizations. This paper summarizes the infrastructure, governance policies, privacy issues, growth strategies and limitations in this expansion. It also addresses populations and private organizations that would want to pay for the services that are being promoted and how that new pool of money can be accessed and redistributed to increase the depth of the service.

**Findings:** a) Publicly funded organizations inherently seem to trust other publicly funded organizations and seem willing to pay for services if made available - is there a case for moving outside this circular funding model? b) Technical support is an important ingredient to ensure the effectiveness of the operation and to ensure credibility of service providers. c) The capital outlay for initial infrastructure (before profit realization) can be prohibitive for private enterprises or smaller service providers so outsourcing to a larger organization can be cost effective so publicly funded programs should consider this option. d) the Continued Medical Education (CME) service provision can be a profitable revenue model to international clients.

**Conclusions:** A publicly funded telepsychiatry service has the ability to create a for-profit model of revenue generation to which it can fund existing resources but can also expand services to other markets if the appropriate infrastructure is in place.

**Objectives**

1. See public funded projects as self-sustaining by using a business model for profit.
2. Expand their market for services by recognizing untapped needs.
3. Drive future expansion by creating a broader infrastructure.

**CHILDREN’S HOSPITAL LOS ANGELES’ GLOBAL TELE-EDUCATION PROGRAM**

**PRESENTERS AND CONTRIBUTING AUTHORS:**
Stuart Siegel, MD, Director, Center for Global Health, Ryan Navarro, MHA, Cristina Aquino, RN², Mae-Fay Koenig, MPH¹, Silvio Vega, MD²
¹CHLA, Los Angeles, CA, USA, ²CHLA-LFF International Telemedicine Program, Los Angeles, CA, USA

**Background:** Children’s Hospital Los Angeles established a tele-education program based on the needs of medical faculties and residents in selected international countries. Through our efforts in Puerto Rico and Panama with our partnership with the Lopez Family Foundation, we have been able to successfully deliver the most advance and most up to date pediatric medical knowledge and practices to physicians in these countries. The physicians participating in our tele-education programs can use this information to provide better care and ultimately improve the health of children in their respective countries.

**Methods:** The Lopez Family Foundation International Telemedicine Program offers a variety of tele-education programs that meet the needs of both practicing physicians and medical students in Puerto Rico and Panama. Our pediatric educational lectures and radiology case conferences connect
CONCURRENT ORAL PRESENTATIONS ABSTRACTS

pediatric and radiology residents respectively to our once a month lecture from CHLA whereas our key note lectures, also held once a month, are geared more for the medical staff, specialists, fellows and attendings. The topics, including the corresponding learning objectives, for the lectures and conferences are chosen by our partners based on the need of the residents and the medical staff. Some of the topics that have been provided to date include virtual intensive care unit, Kawasaki disease, and neonatal infections to name a few.

Results/Benefits: Since we started our tele-education program offerings to our partners in Puerto Rico and Panama, we have given over 50 lectures and seen an excellent attendance rate from all the institutions that we are working with. In fiscal year 2014 (July 2013 to June 2014), we had over 300 physicians attended our lectures from Puerto Rico and over 450 physicians attended from Panama. In this fiscal year, we hope to increase those numbers by 10%. In addition, we have seen high level of satisfaction from participating physicians as well as the medical leadership from our partner institutions. Speakers/lecturers at CHLA have also been very supportive and enthusiastic about sharing their expertise with our partners.

Challenges: Funding is always going to be the main challenge for those who want to start and sustain a tele-education program as it allows organization to secure the necessary resources to implement and operate a tele-education program. Other challenges we have experienced to date include language barrier, internet connectivity for remote/les developed areas and environmental factors such as rain, lightning, thunderstorms, etc.

Summary: Telehealth is an effective way in delivering medical education to practicing physicians and medical students in other countries. In our experience from our international telemedicine program and other tele-education services, we have seen a tremendous benefit to current and future healthcare providers and the impact in the care they can provide to their patients. Our program also creates new opportunities in bidirectional academic and expertise exchanges between the parties involved. We hope to follow similar approach as how we originally established the program so we can continue to meet the medical education needs of our current and future partners.

Objectives
1. Gain insights on CHLA and Lopez Family Foundation’s tele-education program.
2. Achieve a better understanding on key requirements for implementing a tele-education program.
3. Obtain an understanding on the logistical and operational aspects of a tele-education program.

ARMY TELEHEALTH: A GLOBAL OPERATING COMPANY MODEL

PRESENTERS AND CONTRIBUTING AUTHORS:
Colleen B. Rye, PhD, Chief, Telehealth Service Line
U.S. Army, Office of the Surgeon General, Falls Church, VA, USA

Employing an Operating Company Model (OCM) framework is a tool to improve efficiencies and value while ensuring common standards and processes across organizational units. In 2013, the U.S. Army Medical Command deployed an OCM for its global Telehealth (TH) operations across 30 countries and territories, 18 time zones, and over 25 specialties. Lessons learned from implementation and continued refinement of Army TH’s OCM will be covered, with an emphasis on the business aspects of deployment. Topics will include innovative incentives and payment methods for TH, value-based healthcare approaches, and expansion plans for future synchronized, enterprise growth.

Objectives
1. Achieve an understanding of managing global Telehealth business operations.
2. Acquire insights into how to deploy an Operating Company Model for different Telehealth modalities.

3. Gain insights into innovative payment methods employed for Telehealth in a large integrated healthcare system.

MONDAY, MAY 4, 2015

11:00 am–12:00 pm Monday, May 04, 2015

HOW-TO PANEL

Session 58
Session Title: BENEFITS AND DRAWBACKS OF DIFFERENT TELEMEDICINE DELIVERY MODELS
Track: Successful Business Strategies Room 408A

PRESENTER: Sumbul Desai, MD, Associate Chief Medical Officer
Stanford Hospital and Clinics, Stanford, CA, USA

PRESENTER: Lauren Cheung, MD, MBA, Assistant Medical Director.
Stanford University School of Medicine, Stanford, CA, USA

Over recent years, the growth in telemedicine has been rapid with telemedicine visits reaching an all-time high globally with continued expected growth rates in the double digits until 2018. To meet the demand for telemedicine from both employers and consumers, an increasing amount of medical centers and health practices are considering implementing telemedicine services, however, the investment in technology can be daunting from both a cost and implementation standpoint. For large medical centers with multiple service lines, the integration of telemedicine technology can be an even more daunting problem as one considers how to effectively integrate the technology into the entire organization. Stanford Healthcare(SHC) currently employs multiple avenues to deliver telemedicine. Through experiences gained while using these modalities and while implementing telemedicine organization-wide, SCH has learned that one telemedicine solution used across the entire organization may not be effective nor possible. At Stanford Healthcare, telemedicine is delivered through multiple modalities:

1) Direct-to-consumer email, phone, and video platform that allows both synchronous and asynchronous visits fully integrated into our electronic medical record (EMR). It is available at our primary and urgent care clinics and will be rolling out to select specialties in the near future;
2) Point-to-point telepresence platform that facilitates video visits from a local employer to a Stanford clinic. This is currently employed in dermatology and will roll-out to other specialties in the near future;
3) Provider-to-provider and group meeting platform that facilitates the sharing of information including labs and diagnostic tests in real time.

In this how-to session, we will review the benefits and drawbacks of each telemedicine delivery method listed above and will provide the audience with a set of key questions that must be considered when starting a telemedicine program.

Objectives
1. Educate attendees on the various types of delivery methods available for telemedicine.
2. Help attendees understand the various benefits and drawbacks of different telemedicine programs.
3. Teach attendees how to evaluate their organization’s key desires in a telemedicine service to help make a more educated decision on choosing a delivery method.
will describe the pilot partnerships developed by UCLA with local SNFs to en-
system presence as UCLA does not operate its own SNFs. The first presentation
of patients discharged to these locations. However, there is little formal health
up care. SNFs are a frequent admission source for readmissions due to the frailty
patient populations, and increasing telehealth to assist with post-surgery follow

Objectives

1. Learn about issues related to using telehealth approaches to reduce
readmissions from skilled nursing facilities
2. Learn about issues related to expanding remote patient monitoring in
chronic liver disease patients
3. Learn about issues related to using telehealth approaches to improve
post-surgery follow up care

MONDAY, MAY 4, 2015
3:00 pm–4:00 pm Monday, May 04, 2015

SESSION 60
SESSION TITLE: UNDERSTANDING HOW PATIENT CENTERED DESIGN IMPROVES PROVIDER ADOPTION:
MAYO CLINIC AND MASS GENERAL HOSPITAL
Track: Successful Business Strategies Room 408A

MODERATOR: Michael K. Ong, MD, PhD, Associate Professor UCLA, Los Angeles, CA, USA
PRESENTER: Michelle Eslami, MD, Clinical Professor of Medicine UCLA, Los Angeles, CA, USA
PRESENTER: Melissa Reider-Demer, DNP, Nurse Practitioner UCLA, Los Angeles, CA, USA

A critical area of focus for health systems is readmission reduction. The Centers
for Medicare and Medicaid Services have expanded the publicly reported read-
mission rates for hospitals to include hospital-wide all-condition unplanned
readmissions, and this measure is under consideration for future penalties. The
UCLA Health System through its UCLA Connected Health program has been
working with new clinical service delivery lines to expand the use of telehealth
approaches in its readmission reduction efforts. This panel will discuss opera-
tional lessons learned and describe barriers and facilitators to success from three
separate efforts: using telehealth to reduce readmissions from skilled nursing
facilities (SNFs), expanding remote patient monitoring to other chronic disease
patient populations, and increasing telehealth to assist with post-surgery follow
up care. SNFs are a frequent admission source for readmissions due to the frailty
of patients discharged to these locations. However, there is little formal health
system presence as UCLA does not operate its own SNFs. The first presentation
will describe the pilot partnerships developed by UCLA with local SNFs to en-
courage use of video technology to avert potential readmissions. End-stage liver
disease patients are another frail population with high readmission rates at UCLA.
The second presentation will describe pilot efforts with our hepatology service to
use remote patient monitoring to keep patients stable in the outpatient setting
and minimize need for hospitalization. The third presentation will describe pilot
efforts with our surgical departments to increase the use of video technology to
assist with post-surgery follow up care both in SNFs and the outpatient setting.

Objectives

1. Learn about issues related to using telehealth approaches to reduce
readmissions from skilled nursing facilities
2. Learn about issues related to expanding remote patient monitoring in
chronic liver disease patients
3. Learn about issues related to using telehealth approaches to improve
post-surgery follow up care

MONDAY, MAY 4, 2015
1:15 pm–2:15 pm Monday, May 04, 2015

SESSION 59
SESSION TITLE: EXPANDING TELEHEALTH TO IMPROVE HOSPITAL-WIDE READMISSION RATES
Track: Successful Business Strategies Room 408A

MODERATOR: Ling Shao, BS, MBA, National Vice President, Client Solutions Optum, Rossmoor, CA, USA
PRESENTER: Matthew Gardner, Service Designer, Center for Innovation Mayo Clinic, Rochester, MN, USA
PRESENTER: Sarah Sossong, MPH, Director of Telehealth Massachusetts General Hospital, Boston, MA, USA
PRESENTER: Steve Ommer, MD, Medical Director, Centers for Innovation & Connected Care Mayo Clinic, Rochester, MN, USA
PRESENTER: Ami B. Bhatt, MD, FACC, Codirector, Adult Congenital Heart Disease Program Massachusetts General Hospital, Boston, MA, USA

In response to a dynamic marketplace, increased consumer needs and rapidly-
advancing technology, healthcare is going through some significant change.
Telehealth has the potential to be a powerful force for transformation of patient
care – and it’s not just about the technology, outcomes, and ROI – it needs to
work for patients and providers. Leading healthcare organizations are acceler-
ating innovation through a concept relatively new to business strategy —design
thinking. Design thinking is a creative, problem-solving approach that integrates
the needs of people, the possibilities of technology, and the requirements for
business success. Design methods include ethnographic and observational
techniques, visualization, prototyping, sketching, storytelling, brainstorming,
and more. As interest in telehealth is increasing exponentially, telehealth leaders
at the Mayo Clinic and Massachusetts General Hospital have been tasked with
quickly building, scaling, and implementing telehealth solutions in their re-
spective organizations. In this session, the panel will represent clinical, design,
and business perspectives from Mayo Clinic and MGH. Through this coordinated
presentation, the teams will share their perspectives on how design principles are
relevant to telehealth; steps for implementing design thinking in a telehealth
program; and lessons learned on patient and provider adoption.

Objectives

1. Understand how design principles are relevant to telehealth.
2. Recognize how adoption of telehealth by patients and providers is
impacted by well thought out design, through real world examples and
lessons learned.
3. Gain insights on how to incorporate design principles into a telehealth
program.

MONDAY, MAY 4, 2015
4:15 pm–5:15 pm Monday, May 04, 2015

SESSION 61
SESSION TITLE: CHALLENGES AND OPPORTUNITIES OF TELEMEDICINE IN CORRECTIONAL FACILITIES
Track: Successful Business Strategies Room 408A

MODERATOR: Don J. Kosiak, MD, MBA, CPE, FACEP, Medical Director Avera Health, Sioux Falls, SD, USA
PRESENTER: Jay Weems, MBA, Vice President, eCARE Operations Avera Health, Sioux Falls, SD, USA
PRESENTER: Lisa Lindgren, BSN, MBA, eCARE Critical Care Officer Avera Health, Sioux Falls, SD, USA
PRESENTER: Darcy Litzen, RN, BSN, eCARE Sales Director Avera Health, Sioux Falls, SD, USA

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3. Gain insights on how to incorporate design principles into a telehealth
program.
Telemedicine consultations, both urgent care and specialty care, allow a consulting physician to screen patients remotely, reducing the number of incidents requiring transportation of inmates to tertiary-care sites. Reducing travel provides financial cost-saving advantages, and also increases security for the community and prison staff. Providing cost-effective and adequate healthcare to prisoners is a core issue, and one that telemedicine can address. Medical costs are often one of the largest, and fastest growing, operational expenditure after personnel costs. With the use of high-quality, two-way video and evidence-based practices, board certified emergency physicians are conducting urgent care visits for inmates for a variety of healthcare complaints such as chest pain, abdominal pain, minor trauma and neurological issues. In addition to urgent care, specialty consults are also conducted via two-way video giving inmates direct access to infectious disease specialists, neurologists and several other specialties without having to transport the inmate several miles, which contributes to staffing concerns, safety concerns and added cost. Unique challenges exist when treating patients in correctional institutions due to the uncertainty of their mental status, their desire to travel outside of the institution, and the high level of risk with infectious and chronic conditions. In addition to the physical challenges, there are often times technical challenges with wireless connectivity and mobile equipment. As a member of a panel, we will discuss lessons learned from a 2-year program serving the inmates in the State of South Dakota and highlight the difficulties when expanding this service into other states.

**Objectives**
1. Understand the unique challenges of serving inmates.
2. Obtain recommendations on how to set up your telemedicine service.
3. Discuss lessons learned in dealing with state and local governments.

**TUESDAY, MAY 5, 2015**

**11:00 am–12:00 pm Tuesday, May 5, 2015**

**PRESENTATION PANEL**

**Session 62**

**Session Title: HOW TO USE AND INTEGRATE TELEMEDICINE AND mHEALTH APPS AND SENSORS**

**Track:** Successful Business Strategies  Room 408A

**MODERATOR:** Robert E Levin, MBA, MA, CEO

**Transclick, Manhattan, NY, USA**

**PRESENTER:** Robert E Levin, MBA, MA, CEO

**Transclick, Manhattan, NY, USA**

**PRESENTER:** Amy Sheng, MBA, Cofounder

**CellScope, San Francisco, CA, USA**

**PRESENTER:** Hrishikesh Amravatkar, MS, CEO & Cofounder

**HealthQuickly, Sunnyvale, CA, USA**

The market for telemedicine and mHealth is growing, with telemedicine expected to grow from $9.8B worldwide to $27B in 2016; and mHealth expected to grow from $1.2B in 2012 to $49B in 2020. Tele Video Consultation market, including mHealth services, is projected to grow to $13.7 Billion in 2018. “Connected Health” as the umbrella description covering digital health, eHealth, mHealth, telecare, telehealth and telemedicine. The combination of technologies and platforms in these fields is a powerful convergence. This presentation will outline several short case studies:

1. Hrishi Amravatkar, CEO, cofounder of DoctorQuickly, shares what it takes to build an mHealth and telemedicine start-up. DoctorQuickly is a mobile-first app that will allow patients to talk to a doctor any time of the day or night, using video, audio, and messaging. Hrishi will discuss

the wide range of competitors and how access to doctors on tablets and cell phones can collaborate with telemedicine and m-health app & wearable sensor providers.

2. Amy Sheng, cofounder, CellScope, discusses ‘Mobile Phone Connected Diagnostic Tests.’ CellScope created the world’s first smartphone-enabled digital first aid kit, giving patients access to at-home tools in order to capture diagnostic-quality data for a remote diagnosis. CellScope built a suite of optical attachments for smartphones for use with telemedicine. Founders pioneered cell phone microscopy, creating mobile microscopes for remote diagnosis of infectious diseases like tuberculosis and malaria. Pilots were demonstrated in India, Uganda and Vietnam and the work was funded by the Gates Foundation, Vodafone, Microsoft and Intel.

3. Robert Levin, CEO, Transclick, will explore the powerful synergies and advantages of integration at the nexus between telemedicine and global medical apps and sensors in the context when telemedicine and mHealth converge.

4. Conclusions will be drawn about major converging trends.

**Objectives**
1. A deeper understanding of the synergies and healthcare benefits when telemedicine platforms are combined with mHealth sensors and apps.
2. Acquiring knowledge of case studies illustrating the benefits of combining these technologies and competing commercial approaches to solving remote diagnosis.
3. Gain insights into major trends in remote diagnosis of diabetes, heart disease, and infectious diseases with mobile access to doctors.

**TUESDAY, MAY 5, 2015**

**1:15 pm–2:15 pm Tuesday, May 5, 2015**

**PRESENTATION PANEL**

**Session 63**

**Session Title: HOW A MAJOR URBAN HEALTH SYSTEM LEVERSAGES TELEMEDICINE**

**Track:** Successful Business Strategies  Room 408A

**MODERATOR:** Edward Loo, MSECE, Telemedicine Engineer

**Inova Health System, Falls Church, VA, USA**

**PRESENTER:** Theresa M. Davis, PhD, RN, NE-BC, Clinical Operations Director

**Inova Health System, Falls Church, VA, USA**

**PRESENTER:** Albert Holt, MD, MBA, Medical Director TeleICU

**Inova Health System, Falls Church, VA, USA**

**PRESENTER:** Rina Bansal, MD, MBA, Medical Director Telemedicine Institute

**Inova Health System, Falls Church, VA, USA**

**PRESENTER:** Steve Dean, MS, Telemedicine Administrative Director

**Inova Health System, Falls Church, VA, USA**

**Background:** After a decade of telehealthcare delivery, many new clinical models have emerged to support service lines within an urban health system. This effort required a wide scope of clinical expertise and coordination to create a system of programs linking providers and patients via electronic communications. Clinical areas such as emergency departments, critical care, ambulances, neurology, neurosurgery, pediatric ICU, dermatology, and behavioral health are supported with remote clinical teams using synchronous or asynchronous technology. The purpose of this presentation is to describe one organization’s
journey in developing robust telehealth services in many specialty areas. The team will describe essential processes and lessons learned such as program development, coordination of resources, stakeholder engagement, and change management techniques impacting technology acceptance for new implementations. Operationally, we will discuss the value of communication to promote consistent quality delivery.

**Objectives:** (1) Link telehealth practices to clinical specialties, (2) Describe benefits of proactive versus reactive models in various specialties, (3) Identify effective leadership roles in motivating telehealth success. Learn how various models leverage the same infrastructure in different capacities to deliver clinical practice in settings across the care continuum. Multiple programs will be described and how technology was matched to meet the clinical needs of the patient with the available expertise and resources. Leadership role characteristics essential to telehealth program development and sustainment will be identified and discussed. Leaders in both the telehealth and clinical arenas play influential roles in change management, ongoing development, implementation and sustainment of programs. Communication barriers will be explored and solutions for enhanced communication will be described.

**Conclusions:** Clinical and process metrics, including length of stay, time to treatment, and encounter data, will be shared to illustrate utilization and outcome metrics. This presentation will also highlight innovative ideas in consideration for future telemedicine solutions.

**Objectives**

1. Link telehealth practices to clinical specialties.
2. Describe benefits of proactive versus reactive models in various specialties.
3. Identify effective leadership roles in motivating telehealth success.

**TUESDAY, MAY 5, 2015**

**PRESENTATION PANEL**

**Session 64**

**Session Title:** FOSTERING A GLOBAL TELEHEALTH SYSTEM AND RESEARCH NETWORK: TRANSATLANTIC TELEHEALTH RESEARCH NETWORK (TTRN)

**Track:** Successful Business Strategies  
**Room:** 408A

**MODERATOR:** Thomas Nesbitt, MD, MPH, Vice Chancellor
*University of California, Davis, Sacramento, CA, USA*

**PRESENTER:** Birthe Dinesen, PhD, Associate Professor  
*Aalborg University, Aalborg, Denmark*

**PRESENTER:** David Lindeman, PhD, Director  
*University of California, Berkeley, Berkeley, CA, USA*

**PRESENTER:** James Marcin, MD, Associate Professor  
*University of California, Davis, Davis, CA, USA*

The Transatlantic Telehealth Research Network (TTRN) is an innovative international collaboration started in 2011 that is dedicated to developing cutting-edge telehealth research and program innovation on a global scale. Built on the tenets of interdisciplinary research [medicine, engineering, nursing, business, economics, public health], TTRN investigators focus on developing new diagnostic, preventive, and treatment methods/technologies utilizing telehealth. TTRN outcomes are focused on improving the health of patients in their own homes, while the key determinant for selection of TTRN initiatives is that they are problem-based, user-driven, innovative solutions that have global application. The mission of the TTRN is to develop innovative, scalable, and sustainable telehealth programs based on rigorous research. The specific goals of the TTRN have been to: 1) develop and launch an interdisciplinary, transatlantic network and platform to conduct research on telehealth; 2) develop synergy and common structures and processes between global telehealth programs (e.g., between the United States and Denmark); 3) foster global collaboration on the development and testing of new and emerging telehealth technologies; 4) create an international research program on telehealth and chronic disease/prevention using new technologies for preventive care, treatment (e.g., cardiology), and rehabilitation; and 5) develop an international exchange program for knowledge-sharing and research collaborations for clinicians, graduate students, and researchers within the field of telehealth. The TTRN has been established through the unique collaboration of multiple research, clinical and academic partners that include: Aalborg University, Denmark; CITRIS, University of California; UC Davis Health System; UC Davis Center for Health and Technology; Cleveland Clinic; and Center for Connected Health, Partners Healthcare. TTRN researchers and clinicians have achieved significant progress in achieving its multiple goals. The In Vida cardiology treatment program has been successfully implemented in multiple international sites, demonstrating common telehealth solutions in different healthcare systems. TTRN researchers have also developed common telehealth tools and metrics for use in a wide array of geographic and population settings. Members of the TTRN research team are collaborating on identifying innovative telehealth solutions in non-TTRN countries (e.g., Greenland). The initial successes of the TTRN program are due to a number of joint strategies, including: 1) embedding the research network in existing country health systems; 2) selecting and developing common measures and tools using international evidence-based research; 3) identifying minimum, common research protocols and methodologies; 4) emphasizing patient and provider engagement in research network development, 5) alignment of organizational mission and leadership, and 6) early alignment with policy and regulatory requirements.

**Objectives**

1. Achieve a better understanding of the structure and benefits of a global telehealth system and research network.
2. Achieve a better understanding of the opportunities and benefits of international telehealth collaborative efforts.
3. Achieve a better understanding of telehealth research and program development strategies and how to overcome barriers and challenges to implementation.

**TUESDAY, MAY 5, 2015**

**PRESENTATION PANEL**

**Session 29**

**Session Title:** USING COMMUNITY HEALTH MODELS TO ENHANCE PATIENT PERFORMANCE AND OUTCOMES

**Track:** Successful Business Strategies  
**Room:** 402AB

**MODERATOR:** Matthew Jansen, MPA, Senior Business Development Manager  
*Iron Bow Technologies, Chantilly, VA, USA*

**PRESENTER:** Courtney Crooks, PhD, Senior Research Scientist  
*Georgia Institute of Technology, Atlanta, GA, USA*

**PRESENTER:** Paula Guy, RN, Chief Executive Officer  
*Global Partnership for TeleHealth, Waycross, GA, USA*

The presenters will discuss the experience of using community health models to enhance patient performance and outcomes. This includes sharing insights from successful telehealth programs, identifying key success factors, and exploring strategies for scaling these initiatives. The discussion will focus on demonstrating the effectiveness of telehealth in improving patient outcomes and addressing various health challenges.
CONCURRENT ORAL PRESENTATIONS ABSTRACTS

The foundation of community health is changing in dynamic ways. The paradigm shift in our healthcare systems require strategies for integrating primary, specialty and home care to assist in overcoming barriers to treatment, prevention and chronic illness in rural and urban areas globally. In order to understand this convergence of technologies human factors and schools of medicine, a panel of experts including Georgia Institute of Technology's Dr. Courtney Crooks, Medical Director for Georgia's Composite Board Dr. Jean Sumner, and Iron Bow's Senior Development Manager Matt Jansen will map out this paradox with examples of applied telehealth programs and evaluation strategies that will opens new opportunities for community health models to develop. Although design and implementation of tele-communications for the provision of remote behavioral and medical services has been increasing since the 1990s, outcome models and impact studies are few in number in the open literature. Without a concerted program of evaluation following a telehealth program post-implementation, it becomes somewhat difficult to provide evidence for positive community change, or effectiveness of this service delivery modality. Lack of data also influences subsequent financial investment in telehealth, as well as reimbursement policy. A recent publication released by the Department of Defense discusses the importance of such telehealth program evaluation studies and suggests several metrics by which researchers may determine the impact on the community of interest. The DoD task force document, in addition to recommendations from the Center for Connected Health Policy (CCHP) (2014), suggest that program evaluation models utilized for telehealth take into account data provided from three sources: clinical, user experience, and socio-economic outcomes. Using this guidance it is proposed that moving forward in the telehealth space, it is imperative that robust and longitudinal impact data be collected in a systematic and repeatable manner. This may be accomplished by developing and refining a structured program evaluation framework based on procedures common to the practice of human systems integration (HSI), which can be customized as it is utilized in a variety of contexts by taking into account unique, context-dependent short-, mid-, and long-term outcome measures of interest within the evaluation framework.

Objectives

1. Develop applicable knowledge of current global community health needs.
2. Achieve a higher ability to adapt technology into to the work environments more efficiently.
3. Gain insights into the partnership structures that make a community health model.

TUESDAY, MAY 5, 2015

4:15 pm–5:15 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL

Session Title: USING TELEHEALTH TO IMPROVE ACCESS TO CARE IN RURAL COMMUNITIES
Track: Successful Business Strategies Room 408A

MODERATOR: Edwin Vaughan, MBA, VP, Clinical Services Group Catholic Health Initiatives, Englewood, CO, USA

VIRTUAL HOSPITAL: MAKING A DIFFERENCE IN RURAL COMMUNITIES

PRESENTERS AND CONTRIBUTING AUTHORS:
Don J. Kosiak, Jr., MD, MBA, CPE, FACEP, Medical Director Avera Health, Sioux Falls, SD, USA

The Avera eCARE Virtual Hospital currently serves an 8-state area, over 545,000 square miles, including both in-network and out-of-network Critical Access and PPS hospitals. With the push of a button, distant site hospitals are able to connect to a virtual hospital for immediate access to expert, multidisciplinary medical advice, consults, and transfer services. This has resulted in documented improvements to patient care as well as recruitment and retention of the rural workforce. Improvements include: a 58% reduction in severity-adjusted mortality over 2.5 years, 37% reduction in the number of patients requiring transfer, a 13 minute decrease in time to care emergency room patients for whom a doctor is not immediately available, and documentation of 22,169 potentially avoided adverse drug events. Researchers at the RUPRI Center studying Avera eCARE have also documented a positive impact on physician recruitment and retention. In addition to the medical services, hospitals are able to obtain additional support with quality initiatives, CEUs and CMEs, compliance and technical support. After all of Avera’s telehealth services were brought together under one roof in October 2011, many efficiencies have been gained and innovative collaboration has replaced the silo thinking that once existed within separate service lines.

The shift from silos to collaborative care puts the focus on the best interest of the patient as he or she moves through the continuum of care. Local providers and communities benefit by having one place to access an array of highly trained and experienced clinicians. eCARE has collected case studies describing the benefits of collaborative care within the virtual hospital. A distant site hospital will receive a patient in the emergency room and can immediately connect to a board-certified emergency physician who assesses the situation, pulls in resources as needed, monitors patient status and intervenes when necessary. Many activities are taking place behind the scenes in the virtual hospital which allows the local providers to focus on the patient. One case study that resulted in a positive outcome involves a 59 year old female who was an unrestrained driver involved in a single motor vehicle collision in a small rural town. The local critical access hospital emergency room contacted eEmergency for dispatch of flight and assistance of a level 1 trauma. eEmergency assisted with initial stabilization of patient, ordering of diagnostics, pain control and rapid transport to a Level 2 Trauma Center. The eEmergency physician assisted the flight team with needle decompression of a tension pneumothorax during flight. The eEmergency nurse assisted with nurse documentation at the receiving hospital. ePharmacy assisted with identification of the patient’s home meds and pain control while eICU provided care for a subarachnoid hemorrhage, intraparenchymal contusion, C1-C2 fx, pulmonary contusions and a hemopneumothorax.

Objectives

1. Demonstrate how a virtual hospital model provides value and expertise to Critical Access Hospitals.
2. Share examples of how collaboration among eEmergency, ePharmacy and eICU saves lives in rural communities.
3. Reveal the paradigm shift in small hospitals as a result of the virtual hospital model.

RURAL INPATIENT CARE AND THE TELEHOSPITALIST

PRESENTERS AND CONTRIBUTING AUTHORS:
Ariel E. Lufkin, MD, Telehospitalist Mercy, Oklahoma City, OK, USA

Since launch in January 2014 - our telehospitalist program has cared for 276 patients with over 1000 patient encounters through the use of an off-site telehospitalist and an on-site midlevel provider. This service line was created in attempt to support a local rural critical access hospital that was having difficulty staffing a full time provider. Over the past 9 months we have gone through many growing pains and hope to pass these lessons learned onto those interested in developing similar programs. Despite these obstacles, we have discovered a number of unexpected benefits along the way. Our goal is to continue to develop our model and share with ATA 2015
members to promote progress in what we believe is going to be part of the future in rural inpatient healthcare.

Objectives
1. Understand the history and lessons learned during the launch/development of a telehospitalist program.
2. Understand the financial and social impact of a telehospitalist program similar to Logan County Medical Center - a rural critical access hospital in Oklahoma.
3. Understand potential for similar programs and the potential impact on rural inpatient care nationwide.

IDENTIFYING TELEMEDICINE NEEDS FOR SMALL RURAL HOSPITALS: A LOOK AT SOUTH CAROLINA HOSPITAL BYPASS BEHAVIOR

PRESENTERS AND CONTRIBUTING AUTHORS:
Taylor A. Lawrence, MHA, Administrative Resident
Medical University of South Carolina, Charleston, SC, USA

The state of South Carolina recently appropriated over $30 million to the Medical University of South Carolina (MUSC) and other providers in order to establish a sustainable statewide telehealth alliance. Telehealth will offer South Carolinians an innovative way to access healthcare and will remove barriers that prohibit rural residents from receiving specialty care. Instead of taking a cookie-cutter approach to telehealth implementation, the MUSC Center for Telehealth sought to determine which hospitals would benefit most from telehealth, and what high-yield service lines to initially focus on. As a needs assessment was initiated, it appeared that patients were often bypassing small rural hospitals for hospitals outside of their county. The first layer of the analysis was to define and identify rural hospital bypass throughout the state. Criteria were established to select the population of hospitals that would be used in the initial data analysis: less than 50 beds, less than 1000 annual discharges, and proximity to an academic medical center. Bypass was defined as seeking care beyond the county hospital in instances where there is a sole hospital in the county. Of the nine hospitals the data analysis identified, seven are the sole hospital within their respective county. Of those seven, all hospitals exhibited at least 80 percent bypass behavior for all MUSC-defined service lines. Six out of seven hospitals exhibited greater than 85 percent bypass behavior. Services most susceptible to bypass were: Transplant (100% bypass), Women’s Services (99.66% bypass), Children’s Acute Care (99.15% bypass), and Cancer Care (92.55% bypass). During the targeted need assessment, the most common diagnoses for each service line will be identified to determine how amenable they are to telemedicine. After identification of high-yield service lines, the MUSC Center for Telehealth will approach these rural hospitals to develop an implementation plan in an effort to mitigate bypass behavior, and encourage patients to remain at local facilities. Patients may be bypassing their local facilities because of preference, perceived quality of other facilities, or high severity of illness; It is our hope that the targeted needs assessment will help us better understand why patients bypass local hospitals. In the near future, transfer data will be utilized to identify specific diagnoses that were sent to larger hospitals and determine if telemedicine consultations would have enabled patients to stay at local facilities instead. Understanding bypass behavior is incredibly important in developing a statewide strategic plan for telehealth implementation. Through the use of telemedicine, our goal is to increase healthcare access and assist hospitals in keeping local patients within their system. Patients should receive the same level of care no matter where they reside in the state. The MUSC Center for Telehealth believes providing targeted telehealth services will greatly impact rural hospitals, and enable patients to receive care where they are and where they want to be close to home.

Objectives
1. Understand South Carolina hospital bypass behavior for rural residents.
2. Determine which telemedicine services would be highest yield for mitigating rural hospital bypass.
3. Evaluate the potential benefit an academic medical center can provide rural hospitals through the use of telemedicine.

CONCURRENT ORAL PRESENTATIONS ABSTRACTS

TUESDAY, MAY 5, 2015

PRESENTATION PANEL

Session 30
Session Title: ESTABLISHING A SUSTAINABLE TELEHEALTH INFRASTRUCTURE THROUGH A REGIONAL MONITORING CENTER
Track: Successful Business Strategies Room 402AB

MODERATOR: Matt Levi, MHA, MPH, Director, Virtual Health Services
CHI Franciscan Health, Tacoma, WA, USA

PRESENTER: Tim Plante, MSN, MHA, Associate Vice President, St. Clare Hospital
CHI Franciscan Health, Tacoma, WA, USA

PRESENTER: Mary Alice Ragsdale, MSN, MBA, Associate Vice President, St. Joseph Medical Center
CHI Franciscan Health, Tacoma, WA, USA

PRESENTER: Paul Catterson, RN, BA, Clinical Manager, Remote Care Services
CHI Franciscan Health, Tacoma, WA, USA

Hospitals face growing pressure from both government and private agencies to reduce the cost of care and to improve the outcomes of care delivery. Telehealth and virtual health services are often cited as necessary infrastructure to achieving lower cost, higher quality, and better access to care. However, advanced telehealth and virtual health services often require upfront cost, infrastructure, and business models to support advancement of these services. In 2014, CHI Franciscan Health System opened a 24/7 remote monitoring center that creates the foundational infrastructure for additional virtual health services throughout the South Puget Sound. By centralizing existing monitoring functions from 8 hospitals, the health system saved nearly $1 million per year in existing labor costs, elevated the standard of monitoring care, realized operational efficiencies, and established foundational staffing and IT infrastructure for additional services in the future. All hospitals, whether urban or critical access, now receive the same dedicated expertise of experienced monitor technicians 24/7.

Objectives
1. Achieve a better understanding of the clinical, operational, and financial benefits of centralized remote monitoring services.
2. Develop a vision for the sequential development of virtual care infrastructure for a regional health system.
3. Understand the cultural change processes necessary for success in implementing centralized monitoring services.

MONDAY, MAY 4, 2015

PRESENTATION PANEL

Session 66
Session Title: DELIVERING QUALITY DISTANCE EDUCATION
Track: Operational Management Room 304ABC

MODERATOR: Janet Major, BS, Associate Director for Facilities
University of Arizona, Tucson, AZ, USA
CONCURRENT ORAL PRESENTATIONS ABSTRACTS

PRESENTER: Ana Maria Lopez, MD, MPH, FACP, Medical Director
Arizona Telemedicine Program, Tucson, AZ, USA

PRESENTER: Elizabeth Krupinski, PhD, Professor
University of Arizona, Arizona Telemedicine Program, Tucson, AZ, USA

PRESENTER: Janet Major, BS, Associate Director for Facilities.
University of Arizona, Tucson, AZ, USA

This course will be a collaboration between the national leaders in distance learning for telehealth: the ATA Technology Special Interest Group and the national network of Telehealth Resource Centers. It represents a unique combination of the experts in the field of telemedicine. This will be a resource-rich experience highlighting the power of collaboration between the ATA Special Interest Groups (SIGs), the National Telehealth Resource Centers (TRCs) including the Technology Telehealth Resource Center along with other national organizations who are the leading resources in distance learning. Highlights will include meeting the experts who teach distance learning in telehealth including organizations that are accredited by the American Telemedicine Association. The Technology SIG produces monthly webinars on relevant topics and technologies in the field of telemedicine and education. In one word – Telehealth! There are also 13 Telehealth Resource Centers in the United States with each one serving a distinct region. They are funded by the Office for the Advancement of Telehealth/Health Resources and Services Administration. Their mission is to advance the effective use of telemedicine services throughout the United States. They assist start-up telehealth programs in their development as well as serve as a resource for existing programs regarding policy changes, technology and other issues affecting the provision of telehealth. They provide training and are resources for producing clinical and educational distance learning events. The Telehealth Technology Resource Center – TTAC – is an excellent resource. They aim to create better-informed consumers of telehealth technology and have a robust website to share answers to questions – TTAC – is an excellent resource. They aim to create better-informed consumers of telehealth technology and have a robust website to share answers to questions about selecting appropriate technologies for any and all telehealth programs. There are consumer reviews, toolkits, white papers – everything you need to offer clarification on key telehealth topics from a technology perspective. Developing a continuing education program requires a strategic approach aligned with the mission of the healthcare institution. Lessons learned, outreach efforts, and community engagement will be discussed to facilitate your efforts at developing your own tele-education sessions from the ground up!

Objectives

1. Define a variety of distance learning applications, share best practices on how to produce the best distance learning experiences for live and archived telehealth events. Cite information and resources regarding how CME credit is awarded.
2. Introduce the national telehealth resource centers and share their resources, best practices and opportunities for assisting in the production of quality telehealth educational programming standards.
3. Provide attendees with tools and resources of experts and organizations in the field of distance learning to include ATA, the TRC’s, the United States Distance Learning Association as well as other nationally and internationally acclaimed organizations.

MONDAY, MAY 4, 2015

1:15 pm–2:15 pm Monday, May 4, 2015

PRESENTER: Daniel Ruppar, BS, Research Director, Healthcare & Life Sciences
Frost & Sullivan, San Antonio, TX, USA

PRESENTER: Harry Wang, BA, MS, MBA, Director, Mobile & Health Product Research
Parks Associates, Dallas, TX, USA

PRESENTER: Unity Stoakes, President & CEO
StartUp Health, New York, NY, USA

The market for telehealth solutions is an important area which can be a catalyst for healthcare’s evolution, reaching across the continuum of care, and dramatically altering healthcare delivery and the patient experience. In the health system of the future, patient care will be greatly enhanced by a connected and seamless information flow between patients and other stakeholders, with mobility being a core need for users of health information. Virtual care and remote monitoring models are coming more to the fore in importance, given recent market changes. Please join us for a forum consisting of leading analysts and stakeholders sharing insightful perspectives on the current state of the market.

Objectives

1. Discuss current state of the telehealth marketplace and key topics to watch for in 2015.
2. Provide overview of current changes to the market value chain, examples of recent winners/losers.
3. Review stakeholder outlook on needs of payer/provider/consumer.

MONDAY, MAY 4, 2015

1:15 pm–2:15 pm Monday, May 4, 2015

PRESENTER: Mario Gutierrez, Executive Director
Center for Connected Health Policy, Sacramento, CA, USA

PRESENTER: Kathy J. Chorba, Executive Director
California Telehealth Resource Center, Sacramento, CA, USA

PRESENTER: Arthur L. Gruen, MD, CEO
EA Health, Solana Beach, CA, USA

PRESENTER: Javeed Siddiqui, MD, MPH, Chief Medical Officer
Telemed2U, Roseville, CA, USA

PRESENTER: Daniel A. Kurywchak, President
Telemed2U, Roseville, CA, USA

The California Telehealth Resource Center (CTRC) – and their colleagues at regional TRCs across the country – work to support providers in starting or growing telemedicine programs. Over years of providing such guidance, the CTRC has witnessed providers stymied by the same obstacles time and again. In response the CTRC has developed a concrete and accessible Telehealth Implementation Roadmap. The Roadmap was designed to help individuals identify the critical steps and their logical order of completion to assure successful program implementation. This presentation will engage a panel of four individuals who will deepen and expand upon the Telehealth
Implementation Roadmap. Designing and implementing a telehealth program can be a daunting task for most people. The members of this panel will identify and discuss in detail the critical steps every program should consider when planning or revitalizing a telehealth program. At the core of the Roadmap are four components of provider operations that are essential for implementation. What every provider must recognize is that a successful telehealth program integrates leadership and ensures adequate capacity across all four sectors: (1) Technology, (2) Clinical Services, and (4) Business and Sustainability. Throughout the presentation, panelists will provide tips, tools, guidelines and resources to assist in various steps along the way. Material covered will include: clinical and administrative services and needs; technology infrastructure and equipment inventory; leadership support; clinical provider buy-in; and potential relationships with specialty providers. This comprehensive presentation will also address some often overlooked challenges, including partnerships and structured relationships, contracting models, technology infrastructure and the telehealth team. Rather than being allotted a designated quota of speaking minutes, panelists will share their unique perspective as it relates to each portion of the Roadmap. In this way the panelists will explore and demonstrate the importance and challenges of integrating leadership across all four sectors.

Objectives
1. Gain an understanding of the five critical steps for telehealth program design.
2. Acquire insights into the distinct leadership roles required of telehealth operations, technology, clinical services, and business and sustainability staff and managers.
3. Develop an awareness of the benefits and challenges related to leadership integration.

MONDAY, MAY 4, 2015
3:00 pm–4:00 pm Monday, May 4, 2015

PRESENTATION PANEL

Session 69
Session Title: ATA’S PRACTICE GUIDELINES: ROADMAPS GUIDING TELEMEDICINE SERVICE
Track: Operational Management Room 304ABC

MODERATOR: Elizabeth A Krupinski, PhD, Professor & Vice Chair of Research
University of Arizona, Tucson, AZ, USA

PRESENTER: David McSwain, MD, Assistant Professor
Medical University of South Carolina, Charleston, SC, USA

PRESENTER: Elizabeth A. Krupinski, Professor & Vice Chair of Research
University of Arizona, Tucson, AZ, USA

PRESENTER: Jil Berg, PhD, RN, Dean & CEO
Columbia College of Nursing, Glendale, WI, USA

PRESENTER: Karen McKoy, MD, MPH, Assistant Clinical Professor in Dermatology
Lahey Clinic, Burlington, MA, USA

ATA's practice guidelines for telemedicine are critical for the deployment of telemedicine services. Standards form the basis for uniform, quality patient care and safety, grounded in empirical research and clinical experience. The establishment of such standards also accelerates the adoption of telemedicine by payers, administrators and providers who are full partners with ATA in their development along with industry, government agencies, medical societies and other stakeholders. Dr. Krupinski, Chair of the ATA

Standards and Guidelines Committee will lead the discussion about how ATA's practice guidelines are helping to shape service delivery in today's healthcare environment. Leaders of three guidelines development work groups will share insights and discuss the importance and impact of their projects.

Objectives
2. Achieve a better understanding of what new guidelines are available.

TUESDAY, MAY 5, 2015
11:00 am–12:00 pm Tuesday, May 5, 2015

PRESENTATION PANEL

Session 71
Session Title: UNDERSTANDING THE KEY FACTORS TO IMPLEMENTING AN EHOSPITALIST SERVICE LINE
Track: Operational Management Room 304ABC

MODERATOR: Cynthia LeRouge, PhD, Associate Professor, Saint Louis University, Saint Louis, MO, USA

PRESENTER: Pam Fornduez, PhD, Director, eHealth
Integris Oklahoma - Jim Thorpe Rehabilitation, Oklahoma City, OK, USA

Telehealth and remote patient monitoring offers healthcare organizations a great opportunity to control costs, improve outcomes, avoid readmissions, and modify patient behavior. This session will reveal lessons learned and strategies to successfully integrate telehealth into medical institutions.

Objectives
1. Learn how 3 different health systems have integrated telehealth into their institution.
2. Hear lessons learned and ways to overcome barriers to integration.
3. Discuss ways to build a financially sustainable telehealth program.
A panel of experts representing a health system telemedicine network, technology vendor and independent physician service provider will discuss their experience in building a unique partnership to empower rural hospitals in Oklahoma using an eHospitalist program. The movement towards hospitalists to serve as specialists in the care of patients in community hospitals is reported to: a) reduce financial strains on rural primary care physicians; b) increase patient safety, given the hospital serves as their specialty locale; c) improve patient care for complex hospitalized patients; d) improve care coordination by serving as the communication hub among the care team, patient and family caregivers; and e) be a cost-effective measure for rural community hospitals that engage eHospitalist services. Unfortunately, small and rural community hospitals are often unable to afford and/or attract skilled hospitalists. Sanders et al. (2014) have identified markets for new hospital-based telemedicine services that may be valuable to rural hospitals. The Complete Care Remotely There eHospitalists program seeks to leverage the skills across the network, creating cost savings by bringing hospitalists situated in urban centers to rural hospitals. The key components of this program are to allow the eHospitalist to: (1) Access EMRs and diagnostic scans to review patient history, (2) Interact with and evaluate patients using video conferencing to facilitate diagnosis and treatment plans, (3) Communicate face-to-face with the patient to discern needs and symptoms, (4) Communicate face-to-face with local hospital physicians to assist with patient management, and (5) Coordinate with on-site nurses assist to perform physical exams under the eHospitalist’s direction. Telemedicine network representatives and those looking to create their own network eHospitalist service line may find value in learning how one of their peers have created technology and physician partnerships to meet the demands of its affiliated rural hospitals and supported its mission to offer a robust suite of telemedicine services.

The panel will guide the attendees through the background of their path to partnership, functional responsibilities of each partner for an eHospitalist service line. Participants will identify prospective barriers to partnerships and key strategies to overcome barriers.

**Objectives**

1. Identify key areas of partnership between hospitals or health systems, technology vendors and physician service providers for delivering an eHospitalist service line.
2. Understand the workflow required to deliver an eHospitalist service line.
3. Participants will identify prospective barriers to partnerships and key strategies to overcome barriers.

**WEARABLE AUGMENTED REALITY FOR REMOTE CLINICAL TRAINING AND DECISION SUPPORT**

**PRESENTERS AND CONTRIBUTING AUTHORS:**

Jay Tus Doss, PhD, Chairperson; Peter Kazanzides, PhD; Toks Fashola, PhD

Remote medical education and clinical decision support is imperative, especially in response to pandemics like the Ebola Virus where, for example, the Liberia population is significantly impacted by Ebola and only has 51 doctors for four million people; the second-fewest physicians per person on Earth, after Tanzania, according to the World Health Association (WHO). Although mobile telehealth devices have been deployed ranging in capabilities from remotely consulting with clinical specialist or viewing how-to clinical videos to support resident training, most of the mobile devices leverage SmartPhones that require both hands to manipulate, which otherwise would be used to administer life-spring procedures. To address problems with physician shortage and clinical specialty access, especially in urgent times of need, Johns Hopkins University (JHU) and Juxtopia have been advancing wearable augmented reality (AR) for healthcare delivery. Originally funded, in 2005, by the National Science Foundation (NSF), this academic industry partnership has been advancing a wearable augmented reality (AR) based healthcare training and clinical decision support tool derived from the NSF funded Juxtopia AR platform. JHU/Juxtopia has conducted research demonstrating how wearable AR goggles, equipped with mini-stereo cameras, can track markers on patients and instruments in order to improve both healthcare student and professional performance. However, unlike conventional surgical navigation systems, multi-modal information is displayed on AR goggles rather than on an external display. Hence, a clinician wearing AR goggles may use both hands for administering care to patients while, simultaneously, focusing on clinical support information displayed on goggles without looking away at an external monitor, which is currently the practice of medicine; especially for surgeons viewing pre-operative images. JHU and Juxtopia demonstrated how AR goggles brings the most important clinical information directly in front of the clinician, eliminating ergonomic issues, potential safety issues, and decreasing time to perform the clinical procedure. In a neurosurgery trial using cadaver experiments, the JHU/Juxtopia team demonstrated how wearable AR Goggles can display a model of a tumor to guide resection margins during brain surgery. Additionally, the AR goggles’ stereo cameras have been demonstrated to facilitate video-conference, streaming video, and clinical images that can be used for clinical tele-consultation and training (e.g., surgical resident training). Moreover, for providing urgent care to remote locations with significantly limited access to clinical specialist, the JHU/Juxtopia team demonstrated that wearable AR may improve a remote clinician’s ability to use AR goggles as a telestrator to convey important visual information to a clinician (e.g., “cut here”, or “protect this anatomy”).

**Objectives**

1. Understand how wearable augmented reality may be used in Pandemic Response.
2. Understand how wearable AR may be used to deliver care in emergency response and casualty care environments.
3. Understand the importance of remote training and decision support using wearable augmented reality.

**GOOGLE FIBER AND FIBER CITIES LIKE CHATTANOOGA TO REDUCE APPOINTMENT WAITING TIMES AND INCREASE MEDICAL PROVIDER REVENUES**

**PRESENTERS AND CONTRIBUTING AUTHORS:**

Raj Devasigamani, MS, MBA, PhD; iPhotonix, Richardson, TX, USA
Cities around the country are touting gigabit broadband access while patient appointment times continue to escalate at alarming rates. The secretary of the Department of Veterans Affairs resigned in May of this year after apologizing to the President because the agency provided falsified data about long waiting times for patients seeking doctor appointments in nearly two-thirds of the department’s facilities. As of today more than 1000 Telco and cable operators are deploying fiber in the access network offering gigabit speeds in cities and communities around the country and the Agriculture Act of 2014, signed into law by President Barack Obama includes provisions to create the Rural Gigabit Network Pilot Program to deliver Ultra-high-speed services offering 1 Gbps speeds. The bill provides up to $50 million in grants, loans, or loan guarantees over a 5-year period ending in 2018. Understandably, building fiber-optic based networks is an expensive undertaking and operators have resorted to innovative methods of using crowd wisdom, which is a function of demographic targeting to identify communities for profitable broadband service delivery. We will discuss in detail how this selective targeted demographic includes disproportionately large number of medical providers and how it lends well to our proposal of building a profitable telemedicine practice along side the medical providers’ traditional practices. Our solution to reduce appointment waiting times for patients while increasing provider revenues leverages the growth of these gigabit cities and proposes an innovative appointment scheduling program using stochastic queuing models for patient arrivals and provider services. Based on our analysis of medical provider densities in nearly 1000 communities with ultra high bandwidth access networks and the additional revenue generating capacity for medical practitioners, we propose two complementary models for two different types of patient populations. Our study also reviews the Rural Gigabit Network Pilot Program and the economics of extending telemedicine services to the rural populations connected by fiber-optics access network. These two proposed models are based on extensive analytical studies of medical provider densities in the targeted markets and survey analysis of patient appointment waiting and provider service times. Our proposed models take into consideration and is sensitive to the medical providers concerns in sharing their patients’ information with other medical providers and thus offering separate and alternate proposals for multiple medical providers serving patients from several providers’ and multiple remote locations. With data collected from several practicing physicians, and actual fiber deployments across the country we discuss the economic relation between two industries. Encouraged by several cited literature proposing heuristic dynamic policies and stochastic programming approaches to address clinics’ appointment scheduling to meet healthcare demands and increasing provider productivity our study provides an optimal method for medical providers to see increased revenues by incorporating telemedicine in their traditional clinical practices. Additionally, with the advent of ultra high bandwidth communities, we discuss how only one end of the high-speed network infrastructure needs to be built for implementing a successful telemedicine practice.

Objective

1. Attendees will have a comprehensive understanding of how using stochastic queuing models in appointment scheduling can improve patient wait times, provider productivity, and reduce appointment times
2. Attendees will be able to appreciate the relationship between the fiber-optic build-outs, government initiatives, and its economic effects in delivering meaningful healthcare to the populations
3. Healthcare providers and administrators will be able define new business models to leverage the deployment of ultra high broadband services to incorporate telemedicine practice in their traditional practice independently or by collaboration.

DEVELOPING A COMPREHENSIVE TELEHEALTH DASHBOARD AT THE SYSTEM LEVEL

PRESENTERS AND CONTRIBUTING AUTHORS:
Kelsey E. Hofacer, MHSA, Consultant, Smriti Neogi, PhD, Denise White, PhD
Cincinnati Children’s Hospital Medical Center, Cincinnati, OH, USA

In the fall of 2013, Cincinnati Children’s Hospital Medical Center (CCHMC) established the Center for Telehealth (the Center) to improve patient access to pediatric expertise, with the goal of improving health outcomes, patient/provider experience, and value to patients. The Center developed an executive dashboard, which serves as a method for tracking the Center’s progress towards strategic and operational priorities. In the dashboard, standard volume and financial measures were included, but it was critical to identify and measure items specifically related to the Center’s mission. This presentation will address how the Center identified and aligned the dashboard’s goals, metrics, and data elements within each of the five tenets of the Center’s mission: Operational Excellence, Provider Experience, Patient Experience, Value, and Access. The presentation will detail how the Center leveraged EPIC, the organization’s EMR, and existing data collection methodologies to reduce reliance on manual collection techniques. Specifically, the Center worked with the EPIC design team to develop a global ambulatory documentation strategy, which allowed the Center to collect data to measure access, operations (e.g. no shows, distance travel avoided, etc.), and the elements necessary to calculate value. Additionally, the presentation will discuss the Center’s work with the organization’s Patient and Provider Experience teams, and how the Center developed a short and long-term data collection plan to ensure consistent experience data was appropriately collected and incorporated into the dashboard. The executive dashboard is not a static document, and recognizes it will need to grow and evolve in tandem with the Center. However, by developing and aligning the dashboard’s measures with the Center’s mission, the metrics will support the strategic decision-making necessary for future growth.

Objectives

1. Understand how to identify relevant system-level measures that transcend clinical programmatic-specific outcomes.
2. Understand potential opportunities for leveraging existing systems, including the EMR, to limit dependency on manual data collection.
3. Understand how a dashboard with appropriate indicators can lead to improved strategic decision making.

TELEMEDICINE ARCHITECTURAL FRAMEWORK: TELEMEDICINE SUCCESS THROUGH STANDARDS AND ONTOLOGIES

PRESENTERS AND CONTRIBUTING AUTHORS:
Daniel Ramirez, MD, Telehealth Coordinator, Catalina Lopez, MD, MSc
Fundación Santa Fe de Bogotá, Bogota, Colombia

Telemedicine services development is considered of great importance in advancing healthcare quality, opportunity, and access. Nonetheless, telemedicine models proved difficult to discover, develop and deploy; many standard approaches are just beginning to flourish, but still are not shared globally to help create high-quality, great-value, user-centered healthcare services. The Telemedicine Architectural Framework (TAF) is a set of standards and toolkits aimed to facilitate the evaluation of a given telemedicine architecture against the healthcare service development cycle, establishing key process indicators and implementation mechanisms. It allows service administrators, clinic managers, and other decision-makers understand the current status of a telemedicine service and plan a roadmap of strategies to achieve the desired goals. The goal is to simplify and standardize the discovery, analysis, evaluation and improvement of telemedicine architectures, in its technological, processes, and strategy.
In the past 15 years South Africa has drafted and/or introduced many policy related documents that should have led to successful implementation and integration of e-Health initiatives (including telehealth or telemedicine). Healthcare to 82% of the population is provided through a public healthcare system, devolved to 9 provincial Departments of Health that act autonomously within national guidelines. e-Health began in 1995 with formation of the National Health Information Systems Committee and the National Telemedicine Task Team (1998). Subsequently a National Telemedicine System was begun (1999) in a setting devoid of guidance, and failed within 2 years. After a period of policy stagnation the period 2008–2011 saw increased activity resulting in draft documents for telemedicine regulations and ethics (2008), a draft e-Health and Telemedicine Strategy document (2010), and formation of the South African Telemedicine Association (SATMA) and Ministerial Advisory Committee (2011). Documents currently available include: e-Health Strategy South Africa (2010), A Telemedicine Strategy for South Africa (draft, 2012), m-Health Strategy South Africa (2012), National Health Normative Standards Framework for Interoperability in e-Health in South Africa (2014), and Draft General Ethical Guidelines for Good Practice in Telemedicine (2008–14). Significant guidance and regulation is in place. South Africa also aligns with international guidance. In 2012 the World Health Organization and International Telecommunications Union jointly released their National eHealth Strategy Toolkit. It provides countries with specific guidance and an orderly method to develop and implement their own ‘national e-Health vision,’ ‘action plan,’ and ‘monitoring framework.’ As such it does not guide development of an e-Health strategy, in contrast to other published processes, but rather a systematic process by which to implement e-Health nationally. Evidence shows this Tool Kit has been substantially followed in South Africa. Despite this significant quantity of policy guidance, and alignment with the WHO/ITU Toolkit, telehealth and other e-Health initiatives fail to thrive. This is evidenced through past and recent audits. A 2008 audit showed only 32 of 86 ‘sites’ active in 4 service areas (teleradiology, teleconsultation, telespirometry, and ECG, primarily using ISDN based video-conferencing). No usage data was available, and other store and forward services and tele-education were known to occur. A 2013 audit of all 9 provinces used a questionnaire, annual reports, and the literature to triangulate evidence of current activity. Systematically collected data on use was still unavailable. Of 433 state hospitals only 131 had telehealth capability, and only 79 of 1,025 State Clinics had telehealth capability. A total of 14 service types were identified, with poor usage data available for only 4. Clearly telehealth is not embedded or integrated, and now interest has jumped to ‘m-Health’ perceiving it to be a distinct entity. The dichotomy between ‘theory’ and ‘practice’ in South Africa will be presented as a case study to alert other countries to the flawed logic of building a comprehensive policy milieu without ensuring concurrent development of the necessary e-Health strategy, infrastructure, infrastructure, and politically conducive and collaborative setting.

**Objectives**

1. Understand the policy and guidelines available in South Africa.
2. Appreciate the need for prior and overarching e-Health Strategy to guide development.
3. Understand the importance of monitoring to determine status and progress of e-Health implementations.
A REVIEW OF TELEHEALTH IN BRAZIL: ADVANCES AND LIMITATIONS

PRESENTERS AND CONTRIBUTING AUTHORS:
Magdala A. Novaes, PhD, Associate Professor1, Rhayssa R B P Lopes2, Juliana Wolf3, Claudinelle F q Souza, MSc, PhD2
1Federal University of Pernambuco, Recife, Brazil, 2University of Pernambuco, Recife, Brazil, 3Universidade Regional Integrada do Alto Uruguai e das Missões, Santo Ângelo, Brazil

Introduction: Telehealth in Brazil has been widely used by health professionals to provide improved quality of care and promote accessibility to health services. Telehealth services are mainly used in primary health settings. In addition, a range of different health professionals have been made research on this topic, for instance, physicians, nurses, dentists, nutritionists and speech pathologists. Hence, they have played an important role in the application of telehealth services around the country.

Methods: This paper is an integrative review that appraised articles published in the past five years (2010 - 2014). Two databases were utilized, Bireme and EBSCOhost, where the following descriptors were used in both languages Portuguese and English, “telehealth,” “telemedicine,” “tele-education,” “teleconference,” “ehealth,” “teleconsultation,” “telemonitoring.” The criteria for this review were research produced in Brazil and fully available. Thesis and dissertations were excluded from the study. It was found a total of 68 articles that met the research criteria.

Results: Telehealth is an important modality for the improvement of health services in Brazil. However, limitations of the implementation of telehealth are generally related to slow Internet connections, lack of informatization and lack of knowledge of using information and communication technology (ICT). Similarly, some complaints were related to the time and effort that are required to ICT training and professional learning. On the other hand, the use of teleдиagnostic has increased especially in small towns where there is not specialized services. Therefore, teleradiology and tele-electrocardiography are used to provide faster diagnosis. In addition, tele-diagnostic has demonstrated to generate economic and health benefits.

Conclusion: Telehealth in Brazil has been utilized for different health personnel in Brazil. Despite the existence of some barriers in implementing telehealth services, advances have shown that this modality has a significant importance in promoting health assistance to Brazilians.

Objectives
1. Identify telehealth services in Brazil.
2. Describe Brazilian advances in telehealth.
3. Understand the limitations in using telehealth services in Brazil.

Different specialties have been utilizing telehealth and researchers have covered a variety of topics, such as cardiology, radiology, pediatrics, drug abuse, dermatology, oral health, hearing and rehabilitation. Applications are also related to the use of telehealth in education where it was used in academic programs as well as training of healthcare personnel from different levels of care through tele-education.

Conclusion: Telehealth has been utilized for different health personnel in Brazil. Despite the existence of some barriers in implementing telehealth services, advances have shown that this modality has a significant importance in promoting health assistance to Brazilians.

A MULTI-STAKEHOLDER STRATEGY FOR THE GENERATION OF NEW TELEHEALTH SERVICES IN RURAL QUEENSLAND

PRESENTERS AND CONTRIBUTING AUTHORS:
Anthony C. Smith, PhD, Deputy Director; Adjunct Professor1,2, Ruth Saunders, RN1, Liam J. Caffery, PhD1, Natalie K. Bradford, PhD1, Joanne Grey, BA1, Len C. Gray, PhD1
1Centre for Online Health, The University of Queensland, Brisbane, Australia, 2Queensland Children’s Medical Research Institute, Brisbane, Australia

Introduction: The delivery of clinical telehealth services to small rural communities depends on a well-coordinated strategy, which brings together a number of stakeholders. A single technological solution (for telehealth) does not exist for small rural communities, which have limited access to specialist health services. The Health-e-Regions program was introduced in the Western Downs region of Queensland to assist with the generation of new telehealth services in three selected towns. The aim of the program was to improve access to a range of specialist health services and to reduce the need for travel. The program commenced in 2012 with a thorough scoping study; then a pragmatic strategy in 2013, which included the planning and establishment of new telehealth services in public hospitals, primary health care centres (general practice); and residential aged care facilities. Telehealth activity was compared pre- and post-implementation of the Health-e-Regions program; showing promising signs of telehealth adoption.

Methods: Changes in telehealth activity were summarised over a two-year period from July 2012 to June 2014. Important factors associated with the introduction of new telehealth services have been identified by the Health-e-Regions program.

Results: Since the commencement of the Health-e-Regions program in January 2013, some positive changes have been identified in regards to telehealth usage. Public hospital telehealth activity in this region, increased from 2261 consultations in 2012/13 to 4622 consultations in 2013/14. Non-hospital telehealth activity increased from 651 consultations in 2012/13 to 1313 consultations in 2013/14. Important factors associated with the introduction of new telehealth services were: increasing awareness of the use of telehealth (from the perspective of the clinicians, patients, hospital managers and the general public); developing protocols that simplify the referral process; planning telehealth services that had a sustainable funding base; and ensuring appropriate telehealth facilities were accessible to all participants.

Conclusion: The establishment of sustainable telehealth services requires a carefully planned strategy that addresses important requirements from a multi-stakeholder perspective. The strategy must consider technological requirements; availability of clinical expertise; change management; business processes; education and training; and communications and marketing. The Health-e-Regions program is helping to improve access to health services for people living in the Western Downs region of Queensland - through the use of telehealth.
Objectives
1. Acquire an understanding of the processes developed to plan the Health-e-Regions program.
2. Gain an understanding of the key factors which have contributed to the development of services in the region.
3. Learn about the future plans for the Health-e-Regions program.

TUESDAY, MAY 5, 2015
4:15 pm–5:15 pm Tuesday, May 5, 2015

PRESENTATION PANEL

Session 74
Session Title: FCC HEALTHCARE CONNECT FUND: HOW TO MAXIMIZE TELEHEALTH BENEFITS USING THE CONSORTIUM MODEL
Track: Operational Management Room 304ABC

MODERATOR: Radhika Karmarkar, JD, BA, Deputy Division Chief
Federal Communications Commission, Washington, DC, USA

PRESENTER: Kip Smith, BS, Executive Director
Health Information Exchange of Montana, Kalispell, MT, USA

PRESENTER: Scott Davis, MHA, BA, Assistant Vice President, Business Strategy and Development
Geisinger Health System, Danville, PA, USA

PRESENTER: Eric Brown, MBA, BA, President & CEO
California Telehealth Network, Sacramento, CA, USA

PRESENTER: Donald Lewis, MHA, BA, Senior Manager, Rural Healthcare
Universal Service Administrative Company, Washington, DC, USA

This panel discussion, moderated by USAC and FCC staff, will present varied perspectives on the consortium model of the FCC’s Healthcare Connect Fund (HCF) Program, featuring leaders from a diverse set of organizations that pursued consortia applications. The panel will focus on encouraging the formation of new HCF consortia inspired by the lessons learned by these successful participants.

Representatives from HCF consortia will share their experiences with HCF and discuss how their network’s broadband connectivity benefits their communities through increased access, decreased healthcare costs, minimization of transportation, increased availability of services, and greater continuity of care. These participants have benefited from a variety of solutions, including using one vendor to provide services to hundreds of participating entities, or multiple vendors to tailor the specialties of various service providers to their networks’ particular needs. Using these varied solutions, consortia have secured better service levels and pricing for their HCP entities and have facilitated connectivity where it was not available previously.

– Geisinger Health System is a non-profit, physician-led, fully integrated health services organization, serving over 2.6 million people, including 5 hospital campuses, 1,000 + employed physicians, 37 primary care sites, 26 clinical service lines, an alcohol/chemical dependency treatment center, a full-service insurance company, a research enterprise, and a company that disseminates system innovations. Geisinger provides a broadband network covering 31 primarily rural Pennsylvania counties. Numerous telemedicine services are conducted over the network, including tele-ICU, tele-psychiatry, tele-stroke, tele-EEG and adult and pediatric tele-echocardiology.

– The Health Information Exchange of Montana (HIEM) is a rural health consortium that constructed a new 425 mile fiber optic network to connect 21 hospitals and clinics in Northwest and North Central Montana through the Pilot Program. Telemedicine is conducted over the network for tele-radiology, tele-stroke and diabetic education. Several more services are in development for deployment over the next few years. – The California Telehealth Network (CTN) is a statewide MPLS broadband Wide Area Network (WAN) with more than 239 active broadband connections to various HCPs. Telemedicine is conducted over the network for tele-radiology, tele-pharmacy, tele-psychiatry, tele-rheumatology, ePrescribing, tele-pulmonology, tele- oncology, tele-stroke, tele-nephrology, team meetings, grand rounds, and adult/pediatric behavioral health. A comprehensive tele-diabetes program provides for a combination of health education, endocrinology, podiatry, and other medical disciplines.

Presentations will show the flexibility of the program to allow for different models of networks, ranging from a single unified health system to a statewide network of different types of entities, and offer tips for successfully navigating the challenges of establishing robust telemedicine networks.

Objectives
1. Acquire understanding of the benefits of forming a consortia in the HCF Program.
2. Obtain tips/best practices for successful consortia formation.
3. Gain insights about how the consortium model successfully combines technology and service integration.

MONDAY, MAY 4, 2015
8:00 am–8:45 am Monday, May 4, 2015

PRESENTATION PANEL

Session 75
Session Title: STAYING AHEAD OF THE SHIFTING LEGAL AND REGULATORY LANDSCAPE
Track: Policy and Legal Room 403B

MODERATOR: Natasa Sokolovich, JD, MSHCPM, Executive Director
University of Pittsburgh Medical Center, Pittsburgh, PA, USA

PRESENTER: Ellen Janos, JD, Partner
Mintz Levin, Boston, MA, USA

PRESENTER: Julie Korostoff, JD, Partner
Mintz Levin, Boston, MA, USA

PRESENTER: Terrence Lewis, JD, Associate Counsel
University of Pittsburgh Medical Center, Pittsburgh, PA, USA

The adoption of the Model Policy for the Appropriate Use of Telemedicine Technologies in the Practice of Medicine by the Federation of State Medical Boards is expected to spur many state medical boards to modernize their rules and guidance governing the delivery of care through technology. This Model Policy along with new guidance from the American Medical Association as well as the HIPAA rules governing privacy and security and the FDA rules governing certain software products will have an impact on how existing and new telemedicine programs are designed and implemented. This session, which is led by the head of UPMC’s successful telemedicine program, will explore the recent changes in the legal landscape for telemedicine services and provide best practices for vendor and provider contracting that reduce both regulatory and business risk.

Objectives
1. Achieve a better understanding of the new guidance from the Federation of State Medical Boards, the AMA, and the FDA.
2. Understand how to negotiate key vendor contract terms, including Business Associate Agreements.
3. Understand how to develop provider agreements that appropriately address standard of care, liability, and HIPAA obligations.
Clinical evidence has demonstrated that the remote monitoring of patient-generated health data improves care, reduces hospitalizations, helps avoid complications and improves satisfaction, particularly for the most chronically ill, and those in remote geographies. Patients are also empowered to make healthy lifestyle changes. The increased use of remote monitoring in healthcare also represents billions of dollars in new opportunities for the information and communications technology industry. For example, the ongoing Care initiative, which is examining the benefits of remote monitoring to those with chronic conditions. Join this panel discussion to hear from key stakeholders about current remote monitoring opportunities and challenges.

**Objectives**

1. Acquire knowledge of regulatory status and developments related to remote patient monitoring.
2. Gain insights into the benefits of remote patient monitoring to subsidized medicine.
3. Share insight on the latest research related to remote patient monitoring benefits.

**STRATEGIES FOR ADVANCING PRO-GROWTH TELEHEALTH POLICIES AT THE STATE LEVEL**

**PRESENTERS AND CONTRIBUTING AUTHORS:**

Michele Lynn Satterlund, JD, Lawyer & Lobbyist
McGuireWoods, Richmond, VA, USA

Advances in technology are transforming the delivery of healthcare by removing distance barriers between providers and patients. Mobile and Web-based applications are increasing access to non-emergency care and reducing costs. In this growing healthcare environment, boundaries are limited only by technology as new applications are being invented every day. Unfortunately, state laws and regulations have not kept up with the advances made in technology, which has led to a system of fragmented rules that threaten to slow the growth of the telehealth industry. Whether the issue is reimbursement, cyber-security, availability of broadband internet, state licensure, or the mismatch of costs between providers and insurers, barriers imposed at the state level are reducing access to care and diminishing the economic opportunities for industries willing to invest in this sector of the healthcare industry. And the economic opportunities are significant. Forbes recently reported that “telehealth will generate $2 billion in the US by 2018.” Worldwide, revenue for telehealth products and services are expected to reach $4.5 billion in four years, compared with $440.6 million in 2013. With this level of economic opportunity, it is critical that telehealth stakeholders work to ensure the advancement of pro-growth policies that will help spur the growth of this burgeoning industry in the United States. But tensions continue to exist in the policymaking arena as state policymakers seek to create telehealth policies that balance public safety, access-to-care and economic development. And while the ATA and the national e-Health Collaborative have traditionally provided the telehealth industry with an organized advocacy voice at the federal level, the representation of telehealth interests at the state level has been uneven, resulting in disparate state laws and policies that create barriers to the growth of the telehealth industry at the state level. This fragmentation has created a critical need for an organized voice at the state level - a platform from which state policymakers can understand and appreciate the role of telehealth in terms of patient access and economic development. In order to move forward as a united and organized voice towards the implementation of uniform pro-growth telehealth policies, it’s critical advocates understand what messages will resonate with policymakers and how to educate policymakers when it comes to balancing the needs of the telehealth industry with the needs of the healthcare industry. This presentation will teach industry advocates how to successfully negotiate the complexities of state regulatory and legislative arenas, and demonstrate how to work within current policymaking frameworks. Additionally, the presentation will help identify key stakeholder relationships that can help spur industry growth, and will show the top five issues that are impeding the growth of the telehealth industry at the state level. Knowing how to work with policymakers, as well as interested stakeholders, is a critical component to the industry’s national growth, and this presentation will give participants the tools they need to better understand how to navigate the complexities of the policy-making arena.

**Objectives**

1. Participants will gain an understanding of the current legislative and regulatory tensions that that impede the advancement of pro-growth telehealth policies at the state level.
2. Participants will acquire an understanding of the best practices and strategies that have worked to advance pro-growth telehealth policies with state policymakers.
3. Participants will have a better understanding of the barriers that impede the advancement of telehealth, and will better understand what steps can be taken to minimize these barriers within the states.
POLITICAL COMPROMISE: PLANNING AND IMPLEMENTING A STATEWIDE TELEHEALTH ALLIANCE IN SOUTH CAROLINA, A STATE THAT IS NOT EXPANDING MEDICAID

PRESENTERS AND CONTRIBUTING AUTHORS:
Mark Ashton Lyles, MD, MBA, Chief Strategic Officer
Medical University of South Carolina, Charleston, SC, USA

While many states have recently expanded their existing Medicaid programs and also established state-run insurance exchanges, the leadership of South Carolina decided to take a different approach to addressing the needs of uninsured South Carolinians: rather than encourage the young and healthy to sign up for insurance plans so their premium dollars could be used to pay for care that is delivered to sicker people, South Carolina aims to redesign and better coordinate the existing systems that deliver care to people who don’t have insurance. One mechanism the State is using to accomplish its aim is by passing a series of legislative provisos that significantly impact how care is and can be delivered throughout the entire State. In June 2013, the SC Legislature passed Proviso 33.34. Under this Proviso, the State withheld 10% of each hospital’s Disproportionate Share (DSH) dollars. If the hospital agreed to partner with other local providers and better coordinate care for the uninsured, the 10% DSH withheld was returned to the hospital. To provide hospitals and providers with additional dollars to care for the uninsured, in 2013 Medicaid base rates for technical and professional services were increased by 2.4%. All hospitals in the State agreed to participate in Proviso 33.34 and each hospital tailored its response to meet the particular needs of local residents. Although South Carolina has a number of urban communities with robust healthcare services, the State also has profoundly underserved “healthcare deserts” in many rural and impoverished communities. In these areas, access to healthcare is challenged by socio-economic factors, limited transportation, and poor health literacy and education. Since Medicaid expansion is not expected to happen anytime soon in South Carolina, elected officials throughout the State developed a profound interest in securing the delivery of high quality, sustainable healthcare services for the very citizens who had elected the politicians to office. Through collaboration and creativity, additional legislation was passed to secure substantial recurring financial support for telemedicine. Additional Provisos were passed in June 2013 and also in June 2014. In total, over $33 million have been appropriated to the Medical University of South Carolina and other providers for the purpose of creating a statewide telehealth alliance. A specific legislative intent of these dollars is to enable rural hospitals to survive financially by implementing new telehealth capabilities so they can serve their patient populations locally. Legislative focus also was placed on expanding existing telehealth programs in maternal fetal medicine, school based clinics, and stroke care and also on creating a new teleICU program. The results have been remarkable; over the past year, consensus has been reached among disparate telehealth providers in South Carolina: a statewide telehealth strategic plan has been crafted and implemented; hardware and software platforms have been standardized; novel collaborations have been undertaken to care for the uninsured; a recurring funding source for telehealth financial support has been created; and an advisory board has been appointed to oversee and guide the development of telemedicine services statewide.

Objectives
1. Understand the politics involved in a state that is not expanding Medicaid.
2. Learn how to leverage political resources to create innovative solutions to telehealth challenges.
3. Replicate South Carolina’s success in creating a recurring funding source for a statewide telehealth alliance.

MONDAY, MAY 4, 2015
3:00 pm–4:00 pm Monday, May 4, 2015

PRESENTATION PANEL

Session 78
Session Title: TELEHEALTH PARTNERING IN US AND ABROAD: A LOOK AT Viable STRATEGIES AND LEGAL CONSIDERATIONS
Track: Policy and Legal Room 403B

MODERATOR: Alexis Gilroy, JD, Partner
Jones Day, Washington, DC, USA

PRESENTER: Scott Edelstein, JD, Partner
Jones Day, Washington, DC, USA

PRESENTER: Alexis Gilroy, JD, Partner
Jones Day, Washington, DC, USA

PRESENTER: Kevin Mooney, JD, Counsel, IT Group Practice Chair
The Cleveland Clinic Foundation, Beechwood, OH, USA

Telehealth technologies provide the opportunity for healthcare providers (both within and outside a facility) to collaborate with other providers and expand patient base, brand, and available services. Interest for the provision of telehealth services across state lines and even globally is rapidly increasing as patients and consumers are increasingly mobile and options like medical tourism and online access augment care. This panel combines industry leaders with significant experience in designing, developing, and negotiating partnership arrangements.
among healthcare providers throughout the U.S. and abroad to provide the audience with examples of viable options for expanding telehealth models by collaborating with other industry participants and practical insights on applicable business terms and legal considerations for such arrangements.

**Objectives**

1. Identify known models for partnering using telehealth among healthcare facilities and providers within the U.S. and Internationally, highlighting the pros and cons of such models.
2. Describe and discuss key business and contractual terms for partnering arrangements with practical insights on negotiating such terms.
3. Convey information on relevant legal and regulatory topics for partnering arrangements (both US and International), including topics such as data privacy and security, anti-kickback, reimbursement, and jurisdictional specific requirements.

**PRESENTERS**

**Tammy Richmond, MS, OTR/L, FAOTA, CEO**

**PRESENTER:** CCHP, Sacramento, CA, USA

**Christine Calouro, MA, Project Coordinator**

**PRESENTER:** American Speech-Language-Hearing Association, Rockville, MD, USA

**MODERATOR:** Jana Cason, DHS, OTR/L, FAOTA, Associate Professor

**Track:** Policy and Legal  Room 403B

**TUESDAY, MAY 5, 2015**

**CONCURRENT ORAL PRESENTATIONS ABSTRACTS**

**Special Interest Group**, within the American Telemedicine Association, developed a survey to examine reimbursement types, payers, coding and billing with selected professional databases to obtain a current view of funding and reimbursement across all traditional rehabilitation providers. The results of this survey, implications for policy and advocacy efforts, and recommendations for future tracking tools will be discussed.

**Objectives**

1. Acquire an understanding of state and international practice trends in telerehabilitation
2. Gain knowledge in best practice standards for implementation of tele-rehabilitation
3. Identify available telerehabilitation resources to ensure legal and regulatory compliance

**PRESENETERS**

**Kathy J. Chorba, Executive Director**

**MODERATOR:** California Telehealth Resource Center, Sacramento, CA, USA

**PRESENTERS**

**Mario Gutierrez, Executive Director**

**PRESENTER:** California Telehealth Network, Sacramento, CA, USA

**PRESENTER:** Southern Illinois University School of Medicine, Springfield, IL, USA

**PRESENTERS**

**Eric Brown, MBA, BA, President & CEO**

**MODERATOR:** California Telehealth Network, Sacramento, CA, USA

**PRESENTERS**

**Mario Gutierrez, Executive Director**

**PRESENTERS**

**Southern Illinois University School of Medicine, Springfield, IL, USA**

This session will focus on the key details of getting paid now for telemedicine – from traditional fee-for-service to managed care, from Medicare to private pay, from CPT/HCPCS codes to needed documentation. The panelists will provide information on billing for telehealth coverage; including Medicare, Medicaid, and private payer; as well as an overview of state Medicaid reimbursement policies.

**Objectives**

1. Gain a deeper understanding about the various ways to bill for telehealth coverage.
2. Learn about state Medicaid reimbursement policies, including common telehealth elements and model plans.
3. Discuss prospects for Medicaid reimbursement policy improvements.

**TUESDAY, MAY 5, 2015**

**1:15 pm–2:15 pm**

**INDIVIDUAL ORAL**

**Session 81**

**Session Title: INNOVATIVE, NON-TRADITIONAL APPROACHES TO PAYMENT**

**Track:** Policy and Legal  Room 403B

**MODERATOR:** Kathy J. Chorba, Executive Director

**California Telehealth Resource Center, Sacramento, CA, USA**

**PRESENTERS**

**MODERATOR:** Kathy J. Chorba, Executive Director

**PRESENTERS**

**California Telehealth Resource Center, Sacramento, CA, USA**

**PRESENTERS**

**California Telehealth Resource Center, Sacramento, CA, USA**
THE FUTURE OF TELEMEDICINE REIMBURSEMENT

PRESENTER: Gary Capistrant, MA, Chief Policy Officer
American Telemedicine Association, Washington, DC, USA

What do you need to know about the future of telemedicine reimbursement? There is increasing interest among all payors in moving from volume-based fee-for-service to value-based payment incentives, such as per member per month or payments for acute episodes. Understand the change in payment incentives and how the value of telemedicine can be recognized. This presentation will cover topics ranging from congressional 21st Century Cures telehealth provisions, CMS Innovation Center programs, and Medicare value-based purchasing.

Objectives
1. Gain knowledge and tools to move beyond the volume-based fee-for-service reimbursement model.
2. Understand the importance of change in payment incentives and how the value of telemedicine can be recognized.
3. Understand the importance of change in payment incentives and how the value of telemedicine can be recognized.

TUESDAY, MAY 5, 2015
3:00 pm–4:00 pm Tuesday, May 5, 2015

INDIVIDUAL ORAL

Session 82
Session Title: LEGISLATIVE AND ADMINISTRATIVE POLICIES IN THE STATES: WHAT YOU NEED TO KNOW
Track: Policy and Legal Room 403B

MODERATOR: Emily Stewart, National Director of Public Policy
Planned Parenthood Federation of America, New York, NY, USA

A PROVIDER COMPANY’S PERSPECTIVE ON MULTI-STATE TELEHEALTH POLICY

PRESENTERS AND CONTRIBUTING AUTHORS:
Geoffrey Boyce, MBA, Executive Director
InSight Telepsychiatry, Marlton, NJ, USA

Telemedicine policy talks are traditionally crowded with voices of attorneys and lawmakers articulating the limitations and restrictions on this medium of care. This presentation takes the perspective of a company that, despite legislative hurdles, has successfully grown and built a multi-state telemedicine business model. Presenter Geoffrey Boyce and the CFG Health Network's InSight Telepsychiatry team have 14 years of experience as a for-profit provider organization that works to advocate for appropriate policy updates. InSight has rapidly grown its business within 14 states all with varied legislative limitations. This presentation will discuss the legislative challenges facing a multi-state telemedicine company and give best practice examples of how to work within the limitations of policy while also encouraging and facilitating changes that create a more conducive climate for telemedicine. Instead of getting tangled in the web of why a new program may not be allowed, Boyce and the InSight team take initiative to make business decisions based on how the system should be. Boyce will share his experiences cultivating organizational, community, and state buy-in for telemedicine. Getting the appropriate people at the table is just part of the
Developing a successful statewide telehealth agenda: Lessons from Nebraska

**PRESENTERS AND CONTRIBUTING AUTHORS:**
Mandi Constantine, PhD, Executive Director of Telehealth, Nebraska Medicine, Omaha, NE, USA

The Executive Director of Telehealth for Nebraska Medicine, Mandi Constantine, will focus on the progress in telehealth legislation, Medicaid coverage, and state policy occurring in Nebraska. The presenter, who is coming from the vantage point of a major healthcare provider statewide, will talk about the importance of building a state telehealth coalition. At the end of this presentation, attendees will possess a greater understanding of how to develop a telehealth agenda in their respective states.

**Objectives**
1. Understand the importance of a state telehealth coalition.
2. Learn how to build a state telehealth coalition.
3. Develop a telehealth agenda for your state.

Concurrent Oral Presentations Abstracts

TUESDAY, MAY 5, 2015

**INDIVIDUAL ORAL**

**Session 83**

**Session Title:** STATE MEDICAL AND LICENSING BOARDS: WHAT YOU NEED TO KNOW

**Track:** Policy and Legal  
**Room:** 403B  
**Moderator:** Ellen R. Cohn, PhD, CCC-SLP, Associate Dean for Instructional Development, School of Health and Rehabilitation Sciences, RERC on Telerehabilitation, University of Pittsburgh, Pittsburgh, PA, USA

**Presenters and Contributing Authors:**
Sandra Evans, MAEd, RN, Chair, Nurse Licensure Compact, NCSBN, Chicago, IL, USA

Among the major impediments to the growth of telemedicine is archeaic state licensure law. The National Council of State Boards of Nursing (NCSBN) recognized the potential implications of the advent of telemedicine on the practice of nursing in the 1990s, and became the first healthcare profession to develop and implement an interstate compact for licensure. The Nurse Licensure Compact (NLC) was adopted in 1998 by NCSBN, utilizing the mutual recognition model mirroring the driver’s license, in that one multistate license is issued by a licensee’s primary state of residence and the license is valid and accepted in each compact state. From 2000 to 2009, 24 states enacted the NLC; annually, 5–8 states on average introduce NLC legislation. Yet, none has passed legislatively since Missouri in 2009. Barriers to legislative enactment have occurred despite the prevalence of interstate compacts in states (on average, each state is a member of 25 compacts) and the positive history of a driver’s license compact which has worked well for over 60 years. Several years after the adoption of the NLC, NCSBN adopted the APRN (Advanced Practice Registered Nurse) Compact. APRN Compact legislation was passed in several states in 2002, although it was never implemented by the respective boards of nursing. The reason for the halt of this compact’s expansion was the significant number of nuances between APRNs which existed from state to state. Such lack of uniformity was later addressed by NCSBN with the APRN Consensus Model (CM) (2008). States which achieve substantial implementation of the CM may consider APRN Compact membership. Between the Nurse Licensure Compact and the APRN Compact, two interstate compacts were developed with the intent of widespread adoption by states although seemingly fell short of the goal. This presentation will describe the key impediments to growth of the NLC and APRN Compact as well as the steps taken by NCSBN and the NLC’s governing authority, the Nurse Licensure Compact Administrators (NLCA), starting in 2013, to remedy the sluggish uptake of these two compacts. These steps include the convening of heads of boards of nursing in all states. From this dialogue, it was apparent that the task at hand would involve something that interstate compacts rarely, if ever, do - to undergo amendments to the compact model legislation. This presentation will demonstrate the key revisions made to the NLC and APRN Compact. Attendees will learn how the adopted revisions focus on public protection while enabling
one multistate license for cross-border practice of nurses. While righting the ship is part of the fix, the path ahead requires that existing NLC and APRN Compact states enact the “2.0” versions of the respective compacts. Stakeholder involvement, in particular those in the telemedicine community, are needed to advocate for compacts such as these in state legislatures. Utilizing interstate compacts with mutual recognition as the vehicle to implement borderless practice preserves state-based licensure and eliminates the need for alternatives. The vision can only be achieved with the backing of the telemedicine community.

Objectives
1. Acquire an understanding of interstate compacts as a vehicle to enable licensure portability for telehealth.
2. Gain knowledge of the Nurse Licensure Compact and APRN Compact, impediments to their growth and how compact amendments will spur expansion.
3. Learn how stakeholder efforts are critical to making borderless nursing practice a reality.

THE EMERGING FEDERAL STANDARD FOR TELEHEALTH:
GAINING CLARITY IN A FIFTY STATE ENVIRONMENT

PRESENTERS AND CONTRIBUTING AUTHORS:
Kofi A. Jones, MA, Vice President of Public Affairs
American Well, Boston, MA, USA

While innovation in telehealth progresses and doctors, hospitals, and governments take ongoing steps to encourage this modality of care delivery, there still exist multiple barriers within the telehealth ecosystem which prohibit its use and adoption. One of the greatest barriers is the inconsistent patchwork of state laws that have inhibited the deployment of telehealth in both the private and public sectors. With 50 sets of rules, and 50 different definitions of what telehealth is, both providers and patients are in a state of limbo, asking questions such as: Can I, as a provider, deliver care while still being compliant in all 50 states? Can I, as a patient, trust the care I receive via telehealth is safe and secure? The Emerging Federal Standard for Telehealth: Gaining Clarity in a 50 State Environment will examine the 50-state environment, and provide attendees with a look at the current landscape, where it’s been, and where it’s heading. The presentation will also examine the federal standards that have begun to emerge over the past year. Attendees will gain an understanding not only of how to offer telecare in a compliant manner, but how to become active participants in the policy making process.

Objectives
1. Understand the 50-state clinical regulatory environment for telehealth.
2. Gain clarity into the current state of play on a 50-state basis.
3. Understand the state of play nationally.

EXPANDING ACCESS, PROTECTING PATIENTS: AN UPDATE ON THE INTERSTATE MEDICAL LICENSURE COMPACT AND TELEMEDICINE POLICY

PRESENTERS AND CONTRIBUTING AUTHORS:
Lisa Robin, MS, Chief Advocacy Officer
Federation of State Medical Boards, Washington, DC, USA

Ms. Robin will provide an overview and status update on the development and implementation of the Interstate Medical Licensure Compact, a new pathway for expedited licensure for qualified physicians that will facilitate multi-state practice, expand access to care, and enable the use of telemedicine across state lines. Ms. Robin will also discuss the FSMB’s model guidelines for the use of telemedicine technologies in medical practice and the status state medical and osteopathic board policies as related to telemedicine.

Objectives
1. Attendees will have an understanding of the Interstate Medical Licensure Compact.
2. Attendees will have an understanding of the standards set forth in FSMB Model Policy on the appropriate use of telemedicine technologies in the practice of medicine.
3. Attendees will receive an update on federal and state telemedicine legislation and regulations.
MONDAY, MAY 4, 2015
8:00 am–8:45 AM Monday, May 4, 2015

Session 84
OPERATIONAL MANAGEMENT
Room 404AB
MODERATOR: Taylan Bozkurt, Operations and Financial Specialist, Department of Surgery
Massachusetts General Hospital, Boston, MA, USA

P1 INTEGRATING QUALITY ACROSS A REGIONAL NETWORK: THE SUB-HUB THEORY
PRESENTER & CONTRIBUTING AUTHORS:
Rachelle Longo, ADN, Manager, Telemedicine Outreach, Elizabeth Cothren, MSN, Jennifer Humbert, MSN, MHA
Ochsner Medical Center New Orleans, Jefferson, LA, USA

P2 AN INNOVATIVE MODEL INTEGRATING A CLINICAL TELEHEALTH INITIATIVE IN ADVANCED PRACTICE NURSING ACADEMIA TO ASSURE PATIENT SAFETY AND QUALITY
PRESENTER & CONTRIBUTING AUTHORS:
Maite Garrido, DNP, ARNP-FNP, Visiting Clinical Assistant Professor, Lucie Dlugasch, PhD, ARNP,
Maria De Los Santos, PhD, DNP, ARNP, MPH
Florida International University, Miami, FL, USA

P3 LEARN WHERE YOU LIVE: EXTENDING THE APPLICATION OF REMOTE PRESENCE TELEMENTORING TO GLOBAL CLASSROOMS FOR POST-SECONDARY HEALTH EDUCATION
PRESENTER & CONTRIBUTING AUTHORS:
Lorna J. Butler, PhD, College of Nursing, Heather Exner-Pirot, PhD, Wilhelmina Atos, PhD, Nikolai Semenovich Diachkovskii, MD
1University of Saskatchewan, Saskatoon, SK, Canada, 2University of the East Ramon Magsaysay Memorial Medical Centre, Queson City, Philippines, 3Northeastern Federal University, Yakutsk, Russian Federation

P4 SIMULATION AND TELEMEDICINE: COMBINING TECHNOLOGIES TO TAKE HEALTHCARE TRAINING TO THE NEXT LEVEL
PRESENTER & CONTRIBUTING AUTHORS:
Michael Manley, RN, MNSe, Director of Outreach, Sarah Kinder, PhD, DNP, APRN, William Greenfield, MD,
Tesa Ivey, MSN, APRN, WHNP-BC
University of Arkansas for Medical Sciences, Little Rock, AR, USA

P5 TELEMEDICINE DEVICE INTEGRATION FOR HEALTH SUPPLY CHAIN IN DISASTER MANAGEMENT BASED ON GS1
PRESENTER & CONTRIBUTING AUTHORS:
Dina Ziadlou, PhD, Clinical System Specialist
Cedars-Sinai Medical Center, Los Angeles, CA, USA

P6 PROMOTING HEALTH LITERACY THE EWAY: A PRELIMINARY REPORT FROM RURAL TAMILNADU, INDIA
PRESENTER & CONTRIBUTING AUTHORS:
Ganapathy Krishnan, MCh, FACS, PhD, President1, S Srinivasan, BSc1, Jeggan Karuppayia, MSc2, Arulmani Dhanaraj, BSc2
1Apollo Telemedicine Networking Foundation, Chennai, India, 2M S Swaminathan Research Foundation, Chennai, India
Session 85  
CLINICAL SERVICES CASE STUDIES  
Room 404AB  
MODERATOR: Theresa M. Davis, PhD, RN, NE-BC, Clinical Operations Director, enVision eICU  
Inova Health System, Falls Church, VA, USA

P7 CHALLENGES IN ACADEMIC TELERADIOLOGY  
PRESENTER & CONTRIBUTING AUTHORS:  
Elizabeth A. Krupinski, PhD, Professor  
University of Arizona, Tucson, AZ, USA

P8 CONSOLIDATION, SPECIALIZATION, COMMODITIZATION: WHAT CAN TELEMEDICINE LEARN FROM TWO DECADES OF TELERADIOLOGY?  
PRESENTER & CONTRIBUTING AUTHORS:  
Alan Pitt, MD, Professor, Neuroradiology  
Barrow Neurological, Phoenix, AZ, USA

P9 VETERANS AFFAIRS TELEMEDICINE: BRINGING UROLOGIC CARE TO RURAL PATIENTS  
PRESENTER & CONTRIBUTING AUTHORS:  
Stephanie Chu, MD, Resident, Richard Boxer, MD, Pauline Madison, BS, Leonard Kleinman, MD, Lisa Altman, MD, Carol Bennett, MD, Jeremy Shelton, MD, MSHS  
UCLA, Los Angeles, CA, USA

P10 A PROSPECTIVE RANDOMIZED CONTROLLED STUDY OF VIRTUAL VIDEO VISITS IN UROLOGY  
PRESENTER & CONTRIBUTING AUTHORS:  
Boyd R. Viers, MD, Resident, Marcelino E. Rivera, MD, Daniel A. O’Neil, BSc, Matthew R. Gardner, BSc, Rachael L. Hamilton, BSc, Sarah M. Jenkins, BSc, Deborah J. Lightner, MD, Matthew T. Gettman, MD  
Mayo Clinic, Rochester, MN, USA

P11 IMPROVING CHRONIC APHASIA TREATMENT: COMBINING TELE-SPEECH & ONLINE THERAPY  
PRESENTER & CONTRIBUTING AUTHORS:  
Andrew Gomory, BA, MS, CEO  
Lingraphica, Princeton, NJ, USA

P12 RIGHT PLACE REHABILITATION: SAVING MILES THROUGH TELEREHABILITATION  
PRESENTER & CONTRIBUTING AUTHORS:  
Marca Alexander, MD, Associate Chief of Staff, Rehabilitation Medicine  
Birmingham Veterans Affairs Medical Center, Birmingham, AL, USA

P13 PERCEPTIONS AND SATISFACTION WITH PERSONALIZED VIDEO RECORDING AMONG PATIENTS WITH CRANIAL CONDITIONS AND/OR BRAIN TUMORS  
PRESENTER & CONTRIBUTING AUTHORS:  
Andrew J. Meeusen, MA, Director of Research¹, Randall W. Porter, MD², Andrew S. Little, MD², Robert F. Spetzler, MD³, William White, MD³, U. Kumar Kakarla, MD³, Andrew Shetter, MD³, Nicholas Theodore, MD³  
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P14 TELEHEADACHE CARE IMPROVES ADHERENCE TO EVIDENCE BASED GUIDELINES FOR MIGRAINE MANAGEMENT  
PRESENTER & CONTRIBUTING AUTHORS:  
Timothy Smith, MD, RPh, FACP, Mercy Health  
Mercy Health, Chesterfield, MO, USA
P15  Telerheumatology: Despite improved access could there be a potential delay in care without a skilled “Presenter”?

Presenter & Contributing Authors:
Zsolt Kulcsar, DO, Rheumatology Fellow/Leadership Preventive Medicine Resident, John N. Mechella, DO, MPH, Daniel A. Albert, MD
Dartmouth Hitchcock Medical Center, Lebanon, NH, USA

Monday, May 4, 2015
1:15 pm–2:15 pm Monday, May 4, 2015

Session 86
Clinical Services Case Studies/Policy and Legal
Room 404AB

Moderator: Ed Brown, MD, CEO
Ontario Telemedicine Network, Toronto, ON, Canada

P16  Feasibility of Software-Assisted Optical Coherence Tomography in Screening

Presenter & Contributing Authors:
Tian Xia, BA, Medical Student, Ben C. Szirth, PhD, Albert S. Khouri, MD
Rutgers New Jersey Medical School, Newark, NJ, USA

P17  Is Broadband Satellite Adequate for Remote Ophthalmic Consultations?

Presenter & Contributing Authors:
Yogesan Kanagasigam, PhD, MSc, BSc, National Research Director1, Justin Boyle, PhD2, Di Xiao, PhD1, Janardhan Vignarajan, MSc1, Mei-Ling Tay-Kearney, MD3
1Australian e-Health Research Centre, Floreat, Australia, 2Australian e-Health Research Centre, Brisbane, Australia, 3Royal Perth Hospital, Perth, Australia

P18  Evaluation of Real-Time Video Feed from the Digital Indirect Ophthalmoscope for Telehealth Consultations

Presenter & Contributing Authors:
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1Keck School of Medicine of USC, Los Angeles, CA, USA, 2The Vision Center, Children’s Hospital of Los Angeles, Los Angeles, CA, USA

P19  Think Smart, Use Technology, But Do Not Think Too Small: Sepsis Innovation

Presenter & Contributing Authors:
Christopher Veremakis, MD, Medical Director, Mercy SafeWatch and Mercy Virtual1, Ashok Palagiri, MD1, Donna Gudmestad, RN, BSN2
1Mercy Virtual, Chesterfield, MO, USA, 2Mercy Virtual, St. Louis, MO, USA

P20  Using Clinical Data to Establish Representative Populations of Patients with Severe Sepsis/Septic Shock in a Large Private Healthcare System: The Mercy Virtual Sepsis Unit

Presenter & Contributing Authors:
Robert Nicholson, PhD, LCP, FAHS, Director, Behavioral Medicine, Mercy Clinic Headache Center, Benjamin Dumnitt, BS, PhD, Brian Yount, PhD
Mercy Health, Chesterfield, MO, USA

P21  Telemedicine to Overcome Barriers to Care for Transgender Women of Color: Designing a Culturally Appropriate and Effective Telemedicine Interface

Presenter & Contributing Authors:
Manya Magnus, PhD, MPH, School of Public Health1, Christopher Chauncey Watson, BS1, Vittoria Criss, BS1, Ayana Elliott, DNP2, Irene Kuo, PhD, MPH1, Marc Siegel, MD1, Edward Machtinger, MD1, Blaine Parrish, PhD1, Neal Sikka, MD1
1George Washington University, Washington, DC, USA, 2University of District of Columbia, Washington, DC, USA, 3UC San Francisco, San Francisco, CA, USA


Presenter & Contributing Authors:
Maurice Mars, MBChB, MD, University of KwaZulu-Natal
Nelson R Mandela School of Medicine, Durban, South Africa
DEVELOPING INTERNATIONAL STANDARDS AND GUIDELINES: THE WORLD FEDERATION OF OCCUPATIONAL THERAPISTS TELEHEALTH POSITION STATEMENT

PRESENTER & CONTRIBUTING AUTHORS:
Jana Cason, DHS, OTR/L, FAOTA, Associate Professor1, Karen Jacobs, EdD, OTR/L, FAOTA, CPE2, Ritchard Ledgerd, MSc, BScOT3, Tammy Richmond, MS, OTR/L, FAOTA4, Susan Coppola, MS, OTR/L, BCG, FAOTA5, Mimi Ludwig, MS, OTR/L6
1Spalding University, Louisville, KY, USA, 2Boston University, Boston, MA, USA, 3World Federation of Occupational Therapists, Forrestfield Western Australia, Australia, 4Go2Care, Inc., Los Angeles, CA, USA, 5University of North Carolina at Chapel Hill, Chapel Hill, NC, USA, 6Good Shepherd Rehabilitation Hospital, Allentown, PA, USA

RESULTS OF THE TELEREHABILITATION SIG STATE REIMBURSEMENT SURVEY: CURRENT PAYMENT TRENDS

PRESENTER & CONTRIBUTING AUTHORS:
Tammy Richmond, MS, OTR/L, FAOTA, President1, Chris Peterson, PT, DPT, Certified MPT2, Jana Cason, DHS, OTR/L, FAOTA3
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ABSTRACT WITHDRAWN

MONDAY, MAY 4, 2015

3:00 pm–4:00 pm Monday, May 4, 2015

Session 87
CHRONIC CARE
Room 404AB
MODERATOR: Kamal Jethwani, MD, MPH, Lead Research Scientist
Center for Connected Health, Boston, MA, USA

THE ECONOMIC BENEFITS OF REMOTE PATIENT MONITORING: A BUSINESS CASE FOR TELEHEALTH-MANAGED CHRONIC CONDITION PATIENTS IN THE US AND THE UK

PRESENTER & CONTRIBUTING AUTHORS:
Boris T. Rachev, MA, MPA, Global Health Economist
CSC, Falls Church, VA, USA

MANAGING LONG-TERM POPULATION HEALTH USING PREDICTIVE ANALYTICS ON HOME MONITORING DATA

PRESENTER & CONTRIBUTING AUTHORS:
Jorn op den Buijs, MSc, PhD, Research Scientist1, Tine Smits, MSc1, Linda Schertzer2
1Philips Research, Eindhoven, Netherlands, 2Philips Home Monitoring, Framingham, MA, USA

THE BENEFITS OF IMPLEMENTING SECURE MESSAGING

PRESENTER & CONTRIBUTING AUTHORS:
Mary C. Gabriel, MSN, Care Coordinator Home Telehealth
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RELIABILITY, USABILITY, AND ADHERENCE WITH A REAL-TIME AUTOMATED HOVERING TELEHEALTH SYSTEM IN OLDER ADULTS WITH HEART FAILURE

PRESENTER & CONTRIBUTING AUTHORS:
Jarrett Evans, BA, MS, Graduate Student, Psychology Department1, Amy Papadopoulos, DSc2, Christine T. Silvers, MD, PhD2, Neil Charness, PhD1, Walter R. Boot, PhD1, Loretta Schlachta-Fairchild, PhD, RN1, Ronald Andringa, BS1, Joshua Russell, BS1
1Florida State University, Tallahassee, FL, USA, 2AFrame Digital Inc, Vienna, VA, USA, 3iTelehealth Inc, Cocoa Beach, FL, USA
### P30: Exploring Challenges and Finding Solutions to Successfully Integrate Telemonitoring into COPD Care

**Presenter & Contributing Authors:**
Lisa Brunton, MSc, Institute of Population Health1, Caroline Sanders, PhD1, Peter Bower, PhD1, Cees van Berkel, PhD2

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### P31: Telemedicine Application in the Care of Diabetes Patients

**Presenter & Contributing Authors:**
Junia Maia, Specialist, Endocrinologist1, Lidiane Sousa, PhD1, Milena Marcolino, PhD2, Clareci Cardoso, PhD1, Beatriz Alkimim, MSc1, Antonio Ribeiro, PhD2

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### P32: Using Telehealth to Support and Improve Outcomes for an Orphan Disease

**Presenter & Contributing Authors:**
Donna Ussery, RN, Nurse Project Manager, Temekis Hampton, APN, Stella Bowers, RN
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### P33: Hepatitis C Virus Care via Telemedicine for Individuals on Opiate Agonist Therapy

**Presenter & Contributing Authors:**
Andrew Talal, MD, MPH, Professor1, Marja Zeremski, PhD2, Roberto Zavala, MD3, Rositsa Dinova, PhD4, Melissa Lin, MS5, Steven Kritz, MD5, Anthony Martinez, MD1, Jon Zibbell, PhD4, Bryce Smith, PhD5

1University at Buffalo, Buffalo, NY, USA, 2Well Cornell Medical College, New York, NY, USA, 3START Treatment & Recovery Centers, Brooklyn, NY, USA, 4Centers for Disease Control and Prevention, Atlanta, GA, USA

### P34: Role of Telemedicine Network System in Rural Areas of Japan

**Presenter & Contributing Authors:**
Yasuhiro Nagayoshi, MD, PhD, Associate Professor1, Kenichi Tsujita, MD, PhD1, Shuichi Oshima, MD, PhD2, Hisao Ogawa, MD, PhD2

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### Session 88: Critical and Acute Care

**Room:** 404AB

**Moderator:** Carol Olff, RN, MSN, CCRN-E, NEA-BC, Director, Critical Care and TeleICU
John Muir Health, Concord, CA, USA

### P35: A Community Hospital Telemedicine Program: Increasing Utilization Over a Four Year Period

**Presenter & Contributing Authors:**
P. W. Ludwig, MD, FCCP, President, J. Marcus, MD, FCCP, B. Ludwig, MBA, M. Marquez, MBA, FACHE, K. Ramos, BHS, LPN, R. Lewis, BHS
NuVIEW Health, Boca Raton, FL, USA

### P36: The TeleICU: An Innovative Model for Advanced Practice Nurses

**Presenter & Contributing Authors:**
Katheryne T. Amba, MSN, CCRN, Acute Care Nurse Practitioner1,2,3
1Advanced ICU Care, St Louis, MO, USA, 2Barnes Jewish College, Goldfarb School of Nursing, St Louis, MO, USA, 3University of Chicago Medical Center, Chicago, IL, USA

### P37: The Application of TeleICU to Ventilator Liberation: A Clinical and Financial Success

**Presenter & Contributing Authors:**
Michael Ries, MD, MBA, FCCM, FCCP, FACP, Medical Director of Critical Care and eICU1, Cindy Welsh, RN, MBA2
1Advocate Health Care, Chicago, IL, USA, 2Advocate Health Care, Oak Brook, IL, USA
A-108  TELEMEDICINE and e-HEALTH  MAY 2015
Session 89
DIRECT TO CONSUMER
Room 404AB

MODERATOR: Hon Pak, MD, Chief Medical Officer
LongView International Technology Solutions, Alexandria, VA, USA

P45 CLINICAL VIDEO TELEHEALTH TO THE HOME FOR MULTIDISCIPLINARY EVALUATION OF SPINAL CORD INJURED VETERANS

PRESENTER & CONTRIBUTING AUTHORS:
Kevin Broder, MD, Director, Plastic Surgery/Spinal Cord Injury Telehealth Program1,2, Richard Bodor, MD1,2, Andrew Michael, MD1, Tracy Duha, RN1, Elaine Minsch, RN1, Diane Chau, MD1,2
1VA Medical Center–San Diego, San Diego, CA, USA, 2University of California San Diego School of Medicine, San Diego, CA, USA

P46 SCOLIOSIS PATIENTS AND PHYSICAL THERAPISTS LEVERAGING MOBILE APP FOR REMOTE CARE AND IMPROVED OUTCOMES

PRESENTER & CONTRIBUTING AUTHORS:
Naveen Khan, BA, PgDL, CEO1, John Dzivak, IT1, Karina Zapata, DPT, PhD2
1PT PAL, Dallas, TX, USA, 2Texas Scottish Rite, Dallas, TX, USA

P47 TELEHEALTH: IF YOU BUILD IT, WILL THE AVERAGE PATIENT COME?

PRESENTER & CONTRIBUTING AUTHORS:
Kevin Riddleberger, MBA, MS, PA-C, Senior Director of Clinical Solutions
iTriage, Denver, CO, USA

P48 LEARNINGS FROM THE DESIGN AND IMPLEMENTATION OF A DIRECT-TO-CONSUMER VIRTUAL PRIMARY CARE CLINIC

PRESENTER & CONTRIBUTING AUTHORS:
Lauren Cheung, MD, MBA, Assistant Medical Director and Clinical Instructor, Sumbul Ahmad Desai, MD
Stanford University School of Medicine, Stanford, CA, USA

P49 VIRTUAL VISITS: MANAGING ANTEPARTUM CARE WITH MODERN TECHNOLOGY

PRESENTER & CONTRIBUTING AUTHORS:
Christi McCarron, RN, MBA, CPHQ, Vice President, Careline Development and Administration, Stephen Poore, MD, Malinda Carlile, MN, WHNP-BC, RNC-OB, Richard Schroeder, MD, Bethann Plugeisen, MS, MEd
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P50 THE SECRET TO DESIGNING, DELIVERING, AND MARKETING DIRECT-TO-CONSUMER TELEHEALTH SERVICES

PRESENTER & CONTRIBUTING AUTHORS:
Geoffrey Boyce, MBA, Executive Director, Olivia Boyce, BA
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P51 CARE AT TELEMEDICINE VISITS COMPARED TO URGENT CARE VISITS FOR UPPER RESPIRATORY TRACT INFECTIONS

PRESENTER & CONTRIBUTING AUTHORS:
Lo Fu Tan, MD, MS, FCFP, Associate Medical Director, On Demand Medicine1, Natalie T. Mason, MSN, MBA2
1Southwest Medical Associates, Optum Nevada, United Healthcare, Henderson, NV, USA, 2Southwest Medical Associates, Optum Nevada, United Healthcare, Las Vegas, NV, USA

P52 A WEARABLE ECG ABNORMAL EVENT RECORDER FOR ECG MONITORING AT HOME

PRESENTER & CONTRIBUTING AUTHORS:
Jui-chien Hsieh, PhD, Associate Professor1, Yi-hsing Claire Chiu, PhD2
1Yuan Ze University, Chungli, Taoyuan, Taiwan, 2Hsuan Chuang University, Hsinchu, Taiwan
**EXPERIENCE OF IMPLEMENTING A PATIENTS’ GUIDE TO UKRAINIAN HOSPITALS AND MEDICAL CENTERS**

**PRESENTER & CONTRIBUTING AUTHORS:**
Andriy J. Hospodarskyy, PhD, Surgeon
Ternopil Medical University, Ternopil, Ukraine

**MANUFACTURING WIRELESS HEART RATE SENSOR GAUGE MACHINE WITH GSM AND GPS FOR USE IN TELEMEDICINE**

**PRESENTER & CONTRIBUTING AUTHORS:**
Maziar Dehghan Hosseinabadi, PhD, Student
Amirkabir University Of Technology, Esfahan, Iran

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**TUESDAY, MAY 5, 2015**

**1:15 pm–2:15 pm Tuesday, May 5, 2015**

**Session 90**
**BUSINESS STRATEGIES**

**Room 404AB**

**MODERATOR:** Gisele (Gigi) Sorenson, RN, MSN, Director, Telehealth
Flagstaff Medical Center, Flagstaff, AZ, USA

**P55**
**DESIRED QUALITIES IN TELEPRESENTERS: RESULTS OF THE MERCY TALENT BENCHMARK STUDY**

**PRESENTER & CONTRIBUTING AUTHORS:**
Donna Gudmestad, RN, BSN, Operations Director1, Timothy Smith, MD, RPh, FACP2,
Cynthia Mercer, BS, MBA3
1Mercy Virtual, St. Louis, MO, USA, 2Mercy Virtual, Chesterfield, MO, USA, 3Mercy Health, Chesterfield, MO, USA

**P56**
**STRATEGIES FOR SUCCESSFULLY IMPLEMENTING TELEHEALTH**

**PRESENTER & CONTRIBUTING AUTHORS:**
Crystal Jenkins, BSN, Consultant1, Luke Webster, MD2
1Blue Cirrus Consulting, Greenville, SC, USA, 2Christus Health, Dallas, TX, USA

**P57**
**ABSTRACT WITHDRAWN**

**P58**
**OPINION LEADERS’ PERSPECTIVE OF THE BENEFITS AND BARRIERS IN TELEMEDICINE: A GROUNDED THEORY STUDY OF TELEHEALTH IN THE MIDWEST**

**PRESENTER & CONTRIBUTING AUTHORS:**
Shelley Cooper, EdDc, Student
Nova Southeastern University, Kansas City, KS, USA

**P59**
**THE WIN–WIN OF NURSES IN TELEMEDICINE**

**PRESENTER & CONTRIBUTING AUTHORS:**
Carol M. McFarlane, MBA, Senior Health Planner
Ontario Telemedicine Network, Toronto, ON, Canada

**P60**
**EFFECT OF A UNIVERSITY TELEMEDICINE PROGRAM ON HEALTHCARE SAVINGS IN TIME, TRAVEL COST, AND ENVIRONMENTAL IMPACT**

**PRESENTER & CONTRIBUTING AUTHORS:**
Navjit W. Dullet, BS, MS, Student1, Madan Dharmar, MBBS, PhD2,
James P. Marcin, MD, MPH3, Jesse King4, Taylor Kaufman, M., BS5, Estella Geraghty, MD, MPH, MS1
1Touro University–California, Vallejo, CA, USA, 2University of California, Davis, Sacramento, CA, USA
P61 NATIONAL SCENARIO OF TELEMEDICINE IN INDIA

PRESENTER & CONTRIBUTING AUTHORS:
Saroj K. Mishra, MS, FACS, Professor & Head, Department of Endocrine Surgery & Incharge, School of Telemedicine & Biomedical Informatics
Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, India

P62 FOUR APPROACHES TO TELEHEALTH SERVICE AND PROGRAM DEVELOPMENT: A QUALITATIVE STUDY

PRESENTER & CONTRIBUTING AUTHORS:
Deborah E. Seale, MA, PhD, Chair and Assistant Professor
Saint Louis University, St. Louis, MO, USA

P63 ABSTRACT WITHDRAWN

TUESDAY, MAY 5, 2015
3:00 pm–4:00 pm Tuesday, May 5, 2015

Session 91
MENTAL HEALTH
Room 404AB

MODERATOR: Elizabeth Brooks, PhD, Assistant Professor
University of Colorado Denver, Aurora, CO, USA

P64 STATE LICENSE LAWS IN TELEMENTAL HEALTH 2015: REQUIREMENTS, RESTRICTIONS, AND OPPORTUNITIES

PRESENTER & CONTRIBUTING AUTHORS:
Jay Ostrowski, MA, LPC/S, NCC, DCC, ACS, Director of Product and Business Development1,2
1National Board for Certified Counselors, Mooresville, NC, USA, 2Behavioral Health Innovation, Mooresville, NC, USA

P65 ABSTRACT WITHDRAWN

P66 USC TELEHEALTH AS A MODEL “TEACHING CLINIC”: TRAINING THE NEXT GENERATION OF TELEMENTAL HEALTH PRACTITIONERS

PRESENTER & CONTRIBUTING AUTHORS:
Nadia Islam, PhD, LCSW, Clinical Director, USC Telehealth
University of Southern California, Los Angeles, CA, USA

P67 THE VISN 22 EVIDENCE-BASED PSYCHOTHERAPY TELEMENTAL HEALTH CENTER AND REGIONAL PILOT

PRESENTER & CONTRIBUTING AUTHORS:
Peter Hauser, BA, MD, VISN 22 Mental Health Services Lead1, Kathryn Williams, PhD2, Shira Kern, MA1, Steven Thorp, PhD3, Martin Paulus, MD1, Nilesh Shah, MD3
1Veteran Affairs, Long Beach, CA, USA, 2Veteran Affairs, San Diego, CA, USA, 3University of California, San Diego, La Jolla, CA, USA

P68 UTILIZING TELEHEALTH TO SUPPORT TREATMENT OF ACUTE STRESS DISORDER IN A THEATER OF WAR: PROLONGED EXPOSURE VIA CLINICAL VIDEOCONFERENCING

PRESENTER & CONTRIBUTING AUTHORS:
Dan Pelton, PhD, ABPP, Clinical Psychologist1, Bethany Wangelin, PhD2, Peter Tuerk, PhD3
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TELE-PSYCHOANALYTIC PSYCHOTHERAPY: THE EXPERIENCE OF CONTINUITY AND CONNECTION OVER TIME

**PRESENTER & CONTRIBUTING AUTHORS:**
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**P70**
DIDI HIRSCH MENTAL HEALTH SERVICES TELEMENTAL HEALTH CRITICAL RESPONSE

**PRESENTER & CONTRIBUTING AUTHORS:**
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Didi Hirsch Mental Health Services, Culver City, CA, USA

**P71**
EXAMINING THE PROPENSITY TO ADOPT TELEHEALTH TECHNOLOGIES TO DELIVER SUBSTANCE ABUSE TREATMENT SERVICES

**PRESENTER & CONTRIBUTING AUTHORS:**
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**P72**
OVERVIEW OF CHILD AND ADOLESCENT TELEPSYCHIATRY SERVICES AT UNIVERSITY OF MISSOURI, COLUMBIA

**PRESENTER & CONTRIBUTING AUTHORS:**
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1University of Missouri, Informatics Institute, Columbia, MO, USA, 2University of Missouri, Missouri Telehealth Network, Columbia, MO, USA, 3University of Missouri, Department of Psychiatry, Columbia, MO, USA, 4University of Missouri, Health Management and Informatics, Columbia, MO, USA

**TUESDAY, MAY 5, 2015**

**Session 92**
PEDiatrics
Room 404AB

**MODERATOR:** Bryan Burke, MD, Professor of Neonatology
University of Arkansas for Medical Sciences, Little Rock, AR, USA

**P73**
ABSTRACT WITHDRAWN

**P74**
DESIGNING A LOW-COST PLATFORM FOR PARENT CHILD INTERACTION TELETHERAPY

**PRESENTER & CONTRIBUTING AUTHORS:**
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**P75**
TIME TO REBOOT: TRANSITIONING FROM RESEARCH TO MAINSTREAM CLINICAL CARE

**PRESENTER & CONTRIBUTING AUTHORS:**
Anne Marie Healey, RN, BSN, MSW, Nurse Leader Pediatric Telemedicine
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**P76**
COST OF CARE ASSOCIATED WITH PEDIATRIC RHEUMATOLOGY CLINIC VISITS AND INTEREST IN TELEMEDICINE

**PRESENTER & CONTRIBUTING AUTHORS:**
Elizabeth A. Kessler, MD, MS, Physician, Chelsey Smith, CCRC, Anderson Rawni, MA, CCRC, Mara L. Becker, MD, MSCE
Children’s Mercy Kansas City, Kansas City, MO, USA
P77 INNOVATIVE HIGH RISK OB TELEHEALTH: DIAGNOSTIC AND SUPPORTIVE CARE FOR THE MOTHER AND UNBORN BABY

PRESENTER & CONTRIBUTING AUTHORS:
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P78 UTILIZING TELEMEDICINE TO SUPPORT LOCAL PROVIDERS DURING NEONATAL RESUSCITATION

PRESENTER & CONTRIBUTING AUTHORS:
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P79 PROTOTYPING PEDIATRIC TELEHEALTH VIRTUAL VISITS TO IMPROVE OUTCOMES IN CYSTIC FIBROSIS

PRESENTER & CONTRIBUTING AUTHORS:
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P80 RISK FACTORS FOR ONSET OF DIABETIC RETINOPATHY IN A PEDIATRIC DIABETES OCULAR TELEMEDICINE PROGRAM IN CARACAS, VENEZUELA

PRESENTER & CONTRIBUTING AUTHORS:
Kristen M. Hock, OD, Optometrist, Andreina Millan-Ferro, Morella M. Grossmann, Lloyd M. Aiello, MD, Jerry D. Cavallerano, OD, PhD, Lloyd P. Aiello, MD, PhD, Paolo S. Silva, MD
1Joslin Diabetes Center, Boston, MA, USA, 2Fundación MMG, Caracas, Venezuela, Bolivarian Republic of, 3Harvard Medical School, Boston, MA, USA

P81 USING AVATARS TO ENGAGE OVERWEIGHT AND OBESE ADOLESCENTS AN APP-BASED TELEHEALTH WEIGHT MANAGEMENT PROGRAM

PRESENTER & CONTRIBUTING AUTHORS:
Cynthia M. LeRouge, PhD, CPA, Associate Professor, Toree Malasanos, MD, Kathryn Dickhut
1University of Washington, Seattle, WA, USA, 2Vheda Health, Columbia, MD, USA, 3Saint Louis University, Saint Louis, MO, USA
**P1 INTEGRATING QUALITY ACROSS A REGIONAL NETWORK: THE SUB-HUB THEORY**

**PRESENTER & CONTRIBUTING AUTHORS:** Rachelle Longo, ADN, Manager, Telemedicine Outreach, Elizabeth Cothren, MSN, Jennifer Humbert, MSN, MHA, Ochsner Medical Center New Orleans, Jefferson, LA, USA

In an effort to address the disparities in healthcare, telemedicine is becoming increasingly popular among health systems. Many programs focus on providing immediate access to a specialist for quick treatment options with inevitable transfer to a distant higher level of care. This presentation will illustrate a model that utilizes the scale and clinical expertise at the primary hub to incorporate evidence-based practice and protocols across a regional network, and provide expert care keeping local patients local. High preforming clinical partners are identified in major markets across the region to become sub-hubs, providing higher levels of care to hospitals within a geographical region. By leveraging clinical experts from the primary hub, the sub-hub is able to optimize their quality outcomes and increase their referral rates. Partnerships between regional hubs and spokes are built, and telemedicine programs are implemented at the spoke sites in conjunction with the regional hub and the main hub. Ongoing support provided to the sub-hub and spokes by the telemedicine team and clinical experts from the primary hub are essential in driving optimal quality care. The Sub-hub Model has proven to increase patient retention at spoke facilities despite an overall decline in inpatient stays of approximately 15% across the state. This model facilitates appropriate transfers to the sub and primary hubs, keeping more patients closer to home and minimizing the cost of care. Infrastructure to support this model of care, as well as quality and financial outcome metrics will be discussed.

**Objectives**

1. Identify the resources needed to build a regional hub model of telemedicine.
2. Describe the benefits that a regional hub model has for all stakeholders.
3. Define factors that drive quality within a regional hub model.

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**P2 AN INNOVATIVE MODEL INTEGRATING A CLINICAL TELEHEALTH INITIATIVE IN ADVANCED PRACTICE NURSING ACADEMIA TO ASSURE PATIENT SAFETY AND QUALITY**

**PRESENTER & CONTRIBUTING AUTHORS:** Maite Garrido, DNP, ARNP-FNP, Visiting Clinical Assistant Professor, Lucie Dlugasch, PhD, ARNP, Maria De Los Santos, PhDc, DNP, ARNP, MPH, Florida International University, Miami, FL, USA

Healthcare delivery is undergoing rapid change and key in this transformation is the use of technology to improve quality, safety and access. Much has been written in the literature regarding telehealth use and advantages in critical care and rural healthcare settings. Telehealth initiatives are being used in advanced practice nursing curriculum yet, this innovation has not been reported in the literature. Telehealth can be used to supervise and train students in the clinical setting. This allows for increased flexibility for students and faculty.

The initial telehealth goals for this initiative was to: 1) Expose Family Nurse Practitioner (FNP) students to the use of telehealth equipment during clinic rotations and; 2) To have faculty remotely and in real-time supervise students while they were evaluating a patient.

The primary challenge in developing this initiative was the lack of existing resources in the literature from which to model the development of this program. A literature review revealed no other nursing education programs were using telehealth in this manner. These barriers were overcome by hiring an Informatics consultant in telehealth/telementoring who provided the expert advice on the acquisition of cost-effective videoconferencing and telehealth equipment and provided guidance in the development of processes to facilitate the clinical supervision of students.

Student monitoring began at a community not-for-profit clinic. Prior to implementation faculty identified the logistics of the telehealth initiative between the university and a community not-for-profit clinic and as well aid with the introduction of this telehealth model to medical directors at the clinic. Specific items to consider when developing this initiative included determining: How many student/patient visits a day would be monitored via telehealth; What types of visits would be appropriate; Would the faculty remotely supervising will be different than the faculty preceptor onsite? Which faculty will be the remote supervisor?: Is there a need to obtain a separate patient written consent or incorporate into pre-existing consents?

After identifying the needs and those of the clinic, and carefully examining the options available, a mix and match of existing technology and equipment was purchased to create a unique kit which met telehealth needs. The equipment was ordered, policies and procedures were developed, videoed training programs were created and students and faculty were trained on equipment use. A pilot program was tested with a small sample of student (one clinical group of 6 and one faculty), during a semester; with the prime purpose of further establishing and modifying protocols, policies and procedures. Over the past year, faculty have incorporated telehealth technologies into the curriculum. Faculty have successfully provided remote, real-time clinical
supervision. The utilization of this technology has provided an alternative, cost effective and efficient way to ensure quality control in clinical nursing education.

Objectives
1. Describe how telehealth technologies are being used in nursing advanced practice academia.
2. Identify some of the challenges with establishing a telehealth/telemonitoring infrastructure in a nursing program.
3. Appraise some of the steps necessary in planning/实施ing a telehealth model for supervising and training family nurse practitioners in clinical practicums.

P3 LEARN WHERE YOU LIVE: EXTENDING THE APPLICATION OF REMOTE PRESENCE TELEMENTORING TO GLOBAL CLASSROOMS FOR POST-SECONDARY HEALTH EDUCATION

PRESENTER & CONTRIBUTING AUTHORS:
Lorna J. Butler, PhD, College of Nursing1, Heather Exner-Pirot, PhD1,
Wilhelmina Atos, PhD2, Nikolai Semenovich Diachkovskii, MD2

This presentation will demonstrate how three countries were able to use remote presence telementoring to link as a global community for health education. Students and faculty remotely shared expertise, knowledge and insights to address the challenges facing Indigenous people in achieving optimal health and well-being. Creating this high degree of synergy among global partners, from north to south, enabled, leadership and interprofessional collaboration, beyond traditional thinking and local health practices. Three university-based College of Nursing partners, from Canada, the Philippines and Russia were responsible to facilitate the development and use of innovation, creativity, and self-direction with an emphasis on the health conditions that cross global boundaries, resource allocation and knowledge sharing. Students could engage with others whose contributions were closely aligned as “vibrant intellectual communities” or “communities of knowledge.” Remote presence technology facilitated engaging with globally distributed, intellectual communities using two processes: the delivery of nursing education through distributive learning methods and the experiential aspect of linking technology used in clinical education to the practice environment.

Given the advances in technology, including better Internet connectivity to rural and remote areas and experimentation with telehealth applications, the partner organizations’ use of distributed learning and telemedical approaches was feasible. Improved network connectivity to rural and remote areas paired with broadening application and adoption of innovative technologies laid the foundation for the innovative approaches being used for teaching, learning, and nursing practice within the project. The use of remote presence telementoring and other technologies during nursing education is expected to enhance their application in clinical practice after graduation: a hypothesis that will need to be explored longitudinally. Linking quality to education, socio-economic well-being and health as outcome measures provides compelling evidence to assist policy and decision makers in determining the best long term, sustainable investment. As the future workforce, students have the potential to act as knowledge brokers, transforming the healthcare system. Technology broadens the approach to include global as well as local jurisdictions.

One of the key challenges of implementing an effective telehealth system is provider acceptance. As such, a potentially critical strategy is to begin by introducing technology into health education. This would also reduce the number of patients remote telehealth training for practitioners. This finding will be discussed in the presentation. The presentation will describe how these universities are situated to be global leaders in using remote presence technology both in health sciences education and in rural and remote clinical practice.

Objectives
1. Test the feasibility and acceptance of students in three countries to develop indigenous health indicators for rural, remote, and northern determinants of health using remote presence technology.
2. Demonstrate how remote presence technology supports culturally relevant patient-provider relationships such as high trust and high touch in a high tech environment.
3. Describe and compare jurisdictional conditions within which our remote presence system is situated, using both a north-south and circumpolar perspectives.

P4 SIMULATION AND TELEMEDICINE: COMBINING TECHNOLOGIES TO TAKE HEALTHCARE TRAINING TO THE NEXT LEVEL

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Simulation is often used as a training device that duplicates situations likely to be encountered in a real-life scenario. At the University of Arkansas for Medical Sciences (UAMS), simulation has been facilitated and enhanced through interactive video in its use to train healthcare professionals to provide safe, effective, confident, and compassionate care to patients in Arkansas and beyond.

In a partnership aimed to bring education to obstetrical healthcare professionals, UAMS’ ANGELS and the Simulation Center created a novel use of simulation to address the crisis situation during labor called shoulder dystocia, in which an infant’s shoulders have difficulty passing through the vagina during birth. Labor and delivery units are highly volatile areas when it comes to competency in crisis situations. Through the use of “Noelle,” a high-fidelity birthing simulator, healthcare providers can gain experience in avoidance and prompt recognition of errors in a safe, controlled environment. Noelle allows educators to manipulate the shoulder dystocia laboring situation to develop a simulated drill where students are directed and debriefed over interactive video.

Recently, an interactive video-aided simulation drill enabled rural physicians and nurses to practice managing shoulder dystocia using the simulation mannequin, Noelle. A technician and nurse from UAMS took Noelle to a rural hospital in northwest Arkansas, where the high-fidelity simulator was set up at the rural labor and delivery unit to run the drill and an existing telemedicine connection enabled a distant Maternal-Fetal Medicine specialists to direct a pre-discussion session, monitor the simulation session as rural providers and nurses interacted with the mannequin, and finalized by a debriefing discussion led by the distant specialists to explore considerations for improved response with the rural learners. The distant specialist would watch and interact with the rural providers and nurses as each scenario unfolded to enable an interactive distance learning experience with a specialist who confronts shoulder dystocia on a frequent basis. Learners achieve their highest potential through self-awareness; therefore, interactive video-driven debriefing techniques are used, allowing individual discovery.

Outcomes of the Noelle simulation via interactive video included: better team communication (closed-loop communication), better understanding and consistency of policies set within that institution, and policy changes that included more updated and better recognized guidelines for shoulder dystocia patient situations. Merging these two technologies gives providers the ability to educate and train in their own working environment, while seeking expert instruction through interactive video from an outside institution.

Objectives
1. Define high-fidelity simulation and telehealth involved in the delivery of OB provider training.
P5 TELEMEDICINE DEVICE INTEGRATION FOR HEALTH SUPPLY CHAIN IN DISASTER MANAGEMENT BASED ON GS1

PRESENTER & CONTRIBUTING AUTHORS:
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Global Standard 1 (GS1) provides the unique identification of all trade items, services, logistic units, consignments, assets, documents, relationships, parties and locations at any point in the supply chain/logistic chain which arrange preparation, maintenance, storage, distribution, transportation. It needs adjustment and providing procedure, system design and guideline of observation. This paper, for the first time, has suggested integration of medical devices based on GS1 in disaster management for health supply chain. With this approach, the army can improve the privacy of medical information, tracing of medical assets, and also human resources in disasters. Here, the health chain includes management of medical devices, pharmaceutical and blood products, and human resources of the army. In this method, a common language based on GS1 has been designed for database of mhealth, telemedicine and RFID, and also with this type of integration we can use intelligence wearable and microchips to monitor and transfer the vital signs of the soldiers securely in an emergency situation inside of tracing and tracking of equipment.

Methods:
- Integrated GS1 based on medical devices (e.g. microchips) to monitor and transfer vital signs of soldiers
-管理系统

Results:
- Expected good result was the diffusion of knowledge among the non-attendees
- Feedback from the attendees of their perception of such health literacy programs.
- Average increase in knowledge levels was 15.3% (31 to 86)
- Average number of villages simultaneously participating were 7 (4 to 7,236)
- Volunteers.

Conclusions:
The preliminary observations of this PoC justifies the continuation of this endeavor to deploy ICT for promoting health literacy in rural India with follow up and further studies to prove an impact on health outcomes.

Objectives:
1. Understand how to promote health literacy.
2. Deployment of ICT in promoting rural patient empowerment.
3. Review how the response in rural India led to knowledge empowerment.

P6 PROMOTING HEALTH LITERACY THE EWAY: A PRELIMINARY REPORT FROM RURAL TAMILNADU, INDIA

PRESENTER & CONTRIBUTING AUTHORS:
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1Apollo Telemedicine Networking Foundation, Chennai, India,
2M S Swaminathan Research Foundation, Chennai, India

Introduction: It is acknowledged that promoting health literacy and patient knowledge empowerment impacts health outcomes. This is particularly relevant in rural India. In a first of its kind initiative, this pilot study on patient empowerment has deployed ICT in 14 Internet-enabled villages in rural Tamilnadu in South India to successfully empower the community.

Objectives: (1) To provide authenticated, validated, topical health information in a multi media format in the local language, to a number of villages simultaneously, using multi-point, two way video conferencing; (2) To digitally archive all sessions including Q&A and make them available offline to the community including an abridged YouTube version; (3) To quantify change in knowledge levels of the attendees immediately and six months later; and (4) To obtain feedback from the attendees of their perception of such health literacy programs.

Methodology: Apollo Telemedicine Networking Foundation (www.telemedicineindia.com) identified 50 topics (chronic diseases, trauma, nutrition, antenatal counselling etc.). Articulate physicians well versed in the local language (Tamil) delivered lectures twice a month. MSSRF(www.mssrf.org) a globally renowned NGO, present in Internet-enabled villages, mobilized the community. Due to fluctuating reduced bandwidth in the villages, the MCU (Multi Conference Unit) bridge initially used, was replaced with a licensed “Go to Meeting” software. The 30 minute talk was followed by a 45 minute Q&A. MCQ’s on the topic (before and again after the lecture and again six months later) and feedback forms were filled by the attendees assisted by volunteers.

Results: 7,236 individuals (2,328 males and 4,908 females) attended 34 sessions over 18 months. Average attendance per session was 212 (102 to 458). Average number of villages simultaneously participating were 7 (4 to 12). Average increase in knowledge levels was 15.3% (31 to 86). The wide scatter was attributed to unfamiliarity with the MCQ mode and the method of assessment is being reviewed. Feedback from 72%, indicated a high level of acceptability of the e talks (55% good, 12% excellent). The occasional technical glitches encountered were immediately rectified. A detailed analysis will be presented along with video clippings of the presentations and the Q&A sessions to convey the enthusiasm of the teacher and the taught. An unexpected good result was the diffusion of knowledge among the non-attendees resulting in gradual community empowerment.

Innovations: This cost effective deployment of ICT will help provide the much needed knowledge empowerment in healthcare in rural India creating awareness and emphasizing the necessity to “Stay Healthy.” Takeaway: The major challenges in assembling villagers for telelectures and making them view this as a value added service to the community have been identified. The necessity to refine and customize knowledge levels assessment methods was a major takeaway.

Conclusions: The preliminary observations of this PoC justifies the continuation of this endeavor to deploy ICT for promoting health literacy in rural India with follow up and further studies to prove an impact on health outcomes.

Objectives:
1. Learn about the advantages of medical device integration.
2. Understand the importance of GS1 usage.
3. Discuss health supply chain management.

MONDAY, MAY 4, 2015

Session 85 CLINICAL SERVICES CASE STUDIES

Room 404AB

MODERATOR: Theresa M. Davis, PhD, RN, NE-BC, Clinical Operations Director, enVision eICU

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P7 CHALLENGES IN ACADEMIC TELERADIOLOGY

PRESENTER & CONTRIBUTING AUTHORS:
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Our academic center started providing teleradiology services in 1997 and since then have provided over 1.3 million interpretations for plain film, MRI, CT, ultrasound, mammography, nuclear medicine, and fluoroscopy to over 35 sites. The challenges faced by our clinical practice have changed over the years, from how to implement services and satisfy customer needs, to maintaining services and site contracts. In recent years, with changes in department administration and goals, teleradiology services are now provided to less than 14 years, from how to implement services and satisfy customer needs, to maintaining services and site contracts. In recent years, with changes in department administration and goals, teleradiology services are now provided to less than 35 sites. The challenges faced by our clinical practice have changed over the years, from how to implement services and satisfy customer needs, to maintaining services and site contracts. In recent years, with changes in department administration and goals, teleradiology services are now provided to less than 35 sites.
are not often appreciated, including training and education for rural site practitioners and radiology technologists. As sites have gone elsewhere for teleradiology services we have had to reassess the value of teleradiology to our department and reconfigure the way we do business. This has included a better assessment of what we charge for services so we no longer submit bids that result in providing services below cost to the institution, and developing better marketing strategies that emphasize the unique “add-on” services that an academic department can provide. The reduction in teleradiology services has had a positive impact on the department as well. With a high teleradiology workload of mostly plain film cases, sub-specialty radiologists were not utilizing their skills, practicing more like general radiologists, but now our service is 100% sub-specialty driven. Residents are no longer spending time on these routine cases either, gaining more valuable exposure to complex cases and modalities. Surprisingly with a high teleradiology volume, our department employed a teleradiology service to help read our routine cases, especially off-hours. With a refocused mission and reduced teleradiology load we no longer use that teleradiology service to cover in-house cases. These changes in academic teleradiology at our center are not that uncommon and can provide some valuable lessons to other academic departments providing teleradiology services.

**Objectives**

1. Understand the challenges of teleradiology in academic environments.
2. Assess whether teleradiology is viable in your academic institution.
3. Appreciate longitudinal fluctuations in teleradiology services.

**P8 CONSOLIDATION, SPECIALIZATION, COMMODITIZATION: WHAT CAN TELERADIOLOGY LEARN FROM TWO DECADES OF TELERADIOLOGY?**

**PRESENTER & CONTRIBUTING AUTHORS:**

Alan Pitt, MD, Professor, Neuroradiology
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Beginning in the mid 1990’s, radiology went through a radical transformation. Film, the viewing and storage media for medical imaging, was replaced by hard drives and computer screens for review by picture archiving and communications systems (PACS). This transition had both economic and care related benefits. With images in the cloud, any study could be viewed by anyone, anywhere at anytime. At first, PACS were used locally. Radiology groups covering multiple hospitals consolidated their practice. This initially enabled radiology groups to cover call from several hospitals at a single location, reducing the number of people on call. Next, moving cases to the right person rather than the locally available person enabled specialization. Ultimately this catalyzed businesses (Nighthawk, VRC, etc.) that were separate from the radiology group covering the hospital leading to distinctly different economics for imaging services.

Teleradiology is following a similar path. Until recently the technical requirements to support other clinical services have been limiting. Whereas imaging has relatively large files, images are static. Video is not part of the solution. Workflow and data integration are also fairly standard relative to the myriad of clinical use cases required to practice medicine “in the cloud.” Recent software, hardware and networking advances now make teleradiology less of a toy and more of a tool for care. There have been early ventures into this arena. Examples would include Specialists on Call and Urgent Cares in the Cloud. However, to date these efforts have been largely gap coverage. Although radiologists were able to maintain (or at least partially maintain) income by leveraging technology, their role in the care cycle has fundamentally changed. The same should be expected for every other area of medicine moving forward. The economics of managing of the continuum will likely be completely disruptive to how we buy and sell care, as well as what it means to be a care provider.

The lessons learned from a radiologist with two decades of experience will be reviewed, and how it might apply to telemedicine moving forward will be discussed.

**Objectives**

1. Understand the evolution of imaging services via technology.
2. Understand some of the factors transforming the business aspects of imaging services.
3. Be able to draw parallels between teleradiology and telemedicine.

**P9 VETERANS AFFAIRS TELERADIOLOGY: BRINGING UROLOGIC CARE TO RURAL PATIENTS**

**PRESENTER & CONTRIBUTING AUTHORS:**

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**Objective:** To report the feasibility and safety of delivering of general urologic care via telemedicine within the Veterans Affair Greater Los Angeles (VAGLA) healthcare system, and to characterize our initial experience, including evaluated diseases, safety, and benefit to patients in terms of patient satisfaction, ease of access, and prevented travel burden.

**Introduction:** Telehealth can improve access to specialist care in underserved areas in a patient-centered manner. To our knowledge, there are no published reports on the use of telehealth to improve rural access to urologic care. The Veterans Affairs Greater Los Angeles Healthcare System (VAGLAHS) cares for over 86,000 veterans annually in a geographic area 240 by 80 miles in size. Care delivery sites include one central tertiary, two ambulatory care centers, and ten outlying community based outpatient clinics (CBOCs). Patients typically travel to the central tertiary and ambulatory centers for subspecialist care.

**Methods:** Urology telemedicine clinics were set up between the tertiary care center and the two ambulatory care centers. Data was collected between 9/23/2013 and 3/10/2014. Bladder scanners and the International Prostate Symptom Score questionnaire were made available at the ambulatory care centers. Travel distance and time were calculated using Google Maps®, and travel and opportunity costs were calculated using US Census data. Emergency room visits within 1 month of the telemedicine appointment were assessed as a safety measure, and patient satisfaction was evaluated by a questionnaire.

**Results:** Ninety-seven unique patient telemedicine visits were conducted. 96% of patients were male, 80% were Caucasian, and the mean age was 66 years. A total of 171 urologic diseases were seen, with a mean of 1.8 urologic diagnoses per patient. Evaluated diagnoses included lower urinary tract symptoms (LUTS) (61), elevated PSA (25), prostate cancer (23), hematuria (20), stones (6), erectile dysfunction (6), hypogonadism (6), bladder cancer (4), kidney cancer (3), hydrocele (2), UTI (2), testicular microlithiasis (1), spermatocele (1), vasectomy consult (1), Peyronie’s (1), hematospermia (1), balanoposthitis (1) and premature ejaculation (1). The primary care team measured postvoid bladder residual in 39% of LUTS patients, and administered the IPSS questionnaire to 24%. Three patients were seen in the ER after their telemedicine visit, however only 1 was for a urologic complaint, and this was not attributable to inadequate telemedical care. Patients were, in general, happy with their telemedicine experience, with 95% of patients grading their appointment as “excellent” or “very good”. Savings in travel distance and time were substantial (Table 1). Patients saved an average of 277 miles driven, and an average of 290 minutes. Translated into cost, patients saved $67 in travel expenses and $126 in lost opportunity costs, for a total of $193.

**Conclusions:** In the VAGLAHS, telemedicine in urology is feasible and saves nearly 5 hours in travel time per visit, and over $193 per working patient. Telemedicine was successfully used to evaluate and treat multiple urologic conditions. Bladder scanners and the IPSS questionnaire were successfully utilized in CBOCs, facilitating the scope of tele-urologic care delivery.
Introduction: The logistics of the application of telehealth to deliver general urologic care.

Objectives
1. Understand the benefits to patients participating in telehealth for their urologic care, including prevented patient travel burden and patient satisfaction.
2. Describe the breadth of urologic diagnoses able to be addressed through telemedicine.

Patients and Methods: From June 2013 to March 2014, 60 patients were randomized to participate in a traditional face-to-face OV or remote VV.

Results: In total, 27 men underwent a traditional OV and 33 a remote VV.

Conclusion: We observed equivalent patient and urologist satisfaction, improved provider efficiency over time with VV and significantly greater costs to the patients within the OV arm. In an evolving healthcare model, these findings may have significant implications.

Table 1: Estimate of Prevented Burden to Patients

<table>
<thead>
<tr>
<th>PREVENTED PATIENT BURDEN</th>
<th>ESTIMATED SAVINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance (mean)</td>
<td>277 miles</td>
</tr>
<tr>
<td>Distance (total)</td>
<td>26,906 miles</td>
</tr>
<tr>
<td>Time (mean, self-driving)</td>
<td>4 hours, 50 minutes</td>
</tr>
<tr>
<td>Time (total, self-driving)</td>
<td>468</td>
</tr>
<tr>
<td>Mean travel cost per visit ($)</td>
<td>67</td>
</tr>
<tr>
<td>Mean lost opportunity cost per visit ($)</td>
<td>Mean lost opportunity cost per visit ($)</td>
</tr>
<tr>
<td>Mean total cost per visit</td>
<td>193</td>
</tr>
<tr>
<td>Total lost opportunity cost, entire cohort ($)</td>
<td>18,721</td>
</tr>
</tbody>
</table>

P10 A PROSPECTIVE RANDOMIZED CONTROLLED STUDY OF VIRTUAL VIDEO VISITS IN UROLOGY

PRESENTER & CONTRIBUTING AUTHORS: Boyd R. Viers, MD, Resident, Marcelino E. Rivera, MD, Daniel A. O’Neil, BSc, Matthew R. Gardner, BSc, Rachael L. Hamilton, BSc, Sarah M. Jenkins, BSc, Deborah J. Lightner, MD, Matthew T. Gittman, MD

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Introduction: Despite the demonstrated efficacy of virtual communication among other medical specialties, its applicability within an ambulatory urologic patient population remains relatively unknown. As such, the purpose of this pilot study is to investigate the efficiency, acceptability and costs of a patient-physician real-time encounter using remote video-visit technology (VV) compared to a face-to-face office-visit (OV) in the postoperative urologic setting. The three broad goals are to (1) analyze differences in timing parameters, (2) examine patient satisfaction between modalities and, (3) compare the costs accrued to patients.

Patients and Methods: From June 2013 to March 2014, 60 patients were randomized to participate in a traditional face-to-face OV or remote VV. All patients had a history of radical prostatectomy for prostate cancer and all visits were conducted 3 months or greater following surgery. VV were performed during the urologist’s outpatient clinic. Timing parameters for both study arms were analyzed from patient check-in to conclusion of the encounter. Patients were surveyed after each visit utilizing a 7-point Likert scale (1 = strongly agree to 7 = strongly disagree) to assess perceptions and general satisfaction. Costs incurred for each visit were analyzed in a continuous fashion. Differences in outcomes were assessed using a two-tailed t-test and chi-square analysis.

Results: In total, 27 men underwent a traditional OV and 33 a remote VV. Among those undergoing a VV, 97% were willing to participate in this type of encounter again. In comparisons of VV relative to OV, there was no difference in patient-physician consult time (mean 12.0 vs 11.8 minutes; p = 0.9). Moreover, upon assessing a VV patient’s perceptions of the clinical encounter, there was no difference in perceived quality (mean Likert score 1.4 vs 1.0; p = 0.2) or overall satisfaction (mean Likert score 1.2 vs 1.0; p = 0.2) relative to OV; however, those participating in an OV more strongly agreed that the visit was conducted in an efficient manner (mean 2.2 vs 1.3; p = 0.03). Meanwhile, VV patients spent less time traveling to their appointment (mean 11.4 vs 151.9 minutes; p < 0.001), traveled a shorter distances (mean 10.9 vs 132.5 miles; p < 0.001), had lower financial costs (mean $6.9 vs $68.8; p = 0.001) and required less time away from work (mean 0.03 vs 0.8 days; p < 0.001) than OV. Finally, within the VV arm, providers demonstrated a significant increase in timing efficiency over the study period (mean consult time 21 vs 9 minutes; p < 0.02).

Conclusion: We observed equivalent patient and urologist satisfaction, improved provider efficiency over time with VV and significantly greater costs to the patients within the OV arm. In an evolving healthcare model, these findings may have significant implications.

P11 IMPROVING CHRONIC APHASIA TREATMENT: COMBINING TELE-SPEECH & ONLINE THERAPY

PRESENTER & CONTRIBUTING AUTHORS: Andrew Gomory, BA, MS, CEO Lingraphica, Princeton, NJ, USA

Medical practices are changing under continuing pressures to reduce costs, deliver measurable results and provide access to specialists. This often means that patients with chronic conditions are without affordable treatment options. To address this, our study demonstrated how telemedicine services could be used in the field of speech therapy for the treatment of adults with chronic aphasia—a communication disorder acquired from a stroke or brain injury. Lingraphica conducted a 12-week telespeech study using online meeting software, Web-based exercises, and a test group of individuals with chronic aphasia. The study combined traditional speech therapy activities delivered by a licensed clinician based in Winnipeg, Manitoba; nine persons with chronic aphasia based in Baltimore, MD; and support personnel in Lingraphica’s office in Princeton, NJ. For 12 weeks, the persons with aphasia (PWAs) worked with the treating clinician in groups and independently during weekly hour-long sessions. Patients received treatment both in their homes and at a community aphasia center called Snyder Center for Aphasia Life Enhancement (SCALE). When not in sessions, PWAs worked on Web-based exercises assigned by the clinician. PWAs used Lingraphica’s TalkPath Online Speech Therapy platform which provides language exercises in the areas of reading, writing, speaking, and listening. The platform provides real-time reports and detailed activity logs which were used to track work levels and progress. The reports were available to the PWA and treating clinician, and the logs were used for later analysis. In addition to automatically collected data, the clinician made video recordings of group treatment sessions, and generated written notes of one-on-one treatment sessions. To test the effectiveness of the study, pre- and post assessments were administered using multiple standardized tests: Western Aphasia Battery (WAB), Communication Effectiveness...
indicated their satisfaction with receiving services this way was 97%. Specific
1659 visits and have saved 151,932 miles of driving. A sampling of patients
over the course of 2 years providing telerehabilitation services we have provided
majority of physical therapy visits were for provision and training of equipment
via telehealth. Physician consultations were limited to patients who had al-
therapy along with protocols on which patients could be appropriately treated
the patients were required to have high speed Internet and a camera at their
utilize while the therapist saw the patient via telehealth. We also set up a
first year of the program, the physical therapist visited each of the CBOC’s
our community based outreach centers and to provide physiatry consulta-
providing patients with rehabilitation services close to and at times in their homes
rural area. In order to augment the need for rehabilitation services in rural
alicy services. While provision of primary care services may be feasible in a
opportunities to provide patients from extensive geographic areas with spe-

**P12 RIGHT PLACE REHABILITATION: SAVING MILES THROUGH TELEREHABILITATION**

**PRESENTER & CONTRIBUTING AUTHORS:**
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As a separate system of care, the VA system has unique challenges and
opportunities to provide patients from extensive geographic areas with spe-
cialty services. While provision of primary care services may be feasible in a
community based clinic, the volume of patients in rural clinics does not al-
ways justify the placement of a full time physical therapist or physiatrist in a
rural area. In order to augment the need for rehabilitation services in rural
areas, Right Place Rehabilitation was developed in 2012 with a goal of pro-
viding patients with rehabilitation services close to and at times in their homes
through the use of telerehabilitation.

Our specific objectives were to provide basic physical therapy services at
our community based outreach centers and to provide physiatric consulta-
tions to patients, as appropriate and feasible in their homes. Over the course of
the first year of the program, the physical therapist visited each of the CBOC’s
and we provided basic equipment and training for the telehealth presenters to
utilize while the therapist saw the patient via telehealth. We also set up a
specific telehealth room at our main facility. In order to provide services to
patient’s home we used a simple on line camera on the physician desk while
the patients were required to have high speed Internet and a camera at their
home. We also set up a specific telehealth consulttion system for physical
therapy along with protocols on which patients could be appropriately treated
via telehealth. Physician consultations were limited to patients who had al-
ready been seen by the treating provider.

Patients were amenable to receiving telerehabilitation services. The ma-
majority of physical therapy visits were for provision and training of equipment
and followup visits with regards to exercise programs for back issues. For
physiatry visits diagnoses included spinal cord injury and chronic pain. Over
the course of 2 years providing telerehabilitation services we have provided
1659 visits and have saved 151,932 miles of driving. A sampling of patients
indicated their satisfaction with receiving services this way was 97%. Specific
comments of patients included the benefit of not having to spend an entire day
on a rehabilitation visit, not having to deal with parking and not having to
spend money on gas.

In conclusion telerehabilitation services are a timely and appropriate
method to provide specific rehabilitation services directly to patients in their
home or in their community. While not all services can be provided and not all
diagnoses are amenable to this type of treatment, many are. Benefits of a
telerehabilitation system of care include saving time and money in terms of
the patient’s quality of life, in addition to the environmental impact of miles
of driving saved.

**Objectives**
1. Acquiring an understanding for possible uses of telerehabilitation to
provide physical therapy services.
2. Acquire an understanding of the possible uses of telemedicine to home
provide physiatry services.
3. Acquire an understanding of the personal, economic, and environ-
mental benefits of telerehabilitation services.

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**P13 PERCEPTIONS AND SATISFACTION WITH PERSONALIZED VIDEO RECORDING AMONG PATIENTS WITH CRANIAL CONDITIONS AND/OR BRAIN TUMORS**

**PRESENTER & CONTRIBUTING AUTHORS:**
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Andrew S. Little, MD1, Robert F. Spetzler, MD1, William White, MD1,
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Patients who suffer from brain tumors are at high risk of forgetting crucial
information provided by their physicians regarding their conditions and
treatment options. Several other studies have shown that patients with
various forms of cancer both have poor memory for information and that
different interventions (brochures or written information, audio recording
the consultation, general information video and audio tapes) have a positive
effect on patients’ memory. The present study examines the perceptions
and satisfaction with a new intervention, personalized video recording of
doctor-patient visits, among patients with brain tumors at a neurosurgical
institution.

Between 2012 and 2014, 312 patients undergoing neurosurgical consul-
tations were provided with video recordings of their doctor-patient visits and
were subsequently surveyed using a multiple-choice satisfaction and com-
ment-based online tool. The diagnoses and basic demographical information
for each patient were reviewed, and 45 patients who had a primary diagnosis
of a craniofacial disorder or brain tumor were included in the study. Thirty-
three patients were diagnosed with brain tumors. The patient population in-
cluded both benign and malignant brain tumors, both primary (acoustic
neuroma, meningioma, glioblastoma multiforme, glioma) and metastatic
(breast, renal metastases). The remaining 12 patients were seen for a cranio-
facial condition, including hydrocephalus, occipital or trigeminal neuralgia,
pachymeningitis, and subdural hemorrhage.

Forty patients watched their video at least once (range 1–9 times), and five
patients opted not to watch their video. The reasons to not watch the video
were varied, including forgetting the tape had been made available and
technical difficulties working a computer. Seventy-five percent of patients
shared their video with someone else, mostly family members, but two pa-
tients did show the video to their primary care physician to let them know
about their condition.

All patients who watched their video regarded it as “helpful” to them, and
made many comments about what they liked, including having a “visual” of
the problem, having it to review alone or with others to make treatment de-
cisions, and to allay feelings of anxiety. Twenty-two patients indicated that the
video put them “more at ease” compared with two who were less at ease, and 33 patients stated that the video helped them remember more about their condition and treatment options (9 patients indicated that the video neither helped nor hindered their memory, and no patient remembered less after watching the video). Indeed, many patients commented about having gone home after the visit and having the visit be “a blur” or “having trouble remembering what the doctor discussed.” Those patients stated that having the video to refer back to “helped me remember” and “reinforced the doctor’s information.” Providing personalized video recordings to patients with craniofacial conditions and/or brain tumors is shown in our results to have positive effects on anxiety and memory, and patients seemed satisfied with the ability to share information with others. Additional research is warranted to better quantify the effects of video recording for this population and discover other effects.

**Objectives**

1. Understand the value of personalized video recording in a high-risk patient population.
2. Understand the causes of high and low satisfaction with personalized video recording.
3. Infer potential benefits in other patient populations for personalized video recording.

**P14 TELEHEADACHE CARE IMPROVES ADHERENCE TO EVIDENCE BASED GUIDELINES FOR MIGRAINE MANAGEMENT**

**PRESENTER & CONTRIBUTING AUTHORS:**
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Nearly 40 million Americans experience migraine and it is a top reason for presenting for ambulatory and emergency care. Patients with migraine who see migraine specialists are more likely to receive care consistent with evidence-based guidelines, care relative to non-specialists. Regrettably, migraine specialists are not readily available for many patients, especially those in rural settings and those living in the western two-thirds of the U.S. Given its nature, migraine appears to be an ideal candidate for telemedicine care delivery. Yet no current evidence exists regarding whether telemedicine improves the likelihood of an individual receiving care consistent with evidence-based guidelines. The current study evaluated whether implementing a pilot teleheadache program to deliver care to patients with migraine in remote/rural settings improves the likelihood that they received care consistent with evidence-based guidelines. McNemar test compared patients prior to and following teledermatology consultation. A total of 30 patients with migraine (73% female, mean age = 44.8) living at least two hours from a migraine specialist were referred to see a migraine specialist via telemedicine. Preliminary evaluation of the patients indicated that at initial consultation, 16.7% were receiving care consistent with evidence-based guidelines.

After telemedicine consultation, 90% had received evidence-based care recommendations (p < 0.001). These findings suggest that telemedicine is a potentially ideal medium for delivering world-class migraine care to patients regardless of their geographic residence. Moreover, this provides optimism that teleheadache could serve as the foundational delivery mechanism for a system level approach to treating migraine.

**Objectives**

1. Explain why utilizing headache specialists to provide migraine care via telemedicine is an ideal, yet heretofore underutilized care delivery model.
2. Describe the findings from a pilot project delivering teleheadache to patients with migraine living in a rural setting that demonstrated statistically and clinically significant improvements in patients receiving care consistent with evidence base.

3. Propose a vision for addressing the unmet need of patients with migraine receiving care consistent with evidence-based guidelines through a “system of excellence” model harnessing telemedicine as a fundamental care delivery component.

**P15 TELERHEUMATOLOGY: DESPITE IMPROVED ACCESS COULD THERE BE A POTENTIAL DELAY IN CARE WITHOUT A SKILLED “PRESENTER”**

**PRESENTER & CONTRIBUTING AUTHORS:**
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**Background/Purpose:** Arthritis treatment in New Hampshire (NH) is complicated by the fact that a large proportion of the population lives in rural areas (60%) with limited resources and access to care. Telerheumatology services developed at Dartmouth-Hitchcock Medical Center (DHMC) in partnership with Weeks Memorial Hospital (Critical Access Hospital in Northern NH) bring arthritis care to these rural regions, thus improving access. In addition to the providers and patients telemedicine utilizes a “presenter,” an individual who sits with patients at the remote site (medical assistant, nurse, etc.) to facilitate the visit. We sought to learn what challenges and accomplishments our early teledermatology program has encountered since inception.

**Methods:** As part of a quality improvement initiative we performed an IRB-exempt retrospective review of the charts for patients seen in the telerheumatology clinic at DHMC from October 2011 to January 2013. We also interviewed the participants: including providers, presenters and patients regarding their experience of care. We used descriptive statistics to summarize our findings.

**Table 1. Dartmouth-Hitchcock Medical Center Telerheumatology Services Patient Characteristics**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providers</td>
<td></td>
</tr>
<tr>
<td>Patients seen by Provider 1</td>
<td>5 (22.7)</td>
</tr>
<tr>
<td>Patients seen by Provider 2</td>
<td>17 (77.3)</td>
</tr>
<tr>
<td>Total of Patients seen since inception</td>
<td>22</td>
</tr>
<tr>
<td>Total of visits</td>
<td>63</td>
</tr>
<tr>
<td>Patients</td>
<td></td>
</tr>
<tr>
<td>Age (avg in years)</td>
<td>56.8</td>
</tr>
<tr>
<td>Sex (% female)</td>
<td>12 (54.5)</td>
</tr>
<tr>
<td>Avg Distance from home to DHMC one way (miles)</td>
<td>99.6</td>
</tr>
<tr>
<td>Avg Distance from home to Weeks Memorial (miles)</td>
<td>10.7</td>
</tr>
<tr>
<td>Visit Type (% of encounters)</td>
<td></td>
</tr>
<tr>
<td>Consult</td>
<td>18 (28.6)</td>
</tr>
<tr>
<td>Follow-Up</td>
<td>43 (71.4)</td>
</tr>
<tr>
<td>Required-in-person follow up for joint exam</td>
<td>6 (27.3)</td>
</tr>
<tr>
<td>Avg time from initial visit to in-person follow-up (days)</td>
<td>80.8</td>
</tr>
<tr>
<td>Discrepancy in joint examiner in person visit</td>
<td>3 (83.3)</td>
</tr>
<tr>
<td>Started on high risk medication</td>
<td>9 (40.9)</td>
</tr>
<tr>
<td>Diagnosis Seen in Clinic</td>
<td></td>
</tr>
<tr>
<td>Rheumatoid Arthritis (RA), PsA, Anky Spondylitis</td>
<td>9 (40.9)</td>
</tr>
<tr>
<td>Inflammatory Arthritis (RA, PsA, Ank Spon)</td>
<td>10 (45.5)</td>
</tr>
<tr>
<td>Osteoarthritis (OD)</td>
<td>2 (9.0)</td>
</tr>
<tr>
<td>Crystal Arthropathy (Cost, CPPD)</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Osteopenia</td>
<td>1 (4.5)</td>
</tr>
<tr>
<td>Other</td>
<td>1 (4.5)</td>
</tr>
</tbody>
</table>
Results: In our cohort of 22 patients there were 63 encounters (18 initial consults and 45 follow-up visits) with either of the two participating rheumatologists. 27% (n = 6) of the patients seen initially by telerheumatology needed to be seen in-person for clarification of the joint exam. 83% (n = 5) of the patients seen in-person had findings of synovitis not seen via telemedicine. The average time from initial consult to in-person evaluation was 81 days. These patients went without aggressive anti-inflammatory therapy for longer than the recommended 42 days (6 weeks) according to current guidelines. Providers expressed concern about not being able to lay hands on patients, and the inability of the “presenter” to perform and convey the findings of the joint exam which may have contributed to the delay in care. The top two diagnosis that patients presented with during the tele-rheumatology visits were inflammatory arthritis (n = 10) and fibromyalgia (n = 9). 40% of the patients seen by telerheumatology were ultimately started on high risk medications such as high dose steroids (prednisone > 20mg/ daily), biologics, and DMARDs (Table 1).

Conclusion: The use of telerheumatology has successfully increased access to arthritis care in rural regions of NH allowing for shorter travel and intense anti-inflammatory therapy. The lack of musculoskeletal training for the presenter and inability of providers to lay hands on patients could lead to increased delay in initiation of this therapy for inflammatory arthritis. Initial strategies are being developed to improve the training of the presenters and to shorten this interval to meet current guidelines.

Objectives
1. Understand the role for a rheumatology specific presenter.
2. Identify the main diagnosis seen by telerheumatology.
3. Identify the challenges in treating certain rheumatology conditions via telemedicine.

MONDAY, MAY 4, 2015

Session 86
CLINICAL SERVICES CASE STUDIES/POLICY AND LEGAL
Room 404AB
MODERATOR: Ed Brown, MD, CEO
Ontario Telemedicine Network, Toronto, ON, Canada

P16 FEASIBILITY OF SOFTWARE-ASSISTED OPTICAL COHERENCE TOMOGRAPHY IN SCREENING

PRESENTER & CONTRIBUTING AUTHORS:
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BACKGROUND: Telemedicine has an increasing role in ophthalmology remote screening of subjects with limited access to specialized care. Software-assisted spectral-domain Optical Coherence Tomography (OCT) acquisition allows imaging with limited or no operator intervention. No studies have examined software-assisted OCT acquisition in screening.

PURPOSE: To assess the feasibility and quality of software-assisted OCT in screening of healthy and at risk patients.

METHODS: 497 subjects (994 eyes) of subjects between ages 4–77 yrs were imaged in a large scale field screening in July, 2014. Six software-assisted OCT units (iScan, Optovue, Fremont, CA) and 6 operators were used. Scans of both eyes for macular and retinal thickness (Ganglion cell complex) with normative database reference (iWellness, Optovue, Fremont, CA) were obtained. Software-assisted OCT was attempted on all subjects with operator manual intervention only when necessary. Acquisition parameters included: % successfully acquired without manual intervention, scan time, scan quality index, and % scans with acceptable quality on first attempt. Acceptable quality was judged by a trained image analyst based on previous known criteria including image evaluation. Scan quality index was graded by the software based on OCT signal intensity (>40 as acceptable for image evaluation as recommended by Optovue). For data analysis, scans without operator observer notes were excluded.

RESULTS: Subject mean age: 32 ± 19 yr (37% under 18 yr old). In total 883 scans were analyzed: 83% (n = 729) were software-acquired without any manual intervention. Mean quality and time were 69 ± 2:10 ± 0:31 (minutes: seconds) for both eyes, respectively. Reasons for manual intervention included: initial head/eye alignment, pupil center & iris focus, OCT signal find & optimization, and capture. 91% (n = 800) out of 883 scans were of acceptable quality in the all first attempts. The percent of acceptable quality scans in the first attempt per operator were comparable.

CONCLUSIONS: This is a large study of software-assisted OCT imaging acquired in the field during a large scale screening. Software-assisted OCT was used to obtain high quality, efficient image acquisition by various operators. As a small footprint machine with automated software and telemedicine-friendly data transfer for analysis offsite, software-assisted OCT is feasible and can represent a high quality screening tool to detect retinal changes in remote settings with less trained operators.

Objectives
1. Gain insights into the feasibility of software-assisted optical coherence tomography in mass screening.
2. Acquire an understanding of the quality of software-assisted optical coherence tomography.
3. Explore the potential applicability of software-assisted optical coherence tomography in your practices.

P17 IS BROADBAND SATELLITE ADEQUATE FOR REMOTE OPHTHALMIC CONSULTATIONS?

PRESENTER & CONTRIBUTING AUTHORS:
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1Australian e-Health Research Centre, Floreat, Australia, 2Australian e-Health Research Centre, Brisbane, Australia, 3Royal Perth Hospital, Perth, Australia

AIM: Main aim of the project is to bring specialist eye care to the people living in very remote areas in Australia using broadband satellite technology. The trials were conducted in two different states targeting mainly Indigenous and older Australian who otherwise do not have access to eye care services. We have focused on remote diagnosis of diabetic retinopathy that is highly prevalent in the Australian indigenous communities. We have done a comprehensive cost benefit analysis of the specialist eye care service delivery to the remote and rural Australia. This project is funded by the Australian Federal Department of Health.

METHODS: We have seen over 1000 patients during the last one-year period in two different States in Australia - Western Australia (WA) and Queensland. Due to the trial, satellite dishes were installed at community health centres or local medical clinics. Each location received a fundus camera and appropriate training has been given to the local nurses to obtain retinal photos. We have also used a comprehensive telemedicine system called Remote-t that connected all the local remote clinics to the ophthalmologists based in major cities. We have also developed referral pathways such that the services can be continued after the trial period.

RESULTS: 82 cases of diabetic retinopathy (DR) were picked up. Critically, two patients were diagnosed with proliferative DR and two with severe non-prolifer DR. Diabetic macula oedema was noted in 63 patients. The majority of
participants screened had no eye problems, which enables the removal of these patients from the queues of overwhelmed specialist lists, improving service efficiency. Qualitative evaluation found that patients and health professionals were highly satisfied with the Remote-1 system. Broadband satellite speed performance was assessed and found to be adequate for running a tele-eye care service.

Conclusion: The project has improved access to ophthalmic health services for residents of the trial sites and demonstrated that routine eye examination is feasible for early detection of some eye diseases for remote and rural patients. It was demonstrated that the broadband Satellite service provides adequate connection and latency for eye related remote consultations.

Objectives
1. Use of broadband satellite for tele-eye care delivery.
2. Automated grading of diabetic retinopathy.
3. Referral pathways for tele-eye care delivery.

Pt18 EVALUATION OF REAL-TIME VIDEO FEED FROM THE DIGITAL INDIRECT OPHTHALMOSCOPE FOR TELEHEALTH CONSULTATIONS

PRESENTER & CONTRIBUTING AUTHORS:
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Introduction: Retinopathy of Prematurity (ROP) is a vasoproliferative disorder of the retina that occurs primarily in low birth weight premature infants. Although a series of landmark clinical trials over the past 20 years have established proper management strategies, ROP still remains one of the leading causes of preventable childhood blindness. In the US, challenges with ROP surveillance can be attributed to the dwindling pool of trained ophthalmologists willing to manage ROP as a result of the high medicolegal risks and logistical barriers regarding coordination of care in neonatal intensive care units. Telemedicine offers the possibility of remote consultations that can improve the accessibility and delivery of ophthalmic care. To date, all telemedical ROP surveillance programs have been largely limited to the capturing of photographs by a healthcare professional and forwarding for review by an ophthalmic specialist in a store-and-forward manner. Although the use of wide angle retinal photographs has been evolving to becoming an acceptable means of care, there have been limited studies on real-time telehealth pediatric ophthalmologic consultations. Validating the equipment to be used in telehealth consultations is the essential primary step in establishing a viable telehealth platform that can be replicated by other institutions. This pilot study attempts to validate the use of video data from a digital indirect ophthalmoscope for remote diagnosis of diabetic retinal disease using ROP as a model disease. The ability to use the digital indirect ophthalmoscope accurately live would allow for real-time feedback and teaching.

Methods: An ophthalmologist simultaneously performed and recorded routine ROP screenings on enrolled premature infants (<31 weeks and <1500 grams) using the Keeler digital indirect ophthalmoscope. Examinations were graded as no ROP, mild, Type 1, or Type 2. Masked to clinical findings, another ophthalmologist reviewed and graded live video feed transmitted at 4096 kbps. We compared the sensitivity and specificity of diagnosing ROP via live video clips to the gold standard in-person examination. The project has improved access to ophthalmic health services for residents of the trial sites and demonstrated that routine eye examination is feasible for early detection of some eye diseases for remote and rural patients. It was demonstrated that the broadband Satellite service provides adequate connection and latency for eye related remote consultations.

Results: 145 examinations of individual eyes from 37 babies were included. Median postmenstrual age (PMA) at delivery was 24 weeks (range 23–34), median birth weight 630 grams (range 455–1,530), and median PMA at examination 37 weeks (range 31–54). Of those infants with any ROP, the sensitivity and specificity was 100% and 72.9%, respectively. For Type 2 or worse ROP, the sensitivity and specificity was 91.67% and 84.7%. For Type 1 ROP, the sensitivity and specificity was 100% and 99.3%.

Discussion: Live video feed obtained by the Keeler system may be read with high sensitivity and specificity to detect treatment-requiring ROP. Given the high negative predictive value (97.3–100%), it is highly unlikely that eyes requiring closer follow-up or treatment would be missed with remote diagnosis. Future studies include re-evaluation of stored video clips by both graders 3 months after conclusion of enrollment to assess intra- and inter-physician sensitivity and specificity of diagnosing ROP.

Conclusions: Real-time video indirect ophthalmoscopy via the Keeler system may be useful as an adjunct to bedside evaluation and as a training tool for ophthalmologists to diagnose any pediatric retinal disease.

Objectives
1. Summarize the role of telemedicine in ROP management.
2. Identify uses of real-time video indirect ophthalmoscopy system.
3. To evaluate the validity of using real-time video indirect ophthalmoscopy for telehealth consultations using retinopathy of prematurity (ROP) as a model disease.

Pt19 THINK SMART, USE TECHNOLOGY, BUT DO NOT THINK TOO SMALL: SEPSIS INNOVATION

PRESENTER & CONTRIBUTING AUTHORS:
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1Mercy Virtual, Chesterfield, MO, USA, 2Mercy Virtual, St. Louis, MO, USA

Sepsis, Severe Sepsis, and septic shock are common hospital illnesses that result in high morbidity, mortality and hospital cost. This session describes how hospital wide patient data from an EMR can trigger an early warning system utilized to create a virtual sepsis unit whose patients can be monitored and tracked from a distant central monitoring telemedicine center. Telemedicine personnel upon identifying early signs of deterioration notify local sepsis teams that have standardized protocols to respond to this notification and resuscitate patients 24/7 with assistance as needed from the distant core. After establishing this multifaceted program across multiple facilities, improvement in sepsis bundle compliance, early intervention, mortality, and hospital LOS has been seen in this patient population.

Objectives
1. Describe how the three components of this program are combined to establish hospital wide program of early identification and consistent standardized performance with real time feedback
2. Understand the dynamics of the program, impact on clinical workflows across the hospital, and the culture that is needed to be successful
3. Identify how leveraging technology, people, and processes will create the value proposition and improved quality outcomes

Pt20 USING CLINICAL DATA TO ESTABLISH REPRESENTATIVE POPULATIONS OF PATIENTS WITH SEVERE SEPSIS/SEPTIC SHOCK IN A LARGE PRIVATE HEALTHCARE SYSTEM: THE MERCY VIRTUAL SEPSIS UNIT

PRESENTER & CONTRIBUTING AUTHORS:
Robert Nicholson, PhD, LCP, FAHS, Director, Behavioral Medicine, Mercy Clinic Headache Center, Benjamin Dummitt, BS, PhD, Brian Yount, PhD Mercy Health, Chesterfield, MO, USA

Severe sepsis/septic shock is the leading non-cardiac cause of in-hospital mortality in the U.S. Mercy, the nation’s 5th largest Catholic health system, has implemented a system-wide comprehensive sepsis care redesign program. This program optimizes sepsis management by employing electronic
biometric monitoring to detect emerging in hospital sepsis, utilizing standardized order sets, and implementing hospital work flow redesign in order to provide 24/7/365 early response readiness. In real-world situations where system level demands require efficient, expedient program implementation take precedent over programmatic research design, determining the clinical and financial performance and value of innovative program implementation is fraught with difficulties. These include individual-level variations in diagnostic evaluation, non-standardized clinical EMR data capture, insufficient comparable baseline periods, and potential coding alterations emanating from unblinded program implementation. To address these challenges, Mercy has developed methodology to identify severe sepsis/septic shock populations that are independent of coding. This two-step data mining/statistical process uses automated data extraction to pull EMR data from discrete and free fields to identify patients (while being agnostic to chart assigned diagnoses) and then extracts known severe sepsis/septic shock parameters from discrete EMR fields to further refine the population identification process. This methodology, developed and then validated against a known population with severe sepsis/septic shock, delivered >80% overlap. Utilizing this process enables comparable population identification across time and location. These populations can then be used in program evaluation designs including interrupted time series, stepped-wedge implementation, and control/cohort comparisons. A key advantage of this approach is its independence from diagnostic assignment.

**Objectives**

1. Describe the shortcomings of relying on diagnosis coding data to track clinical and financial performance of telemedicine innovations.
2. Describe the difficulties in applying programmatic research design given the competing demands when implementing healthcare redesign projects in real world settings.
3. Report on validation efforts of a method for deriving severe sepsis/septic shock populations that are based on clinical data mined from an electronic medical record and are independent of diagnostic coding assignment.

**P21** TELEMEDICINE TO OVERCOME BARRIERS TO CARE FOR TRANSGENDER WOMEN OF COLOR: DESIGNING A CULTURALLY APPROPRIATE AND EFFECTIVE TELEMEDICINE INTERFACE

**PRESENTER & CONTRIBUTING AUTHORS:**

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**Background:** The transgender population is medically underserved and understudied population often experiencing myriad barriers to care. Despite growing awareness and publicity about transgender individuals, this population continues to experience enormous stigma, violence, and an inability to receive even the most basic healthcare; this is particularly true with the subpopulation of transwomen of color (TWoC). TWoC represent one of the populations most highly affected by HIV, trauma, discrimination, poor utilization of primary care, and violence. The need for knowledgeable, culturally appropriate, comprehensive healthcare for TWoC has been identified in numerous studies conducted in the past two decades, yet lack of access to care and culturally-competent clinicians continue to plague the healthcare system, preventing TWoC from accessing care others find easy to receive. Telemedicine offers the potential for a virtual medical home that can overcome myriad barriers to entering care experienced by TWoC. The telemedicine interface allows highly trained and culturally competent personnel to provide support, referrals, and serves as a bridge to engage individuals in primary and specialty healthcare services as evidenced by its use in other populations yet has not, to date, been studied among TWoC.

**Methods:** The purpose of this study was to conduct formative research on the health needs and optimal interface by which telemedicine can overcome barriers to care for TWoC and ultimately allow creation of a virtual medical home developed specifically for TWoC. Semi-structured key informant interviews (N = 25) and two focus groups were conducted with out of care TW; providers of transgender-specific care (N = 10) participated in semi-structured key informant interviews. Qualitative data were thematically coded, corroborated independently by multiple staff, and emerging domains distilled during a community meeting with representatives of the TWoC population.

**Results:** Participants overwhelmingly viewed telemedicine as an important method for overcoming barriers to care for TW TWoC in particular linking to services unique to TWoC health needs. These included TWoC-specific health needs and gender transitioning, sexual and mental health, HIV/STI prevention, and preventive care but also extended to housing, prevention of violence and access to victim services, and career/job counseling. Providers concurred that telemedicine offers an opportunity to link TWoC into resources and care, and were supportive of telemedicine for this population. Concerns from TWoC included location for use of telemedicine interface, particularly for the unstably housed, and preference for own smartphone device rather than a program-provided one, and expansion from a provider-only model to a virtual community support model.

**Discussion:** Innovative telemedicine interfaces offer unique opportunities to serve TWoC who experience barriers to engagement in care or receipt of necessary health services. This study provides insight into the key elements to optimize the efficacy of telemedicine for this population. Future research will be necessary to develop an appropriate telemedicine interface for TW and evaluate its impact.

**Objectives**

1. Describe factors that may allow the transgender women of color population to uniquely benefit from telemedicine.
2. Describe qualitative data analysis from this study and its impact on future intervention development.
3. Characterize the potential utilization of telemedicine among transgender women of color.

**P22** TELEMEDICINE GUIDELINES FOR THE DEVELOPING WORLD: WHO, WHAT, WHEN, HOW AND WHY? LESSONS LEARNED IN SOUTH AFRICA

**PRESENTER & CONTRIBUTING AUTHORS:**

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**Introduction:** Telemedicine is relatively new in the developing world and its potential is recognized. With few sustained telemedicine programs, the relevant regulatory authorities in the developing world have little knowledge or experience of it. The need for telemedicine guidelines was articulated by the World Medical Association in 1999 and again in 2009 when they stated that, “physicians should use existing clinical practice guidelines, whenever possible, to guide the delivery of care in the telehealth setting, recognizing that certain modifications may need to be made to accommodate specific circumstances.” Telemedicine guidelines set standards for uniform quality of care, facilitate telemedicine implementation by reducing the learning curve and serve to reassure regulators. Using Rogers’ Diffusion of Innovation curve for reference, guidelines have been formulated in the developed world, between the phases of ‘early adopters’ and ‘early majority’. This is difficult for regulators and clinicians in countries where telemedicine is embryonic and still between the phases of ‘innovators’ and ‘early adopters.’ In South Africa
the Health Professions Council, the statutory body regulating the practice of medicine, has been working on developing Ethical Guidelines for the Practice of Telemedicine for over seven years. They acknowledge the process is difficult because of their lack of experience of telemedicine and the absence of clinical guidelines. A solution is to take existing guidelines from the developed world and adapt them to meet local developing world conditions. This paper reports the process followed in developing Practice Guidelines for Videoconference Based Telepsychiatry in South Africa.

Methods: With the approval of the American Telemedicine Association (ATA) their 2009 guidelines for Videoconferencing Based Telemental Health were reviewed by a three person expert group, a psychiatrist, an academic public health nursing sister with experience in mental health and telemedicine and a telemedicine expert. The ATA guidelines were read in conjunction with the Evidence Based Practice for Telemental Health document. Deviations from the ATA documents, based on local context and their implications, were discussed until consensus was reached. Particular attention was paid to appropriate use of the words “shall”, “should” and “may”.

Results: The guidelines differ in format from those of the ATA, with a set of standard operating procedures developed for the four scenarios applicable in South Africa and include standard operating procedures for establishing a telepsychiatry service. They are more descriptive and explanatory as no telepsychiatry was being practiced at that time. The guidelines were sent to psychiatrists at the local medical school and to the heads of Departments of Psychiatry at the eight medical schools for review and input and then submitted to the College of Psychiatrists of South Africa, the body responsible for training standards in psychiatry, for endorsement. The approved adapted guidelines have been implemented in the first telepsychiatry service in South Africa and have been made available to ATA for dissemination and further adaptation by other countries.

Conclusions: This is a simple model facilitating formulation of country and context specific telemedicine guidelines for a range of disciplines in the developing world.

Objectives
1. Acquire an understanding of the importance of clinical guidelines in countries where there is little telemedicine activity or telemedicine is new.
2. Gain insights into the difficulty of formulating clinical guidelines in countries where telemedicine is still developing.
3. Acquire an understanding of the steps followed to adapt a telemedicine guideline to be country and context specific and have it endorsed by a professional body.

P23 DEVELOPING INTERNATIONAL STANDARDS AND GUIDELINES: THE WORLD FEDERATION OF OCCUPATIONAL THERAPISTS TELEHEALTH POSITION STATEMENT

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Telehealth is a service delivery model that uses information and communication technologies to deliver evaluation, consultation, prevention, and other therapeutic services to clients who are in a different location than the practitioner (AOTA, 2013). OT practitioners and their clients are poised to benefit from telehealth as an emerging service delivery model within OT to improve access to services for clients who live in underserved areas, prevent delays in receiving care, and facilitate chronic disease management (AOTA, 2013). Telehealth has been used to provide evaluation and intervention in OT practice areas including children and youth (Cason 2011), health and wellness (Polisena et al., 2010), productive aging (Harada, et al, 2010), rehabilitation and work (Baker & Jacobs, 2010). Due to increased inquiries related to utilization of telehealth to deliver OT services internationally, the World Federation of Occupational Therapists (WFOT) formed a workgroup to develop a Telehealth Position Statement. This poster describes the development of the position statement, including survey results from 38 countries. International issues impacting the use of telehealth and available resources to ensure legal and ethical practice using telehealth technologies will be discussed. Attendees will be encouraged to reflect on the information presented and to consider how telehealth may be utilized in their occupational therapy practice settings.

Objectives
1. Articulate the process used to develop the World Federation of Occupational Therapists Telehealth Position Statement.
2. Identify important issues and factors impacting the use of telehealth internationally.
3. Identify available resources and practice guidelines to ensure legal and ethical practice using telehealth technologies.

P24 RESULTS OF THE TELEREHABILITATION SIG STATE REIMBURSEMENT SURVEY: CURRENT PAYMENT TRENDS

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There is a growing number of allied health professionals providing tele-rehabilitation and other telehealth services across several types of settings and populations in the United States and around the world. The American Occupational Therapy Association (AOTA 2013), the American Physical Therapy Association (APTA 2014), and the American Speech-Language-Hearing Association (ASHA 2014, Brown 2010) have developed technology and telehealth practice standards and guidelines, ethical statements and numerous support documents to promote the implementation of telehealth services. However, reimbursement continues to be one of the major barriers to faster adoption of telehealth technology enabled care. The Telehealth Special Interest Section recognizes the need to provide its constituents and numerous other industry stakeholders with information on use and reimbursement of telehealth services for purposes of advocacy, policy making and the advancement of education, training and implementation. Therefore, an initiative examined current location of services, payers, payment, billing and coding trends across all 50 states and U.S. Territories.

The 2014 State Telehabilitation Reimbursement Survey provides a state-by-state breakdown of reimbursement and practice trends for occupational therapy, physical therapy and speech therapy, audiology, and physical medicine services delivered through telehealth technologies. The survey process and results assist policy and advocacy efforts to advance use of telehabilitation within these professions by providing information about current reimbursement and practice trends.

Objectives
1. Articulate the process used to develop the Telehabilitation SIGState by State Reimbursement Survey.
2. Identify current payment trends and payers by state.
3. Identify impact factors to billing and coding for telehabilitation.
Providers in the UK and U.S. are under increasing pressure to do more with the same budget. In both countries, less than 30% of the population—those with chronic conditions and co-morbidities—accounts for 70% of healthcare spend. Care is often fragmented and uncoordinated, with no one agency taking overall responsibility, so it is often left to individuals and their families to negotiate the system as best they can. Until now, care providers have had little financial incentive and have lacked financial mechanisms to allow funding to follow patients as they move from one setting to another. Both healthcare systems are in the process of creating financial mechanisms that support rather than inhibit payers and providers to work collaboratively around the needs of patients. We propose a telehealth approach, which targets collaborative care arrangements initially at a subset of the population that would be expected to benefit most. The objective is to identify which people might comprise this initial group, and to assess what is the budget estimate to cover their health, community, and social care requirements before and after introducing telehealth in pathways across care settings. We have adopted four criteria to identify groups most amenable to a telehealth-managed chronic condition: prevalence; utilization of telehealth across diverse settings; cost of care before and after introduction of telehealth; and stakeholder consensus that changes to the care pathway are feasible. The rationale for these criteria and the analytical approach are set out in the box below.

<table>
<thead>
<tr>
<th>BASIS</th>
<th>RATIONALE</th>
<th>ANALYTICAL APPROACH</th>
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<tbody>
<tr>
<td>Prevalence of chronic conditions (COPD, CHF, Diabetes, and hypertension)</td>
<td>In developing a budget, there needs to be a reasonably large number of people to form the “risk pool”.</td>
<td>Assess how many people have particular chronic conditions and combinations thereof.</td>
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<tr>
<td>Utilization of telehealth across settings</td>
<td>People who require services across diverse settings are most likely to benefit from collaborative care via telehealth.</td>
<td>Summarize the number and type of settings in which patients receive care by chronic condition.</td>
</tr>
<tr>
<td>Costs of care</td>
<td>Potential greater ROI when managing chronic conditions using telehealth.</td>
<td>Summarize total and setting-specific costs and benefits by chronic condition and calculate ROI.</td>
</tr>
<tr>
<td>Potential for change</td>
<td>Changes require stakeholder ownership and action.</td>
<td>Various forms of interaction with the local health, community, and social care stakeholders</td>
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This presentation summarizes our experience developing a telehealth-managed chronic condition care model for US payers and providers and UK Clinical Commissioning Groups and hospital trusts using telehealth services not only as a cost-cutting tool, but as a mechanism for creating a flexible and responsive patient-centered care model. We estimate the economic benefits of remote patient monitoring resulting from: the shift to less costly interventions; reduction in readmissions; reduced unplanned admissions; reduction in the number and increased time allocation efficiency of healthcare staff; and the overall reduction in per-patient cost. Insights from such work with payers and providers could be of considerable methodological and practical use to the ATA community.

**Objectives**

1. Acquire an understanding of the economic benefits of remote patient monitoring based on the experience of telehealth-managed patients in the U.S. and the UK.
2. Achieve a better understanding of the telehealth-managed chronic condition care model for US and UK payers and providers.
3. Gain insights on the telehealth management of chronic condition patients not only as a cost-cutting tool, but as a mechanism for creating a flexible and responsive patient-centered care model.
In the transition from a fee-for-service to a fee-for-value system, healthcare organizations are under pressure to keep patients healthy through preventive services and managing avoidable admissions, while assuring patients use their health system when they need services. Therefore, healthcare organizations are changing to a model of managing population health across the care continuum with the goal to provide the right care at the right time with the right resources. Furthermore, health systems are concerned with patient satisfaction and retaining patients as returning customers when they need services. Initiatives to improve patient care include the use of patient home monitoring with a personal medical alert service and medication management solutions.

For many managed care organizations, comprehensive population data analytics is the key to unlocking critical information that could improve patient outcomes. Predictive analytics can provide the necessary insights to understanding the past health behavior of the patient population and turn this information into predictions for future behavior and actionable insights. To leverage analytics to the fullest extent, data from multiple sources, including patient medical records and home monitoring data, need to be combined to provide the most extensive view.

Our objective was to use predictive analytics to proactively identify members at highest risk for unplanned emergency hospitalizations, enabling targeting of programs to members that need it the most. De-identified medical alert pattern data of a large population of personal medical alert service subscribers were combined with patient electronic medical record data to develop a predictive model of emergency hospital transport. The predictive model was used to stratify the population and track patient decline over time. The model was retrospectively validated and showed good discriminatory accuracy and calibration.

Another objective was to identify patient characteristics predictive of returning to the healthcare organization for post-acute care services when needed. De-identified data of patient visits to a post-acute care organization were used to carry out a multivariate regression analysis. This analysis showed that patients with a personal medical alert service returned to the healthcare provider more often, independent of patient fall risk and medical conditions. Our research has shown in a fee for value system, it is critical to provide a continuum of care to enable the patients to use the healthcare organization whenever possible. Access to care can be confusing to patients after discharge, especially when multiple physicians are utilized. It can be difficult to know the needs of patients after hospital discharge or discharge from post-acute care services. A personal medical alert service may provide a strong point of contact with the patient between episodes of care, better enabling the patient to return to the provider when services are needed, increasing quality of care and patient life time value.

Implementation of predictive data analytics and linking patient electronic medical record data with home telemonitoring data will enable health systems to coordinate long-term patient support by tracking patient decline and identifying members with greatest need for services. We are currently validating our data analytics findings in collaboration with various health systems.

Objectives
1. Understand how patient decline can be tracked using predictive analytics.
2. Understand that integration of multiple data sources is beneficial for tracking patient risk.
3. Understand factors predictive of post-acute care service reuse.

P28 THE BENEFITS OF IMPLEMENTING SECURE MESSAGING
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My HealtheVet is the VA’s Personal Health Record for Veterans. My HealtheVet offers an unprecedented opportunity to bring online services and care to VA patients. Now used by over 1 million Veterans. My HealtheVet serves as a novel platform for Veterans and their families to access their own health information, manage their medications, and communicate with their healthcare team. My HealtheVet Secure Messaging is a Web-based messaging system that allows members of the healthcare team to communicate non-urgent, non-emergent health-related information with their VA patients. Secure Messaging offers a valuable opportunity to demonstrate a patient-centered approach for health communication. Secure Messaging plays an important role in providing new models of care that aim to enhance access to providers and other VA staff, and to offer high-quality care that is convenient to Veterans and their families. Secure Messaging is a novel computer application designed for VA patients and a wide variety of VA staff. Secure Messaging holds great promise for transforming how patients communicate with their healthcare team. Intended for non-urgent communication, Secure Messaging, unlike email, offers security protections for all users. It can be used to request VA appointments, prescription renewals, and to ask health and/or administrative questions. Secure Messaging enhances access to care and provides the capability to save messages to the patient’s electronic record, CPRS. Advantage of Secure Messaging to home telehealth is it offers workflow efficiencies, promotes team based care, secure way of communication, patient information can be sent securely, instant group electronic education material, substitute phone visits, alternate to voice message, reduce phone time, convenient, reminder to non-responders, higher satisfaction with care, enhance communication for chronic illness care, improves documentation of care delivery, it is economical, reduce cost on material such as paper, envelopes, stamps, and manpower.

Objectives
1. Identify the advantages of integrating Secure Messaging into clinical workflow.
2. List the core functionalities of Secure Messaging in home telehealth.

P29 RELIABILITY, USABILITY, AND ADHERENCE WITH A REAL-TIME AUTOMATED HOVERING TELEHEALTH SYSTEM IN OLDER ADULTS WITH HEART FAILURE
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Background: ‘Automated hovering’ using technology has been suggested as part of an early intervention and prevention care model. One group that has been shown to benefit from automated hovering is older adults with a chronic health condition. Aging adults often have challenges with technology and unreliable equipment is often problematic. The current study tested reliability, usability, and adherence with an integrated, real-time automated hovering technology in older adults having a chronic condition over an extended period of time.

Methods: Eleven older adults (five females) diagnosed with stage I-III (NYHA) heart failure, ages 56 to 92 (M = 69.1, SD = 10.93), were monitored in their homes for six months each using a wireless real-time monitoring system that included a 24/7 wearable monitor in wristwatch form factor, blood pressure cuff, weight scale, and touchscreen tablet for completing daily health surveys. Device usability was measured with a modified (range 8–40) System Usability Scale. In addition, the watch device was measured with a modified (range 22–110) Comfort Rating Scale. Higher scores are better for both measures.
Results: Reliability: The cellular-based network transmitted data in real time 93% of the time; the watches collected and transmitted 24/7 data 74% of the time.

Usability: The ratings for the watch device (Time1: M = 26.4, SD = 3.69; Time2: M = 27.4, SD = 5.44) and weight scale (Time1: M = 28.9, SD = 2.59; Time2: M = 30.7, SD = 3.10) trended in the positive direction. The ratings for the BP cuff at completion (M = 29.3, SD = 4.73) were marginally higher than at the start (M = 25.7, SD = 4.76, t = 1.83, p = 0.096). The differences from start (M = 25.4, SD = 5.16) to finish (M = 28.6, SD = 6.04) for overall system (t = 2.24, p = 0.049, d = 0.56) and tablet device usability (T1: M = 18.9, SD = 3.65; T2: M = 30.6, SD = 2.98, t = 6.84, p < 0.0001, d = 3.49) were significantly higher.

Adherence: Weight and blood pressure daily readings were collected 84% of the time, respectively, and out of the watch data collected (~75% of the time) the watch monitor was worn 91% of the time. Participants completed 70% of the requested surveys on the tablet device.

Comfort: The ratings for the watch at the start (M = 79.6, SD = 11.79) and end (M = 78.1, SD = 9.79) were consistent.

Conclusions: The reliability and adherence results show promise. The usability ratings on the devices and overall system suggest that older adults with heart failure can and will use technology and that with continued practice, the devices are perceived to be easier to use. These data support previous findings that indicated the potential benefits of automated hovering types of 24/7, integrated telehealth systems.

Objectives
1. Assess comfort of a remote telecare system.
2. Evaluate the reliability of a remote telecare system.
3. Assess comfort of a remote telecare system.

P31 TELEMEDICINE APPLICATION IN THE CARE OF DIABETES PATIENTS

PRESENTER & CONTRIBUTING AUTHORS:
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Background: Telehealth strategies have the potential to improve diabetes care, but there is lack of evidence about the impact of telehealth strategies in diabetes patients in developing countries. The objective of this study is to analyze the feasibility, usability and clinical impact of a decision support system (DSS) in Brazilian primary care diabetes patients.

Methods: Quasi-experimental study, which included type 2 diabetes primary care patients over 18 years-old of six cities randomly selected from the 660 cities attended by the Telehealth Network of Minas Gerais, a Brazilian public telehealth service. Patients were assessed on baseline, during 6 months before the app implementation, and 4 months after the implementation. The software was developed as an app and included initial evaluation, subsequent evaluations, capillary blood glucose measurements and feet assessments. The DSS application generates specific recommendations based on the data entered. For the statistical analysis, patients were divided in 2 subgroups based on HbA1c, lower than vs. equal or higher than 9.0%. Student’s Test and Mann-Whitney Test were used to compare mean or median values, depending by the variable distribution, and a multiple regression analysis was performed to compare the HbA1c and glucose measurements, considering as significant p < 0.05.

Results: A total 148 patients were recruited, but 3 of them were excluded for not having any HbA1C measurement, totaling 145 valid patients. Mean age was 62 (±9.94 years), 62.1% were female and 70% of patients had the diagnosis of diabetes for more than 5 years. Mean body mass index was 29 (±5.24) kg/m2. There were 111 initial assessments, 254 subsequent evaluations, 808 capillary glucose measurements and 119 feet assessments inserted in the application. There was a slight decrease in median HbA1C over the course of the study, from 7.7% (6.5-9.8%) to 7.4% (6.5-9.2), but the effect was not statistically significant.
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(p = 0.347). The decline was significantly different between subgroups (p = 0.004): those individuals with HbA1C ≥ 9% at baseline showed greater reduction 10.5% (9.9–11.3%) to 10% (8.9–10.9%) than those with initial HbA1C < 9%: 6.9% (6.3–7.7%) to 7.0% (6.3–7.6%). After imputation of missing values, the analysis was redone and the results were similar. Ninety seven (81.5%) feet assessment had normal results, 11 (9.2%) indicated altered protective sensitivity, 5 (4.2%) absent pulses, 3 (2.5%) present ulcers and 10 (8.4%) previous ulcers. Furthermore, a specific instrument was developed to investigate the app usability by the users. The results showed that the healthcare practitioners considered the DDS for diabetes care to be easy to use (99%) and the information provided by the app was useful for patient care (100%).

Conclusions: The improvement of glycemic control in the more decompensated patients (HbA1C ≥ 9%) observed in this study probably reflects the systematization of diabetes care. Telehealth may be a useful tool in diabetic patients - and possibly also in other chronic diseases - inserted into a context of greater organization and overall improvement of care strategies.

Objectives
1. Understand the development of a decision support system for diabetes care.
2. Increase knowledge about the feasibility, usability, and clinical impact of a decision support system in the primary care of diabetes patients.
3. To discuss the systematization of care using telehealth as a tool for improving the assistance to diabetes patients.

P32 USING TELEHEALTH TO SUPPORT AND IMPROVE OUTCOMES FOR AN ORPHAN DISEASE

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While less than 200,000 people nationwide affected by sickle cell disease, such patients often require complicated case management. Considered an “orphan disease” due its low number of impacted patients, at least 1200 Arkansas suffering from sickle cell disease. Those with the severest progressions of the disease seek emergency care frequently due to pain crises, an affliction often prompted by the lack of primary care physicians who know how to treat this high-risk, chronic condition. These patients are often blacklisted as “drug seekers,” with needs that may not be fully understood by primary care physicians without specialty training in sickle cell disease.

To better care for this chronic disease population, the University of Arkansas for Medical Sciences’ (UAMS) Division of Hematology/Oncology partnered with the UAMS Center for Distance Health to create a system for sickle cell patients and the physicians who care for them. The state legislature recognized the needs of this underserved population and generously provided funds to develop and nurture the program to reach sickle cell patients across Arkansas.

The UAMS Adult Sickle Cell Clinical Program launched in January 2014 and includes a sickle cell hotline hosted by the ANGELS Call Center. Calls from healthcare providers request advice on patient management, and patients request appointments and ask questions regarding their disease or complication. Acute medical issues are triaged by the Call Center RN and advice is given regarding the level of care needed. Advice may include sending patients to the emergency department (ED) for treatment, scheduling an appointment, or instruction for self-care at home. The triage nurses are familiar with sickle cell disease and equipped with triage guidelines for the most appropriate level of care, and a dedicated Sickle Cell Clinical Team provides second-level triage. In the first 8 months of the 227 calls the hotline received, 76 patients needed triage for medical complications. Of the 74 triaged, 31 were sent to the ED for urgent treatment, 22 scheduled an appointment (9 of which were the same day), and 21 were given self-care instructions and stayed home (of which, 9 received Rx refills). Of the 74 patients triaged, 21 patients avoided an ED visit: 15 of which the triage nurse utilized 2nd level triage with Sickle Cell Team members on-call and an alternative outcome resulted. Alternatives to the ED included same-day clinic appointments, same day infusion clinic, or adjustment in pain medication. The other 9 of the 21 avoided ED visits were patients who stated they would have gone to the ED had they not been able to speak to a triage nurse.

Since the ANGELS Call Center is one piece of a robust interactive video telemedicine network in Arkansas, it is anticipated that telephonic intervention will soon merge into home-based interactive video consultations and other telemedical consultations within rural hospitals serving sickle cell patients.

Objectives
1. The participants will be able to identify an Orphan disease and the potential for disparities in healthcare.
2. The participants will be able to recognize incorporating telehealth into a healthcare program for an underserved population can potentially improve outcomes.
3. The participants will be able to identify potential cost savings related to providing telephone triage for Sickle Cell patients therefore reducing ED visits.

P33 HEPATITIS C VIRUS CARE VIA TELEMEDICINE FOR INDIVIDUALS ON OPIATE AGONIST THERAPY

PRESENTER & CONTRIBUTING AUTHORS:
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Although persons who use injection drugs (PWID) have the highest prevalence and incidence of hepatitis C virus (HCV) infection, they have rarely been treated. Based on studies showing that co-location of substance abuse treatment with other co-occurring conditions results in improved outcomes for both, we sought to use telemedicine to bring specialty consultation to the OTP to treat HCV infection.

Telemedicine has proven effective in delivering medical care to populations with restricted access due to geography (e.g. rural areas), physical limitations, such as bed-bound patients, prisoners or disenfranchised groups, such as the uninsured/underinsured and persons who are actively using drugs. Patients in an urban OTP are similar as they will infrequently adhere with referrals for specialty care in conventional healthcare settings. Furthermore, development of highly effective antiviral therapy for HCV with dramatically reduced adverse effects and shorter treatment duration, open the door to new treatment approaches for HCV in previously disenfranchised populations.

We initially sought to determine patient interest in obtaining on-site treatment. We surveyed 320 patients to evaluate, among other responses, their HCV-related knowledge level, whether they would be receptive to attending educational sessions as a prelude to treatment for eligible patients. The results were overwhelmingly positive, providing the impetus to proceed with telemedicine-based HCV evaluation and treatment.

We first provided HCV-related education to staff and patients; and second, we sought to provide on-site linkage to specialized medical services, Hepatitis C education to all clinical staff was completed, as well as for 111 treatment-eligible patients who completed the survey. Within the patient group, 23 have moved to the treatment stage for initial evaluation. To date, patient reaction to telemedicine-based evaluations has been overwhelmingly positive with appreciation of the convenience of onsite specialty care co-located in the OTP. Prior to moving to the treatment phase, we are awaiting FDA-approval of regimens without interferon, a principal impediment to treatment initiation in this population.

With regard to the technical and reimbursement challenges, we have established a system for two-way, face-to-face interaction with OTP patients that also allows for their visualization of their results from the electronic health
ROLE OF TELEMEDICINE NETWORK SYSTEM IN RURAL AREAS OF JAPAN

PRESENTER & CONTRIBUTING AUTHORS:
Yasuhiro Nagayoshi, MD, PhD, Associate Professor1, Kenichi Tsujita, MD, PhD2, Shuichi Oshima, MD, PhD3, Hisao Ogawa, MD, PhD4
1Aso Medical Center, Aso, Japan, 2Department of Cardiovascular Medicine, Graduate School of Medical Sciences, Kumamoto University, Kumamoto, Japan, 3Kumamoto Central Hospital, Kumamoto, Japan

Background: In Japan, there are some catheterization laboratories in each medical service area. However, cardiovascular centers capable of surgical procedures concentrate in urban areas. The critical ill patients such as coronary complex lesions must be transferred to receive the advanced medical care. Inter-hospital conference is necessary for an optimal patient transfer. We have developed a DICOM telemedicine network to enable to open cardiology conference between hospitals long distance away.

Methods and Results: Kumamoto telemedicine network is organized by two high-volume centers and 12 rural low-volume hospitals without on-site cardiac surgery. Travel distance between hospitals and the reference center ranges from 40 to 113 km. Network consists of central server and multiple clients that can retrieve and display DICOM images. All DICOM images were stored in the digital filing system. The images were transmitted through broadband connections such as ADSL (13-18 MBps) or optic fiber (100MBps). Angiographic teleconsultations were performed in the “online” mode. Patient information was transmitted using WEB-based consultation system. Network security was based on a firewall and a virtual private network. Between August 2012 and March 2014, 161 tele-conferences were conducted. Aso city is one of the small rural cities, where approximately 30,000 people inhabit. We investigated the utility of the tele-conference system in Aso areas. In Aso central hospital, one of the low-volume hospitals, tele-conferences have been carried out in 24 cases (12 coronary artery disease, 5 peripheral artery disease, 2 infective aneurysm, 2 aortic aneurysm, 1 anululoaortic ectasia, 1 cardiac tamponade, 1 suspected deep vein thrombosis). A successful communication hookup was obtained in all cases. After the cardiology conferences, six cases (25%) were required to be transferred to the high-volume center. We investigated the prevalence of patient transfer from Aso central hospital to high volume centers before and after network system deployment. Telemedicine-based collaborative care significantly decreased the frequency of patient transfer from Aso area (P < 0.05).

Conclusion: Kumamoto telemedicine network enables a close relationship between high volume centers and rural hospitals. This collaboration has the potential to improve cardiac care in rural areas.

Objectives
1. Understand the utility and benefits of telemedicine network in the field of cardiology
2. Understand the role of telemedicine in cardiologist in rural areas
3. Understand the use of telemedicine network for the management of patients in acute/chronic phase

MONDAY, MAY 4, 2015
4:15 pm–5:15 pm Monday, May 4, 2015

A COMMUNITY HOSPITAL TELEMEDICINE PROGRAM: INCREASING UTILIZATION OVER A FOUR YEAR PERIOD

PRESENTER & CONTRIBUTING AUTHORS:
P. W. Ludwig, MD, FCCP, President, J. Marcus, MD, FCCP, B. Ludwig, MBA, M. Marquez, MBA, FACHE, K. Ramos, BHS, LPN, R. Lewis, BHS

Introduction: ICU telemedicine has proven to be a useful modality to improve access to intensivist directed care for ICU patients. Our previous experience has shown that implementation is not uniform. This study details increasing telemedicine utilization during a 4 year period and outlines program structural changes that improved utilization.

Methods: The subject community hospital has a 16 bed medical surgical ICU. It is staffed by a 12 hour daytime Intensivist program and a 12-hour telemedicine coverage at night. There is a mandatory intensivist consult policy for all ICU admissions admitted during all duty hours in this hybrid model intensivist program. The telemedicine system utilized by the teleintensivist is a portable cart equipped with a monitor and two way televideo system that allows simultaneous visualization of the patient, and the on call teleintensivist. The teleintensivist was also provided access to the facility’s EMR and PACS systems. Patients seen by telemedicine were managed by direct communication with the bedside nurse, and/or ancillary staff members. Data was collected for a four year period including total number of telemedicine encounters, primary diagnosis/reason for activation and respective mortality rates. At the beginning of year 4 the telemedicine shift policy/structure was modified to include: (1) Direct (daytime) intensivist to (nighttime) teleintensivist signouts; (2) Mandatory evening tele-rounds with the ICU charge nurse with “walk rounds” on all critical patients; and (3) A policy requiring the immediate activation of the teleintensivist for all admissions designated to the ICU. The primary outcome was the total number of telemedicine patient encounters, primary diagnosis/reason for activation and respective mortality rates. At the beginning of year 4 the telemedicine shift policy/structure was modified to include: (1) Direct (daytime) intensivist to (nighttime) teleintensivist signouts; (2) Mandatory evening tele-rounds with the ICU charge nurse with “walk rounds” on all critical patients; and (3) A policy requiring the immediate activation of the teleintensivist for all admissions designated to the ICU. The primary outcome was the total number of telemedicine patient encounters, primary diagnosis/reason for activation and respective mortality rates. At the beginning of year 4 the telemedicine shift policy/structure was modified to include: (1) Direct (daytime) intensivist to (nighttime) teleintensivist signouts; (2) Mandatory evening tele-rounds with the ICU charge nurse with “walk rounds” on all critical patients; and (3) A policy requiring the immediate activation of the teleintensivist for all admissions designated to the ICU. The primary outcome was the total number of telemedicine patient encounters, primary diagnosis/reason for activation and respective mortality rates.
**P36 THE TELEICU: AN INNOVATIVE MODEL FOR ADVANCED PRACTICE NURSES**

**PRESENTER & CONTRIBUTING AUTHORS:**
Katheryne T. Amba, MSN, CCRN, Acute Care Nurse Practitioner

1. Advanced ICU Care, St Louis, MO, USA, 2. Barnes Jewish College, Goldfarb School of Nursing, St Louis, MO, USA, 3. University of Chicago Medical Center, Chicago, IL, USA

As healthcare reforms call for improved care outcomes at reduced cost, there is the need of paradigm shift from traditional practice models at the bedside to tele-Intensive Care Unit (TeleICU) models. The TeleICU is a subspeciality in telemedicine. It is a care model where critical care experts continuously employ the use of sophisticated telecommunication devices from a remote monitoring center to provide services and communicate with bedside clinicians in a hospital intensive care unit (ICU). The introduction of telemedicine into the ICU dates back over 30 years where experts speculated telemedicine could solve the scarcity of inadequate specialists in critical care. Although considerable research has been conducted highlighting the positive impact of teleICUs to patient care such as decreased length of stay and mortality in the ICU, there continues to be obstacles in its uniform adoption and acceptance by ICU Healthcare providers. This study shows that following an adjustment of the telemedicine activation policy there was a marked increase in number of telemedicine patient encounters and improved acceptance and utilization by the medical staff in the ICU.

**Objectives**
1. See what kind of impact that a Telemedicine program with structure can have on a hospital’s ICU.
2. See that there are no major difference in covering an ICU via telemedicine vs. physically being onsite.
3. Inform about a successful telemedicine program.

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**P37 THE APPLICATION OF TELEICU TO VENTILATOR LIBERATION: A CLINICAL AND FINANCIAL SUCCESS**

**PRESENTER & CONTRIBUTING AUTHORS:**
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1. Advocate Health Care, Chicago, IL, USA, 2. Advocate Health Care, Oak Brook, IL, USA

TeleICU is a disruptive technology that can transform the care of critical care patients. Investing in the technology can realize clinical and financial benefits, opportunities for better data analysis, and improved clinician and patient satisfaction. Advocate initially invested in teleICU with the goal of reducing mortality, LOS, and cost. This was predicated on: 1) early clinical intervention in acute and evolving medical urgencies detected by the technology’s early warning alerts and 2) a proactive review of patient charts to avoid adverse events and promote more efficient delivery of patient care. An unexpected realization was the application of teleICU to population management which enabled a more standardized application of evidence-based medicine across the continuum of critical care patients. These population management efforts resulted in a reduction in ventilator associated pneumonias, consistent DVT prophylaxis, sepsis screening and early goal directed therapy. Population management translated into understanding individual ICU characteristics that through process flow variability and gap analysis afforded the opportunity to create mild variations in the delivery of care that resulted in even further gains.

In 2011, the ventilator days index at Advocate was 1.27. Reducing the ventilator days index to the expected ratio of 1.0 would lower the LOS by 4600 days at a cost savings of $3M. It was projected that half the opportunity could be achieved in year 1 and the full savings by year 2. The system-wide ventilator liberation protocol and workflows were reviewed with each of the 16 ICUs’ clinical leadership. It was proposed that our opportunity for improvement rested with the consistent withdrawal of sedation and a trial of spontaneous breathing at a predetermined time every morning and that the teleICU could significantly collaborate in the initiative. The initiative included: (1) creating a new ventilator handover tracking tool on our homegrown electronic report sheet. It allowed the bedside to convey the readiness to wean, reasons patients failed ventilator liberation that day, clinical interventions that would make the patient more weanable, and uniformly communicated the patient’s status to all care providers; (2) afternoon ventilator rounds between the bedside and the teleICU remote center via Microsoft Lync to discuss opportunities to improve the chances of a successful extubation the next morning; (3) partnering between the bedside nurse and teleICU nurse between midnight and 7 AM to reduce sedation to enable a spontaneous breathing trial every morning at 6 AM; (4) a new teleICU intensivist shift 4 am-noon to round with the bedside nurse and respiratory therapist to initiate the spontaneous breathing trial; and (5) the teleICU intensivist serving as the physician participant in multidisciplinary rounds via Microsoft Lync at those sites without an immediately available onsite intensivist. Between Q3 2011 and Q3 2012 Advocate’s ventilator days index decreased from 1.27 to 1.07 and by Q3 2013 was 0.97, a cost savings of $1.35M. Even more important, this extrapolated to 828 lives saved over the 2 years.

**Objectives**
1. Demonstrate how telemedicine can be used to improve evidence-based practice in the ICU.
2. In what ways does telemedicine enhance or disrupt the interdisciplinary ICU team.
3. What is the role of ICU telemedicine in protocol and guideline adherence.

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**P38 USING TELEICU TO ACHIEVE POPULATION MANAGEMENT CLINICALLY AND FINANCIALLY**

**PRESENTER & CONTRIBUTING AUTHORS:**
Cindy M. Welsh, BSN, MBA, VP Adult Critical Care/eICU and Medical Professional Affairs, 1. Michael Ries, MD, MBA, FCCM, FCCP, FACP 2

1. Advocate Health Care, Oak Brook, IL, USA, 2. Advocate Health Care, Chicago, IL, USA

Advocate introduced teleICU technology more than 11 years ago to provide additional patient monitoring with the intent of reducing mortality, adverse events, and length of stay. Advocate quickly realized that the teleICU could also provide for greater population management of common evidence-based
The cost-effectiveness of telestroke varies by implementation cost and stroke severity: real world data from a Pacific Northwest telestroke network

**PRESENTER & CONTRIBUTING AUTHORS:**
Archit Bhatt, MD, Director, Telestroke and Telehealth, Providence Brain and Spine Institute¹, Elizabeth Baraban, MPH, PhD², Richard Nelson, PhD², Alexandra Lesko, BA¹, Jennifer Majersik, MD, MS³, Nicholas Okon, DO¹
¹Providence Health and Services, Portland, OR, USA, ²Veterans Affairs Salt Lake City Healthcare System, Salt Lake City, UT, USA, ³Division of Vascular Neurology, Department of Neurology, University of Utah, Salt Lake City, UT, USA

**Objective:** An obstacle for community hospitals in joining a telestroke network is often the cost of implementation. Yet, previous analyses examining the cost and cost-effectiveness have only used estimates from the literature. Using real-world data from a Pacific Northwest telestroke network, we examined the cost-effectiveness of telestroke for spokes by level of financial responsibility for these costs and how this changes with patient stroke severity.

**Methods:** We constructed a decision analytic model and parameterized it using patient-level clinical and financial data from the Providence Telestroke Network (PTN) pre and post telestroke implementation. Data included patients presenting at 17 spokes within 4.5 hours of symptom onset. Probability inputs included observed IV-tPA treatment rates, transfer status and hospital costs and reimbursements. Effectiveness, measured as quality-adjusted life years (QALYs), and cost per patient were used to calculate incremental cost-effectiveness ratios (ICERs). ICER’s of <$50,000-$120,000/QALY are considered cost-effective. Outcomes were generated overall and separately by admit NIHSS, defined as low (0-10), medium (11-20) and high (>20) and percentage of implementation costs paid by spokes (0%, 50%, 100%)

**Results:** Data for 594 patients, 105 pre- and 489 post-implementation, were included. See Table 1.

**Conclusions:** Our results support previous theoretic models showing good value, overall. However, costs and ICERs varied by stroke severity, with telestroke being most cost-effective for severe strokes. Telestroke was least cost effective if spokes paid for half or more of implementation costs.

**Objectives**
1. Gain an understanding of the cost-effectiveness of telestroke for spokes by level of financial responsibility for these costs.
2. Better understanding of the cost-effectiveness of telestroke for spokes and how this changes with patient stroke severity.
3. Describe a cost-effectiveness study utilizing real telestroke network data.

**Table 1: Cost-effectiveness Analysis Results by NIHSS and Spoke Cost Burden**

<table>
<thead>
<tr>
<th>% of Implementation Costs Covered by Spoke</th>
<th>0%</th>
<th>50%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall</td>
<td>($5,554)</td>
<td>0.04</td>
<td>Dominant³</td>
</tr>
<tr>
<td>NIHSS Low (&lt;10)</td>
<td>$11</td>
<td>0.007</td>
<td>$1,634</td>
</tr>
<tr>
<td>NIHSS Moderate (10-19)</td>
<td>($371)</td>
<td>0.017</td>
<td>$51,512</td>
</tr>
<tr>
<td>NIHSS High (&gt;20)</td>
<td>($2,919)</td>
<td>0.047</td>
<td>Dominant³</td>
</tr>
</tbody>
</table>

¹Incremental calculations = (telestroke – no telestroke)
²ICER (incremental cost-effectiveness ratio) = Incremental Cost/Incremental Effectiveness
³Dominant = Telestroke leads to lower costs and greater QALYs compared with no telestroke
⁴NIHSS = National Institute of Health Stroke Scale
Methods: Our TM network was established in 2005 and has 14 spoke sites providing acute neurological coverage to rural and community hospitals in Southeast Texas. Our hub stroke research center partnered with two spoke TM sites to bring an adjunctive sonothrombolysis clinical trial (CLOTBUST-ER) to the spoke emergency department. Inclusion criteria of CLOTBUST-ER includes age 18–80, NIHSS ≥ 10, treated with IV-tPA within 3 hours of symptom onset, and no standard IV-tPA contraindications. We retrospectively reviewed our TM registry and identified consecutive patients who received IV-tPA and abstracted their demographic and clinical data.

Results: From 5/2013 to 5/2014, 10 patients identified via TM met study eligibility at the spoke hospitals. In one case there was insufficient time (< 5 minutes) for consent and protocol procedures due to delay in study-team activation. Five of the remaining 9 patients (56%) agreed to participate. Family members were present for informed consent in each case, and no serious adverse events or protocol deviations occurred. All Time metrics were comparable to 4 patients enrolled at the hub hospital during the same time period.

Conclusion: We demonstrate the feasibility of using TM to enhance recruitment into time-sensitive AIS clinical trials with proper resources and planning. Establishing a hub and spoke TM network could substantially increase the pool of potentially eligible patients for acute stroke clinical trials where the hub serves as the coordinating clinical center.

Objectives
1. Acquire an understanding on how telemedicine can enhance recruitment into an acute ischemic stroke trial.
2. Understand the logistical obstacles to conduct clinical trials using telemedicine.
3. Achieve a better understanding and recognition that telemedicine can be used to enhance recruitment into clinical trials.
Similar to many states with a significant percentage of rural landscapes, South Carolina and its rural citizens have continued to face geographical barriers to accessing specialty healthcare. Specifically, South Carolina has consistently high rates of stroke incidence and mortality when compared to the rest of the country. While many South Carolinians continue to lack timely access to high level stroke care, the utilization of telestroke hub and spoke models has proven successful in improving that access in the state. The objective of this study was to maximize the percentage of South Carolinians living within a 60 minute drive time of high level stroke care.

In 2012, a study was published that outlined the geographical challenges faced by South Carolinians living in rural, medically underserved areas of the state and how the impact of telemedicine has helped to overcome those distance barriers and improve access to high level stroke care. At the time of publication of that study, the Medical University of South Carolina’s telestroke network was able to help improve the 60 minute drive times to high level stroke care from 38% to 76% of the state’s population.

In 2013, the South Carolina Legislature appropriated $12.4 million of state funding to MUSC to advance telehealth initiatives throughout the state. With the creation of MUSC’s Center for Telehealth, seven key objectives were established, including strategically expanding the telestroke network to improve access to high level stroke care for all South Carolinians.

As other South Carolina academic institutions had recently launched their own telestroke networks in the state, it was important for MUSC’s Center for Telehealth to specifically target those areas of the state that have remained outside of the 60 minute drive time window. Utilizing Microsoft’s MapPoint software, four hospitals (Tuomey Healthcare System, Beaufort Memorial Hospital, Allendale County Hospital, and the Regional Medical Center of Orangeburg and Calhoun Counties) were initially identified as the most strategic locations to collaborate with and establish a telehealth partnership. With the completion of MUSC’s initial four hospital telestroke expansion initiative expected to be completed by the end of 2014, over 95% of the state’s population will now be within a 60 minute drive time of high level stroke care.

Objectives
1. Learn how to leverage telemedicine to solve statewide healthcare access issues
2. Understand how to strategically target medically underserved areas
3. Gain insights to collaborating at a statewide level

P43 NIH STROKE SCALE ASSESSMENT VIA IPAD-BASED MOBILE TELESTROKE DURING AMBULANCE TRANSPORT IS FEASIBLE: PILOT DATA FROM THE ITREAT STUDY

PRESENTER & CONTRIBUTING AUTHORS:
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Introduction: With an emphasis on more rapid diagnosis and treatment, acute stroke care and research is moving into the prehospital setting with a call for innovative approaches. As a first step in the Improving Treatment with Rapid Evaluation of Acute stroke via mobile Telemedecine (iTREAT) study, we previously showed that mobile telestroke videoconferencing during ambulance transport is technically feasible in a rural EMS setting using a tablet-based system of low cost, off the shelf technology and commercial wireless network. We hypothesize that our iTREAT mobile telestroke system is clinically reliable to perform the NIH Stroke Scale (NIHSS) during ambulance transport compared to face-to-face (FTF) assessment.

Methods: The iTREAT system comprises an Apple iPad with retina display, stretcher-clamped cradle mount, high-speed 4G LTE modem, magnetic-mount external antenna, secure Cisco Jabber videoconferencing application, and our regional Verizon Wireless network. In this simulation study, six unique stroke scenarios were created to best emulate real life EMSprehospital stroke alerts. Three standardized patients were recruited and randomly assigned two scenarios each tested along six major ambulance routes triaging to UVA Medical Center. We alternated the order of FTF and iTREAT evaluations. Statistical analysis included a mixed effects regression model, adjusting for scenario, rater, and order of exposure, to estimate the difference between FTF and
**Outcomes Summary:**

The AN pager if allowed to use for routine patient care. 2 participants re-transfers. 99% of participants agreed the App was more efficient method over teams.

**A-134 TELEMEDICINE and e-HEALTH**

**MAY 2015**

**USING HIPAA COMPLIANT MOBILE PHONE TEXT MESSAGING APP**

**iTREAT scores. Inter-rater and intra-rater agreement was measured using correlation statistics (95% CI) and Bland-Altman plots. Qualitative measures of mean/median audiovisual (AV) quality was determined on a 6-point rating scale (> 4 indicating technical feasibility).**

**Results:**

Overall, the intraclass correlation between iTREAT and FTF assessments was 0.98 (0.94, 1.00) - Graph 1. Bland-Altman plots showed that the ambulance estimates tended to be slightly higher than FTF, but the difference in NIHSS scores was not significantly different 0.32 [-0.33, 0.98]. Additionally, when looking at all individual components of the NIHSS, no rater changed their score by more than one point from FTF to the ambulance scenario. AV quality ratings during all iTREAT evaluations were deemed “good” or “excellent” (audio mean = 5.3, median = 5.5; video mean = 4.67, median = 4.5). Both the NIHSS correlation and AV quality rating increased over the study period.

**Conclusion:**

In this simulation study, NIHSS scores performed during ambulance transport using our tablet-based mobile telestroke system correlated well with face-to-face assessments. Mobile telestroke in the pre-hospital setting could facilitate earlier stroke diagnosis, more accurate and efficient prenotification, and ultimately help reduce stroke onset-to-treatment times; especially in rural areas with a geographic disparity of proximity to primary stroke centers and neurological expertise. These results support further prospective research of mobile telemedicine in live patient settings of prehospital stroke care.

**Objectives**

1. Recognize the utility of mobile telemedicine in the emergency setting.
2. Acquire an understanding of the iTREAT platform.
3. Gain insights into implementing a similar platform.

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**P44 USING HIPAA COMPLIANT MOBILE PHONE TEXT MESSAGING APP TO ENHANCE COMMUNICATION EFFICIENCY FOR EMERGENT STROKE PATIENT AND NEUROSURGERY TRANSFERS**

**PRESENTER & CONTRIBUTING AUTHORS:**

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Mayo Clinic, Jacksonville, FL, USA

**Introduction:**

We conducted a prospective observational study using a mobile health (mHealth) iPhone/Droid app which allows SMS-text messaging which is HIPAA compliant in comparison to the standard alphanumeric (AN) paging system in terms of communication efficiency, satisfaction and technical feasibility and limitations over a 30 day pilot.

**Results:**

94% of participants (n = 15/16) reported improved communication efficiency compared to the AN pager. Average time saved with App vs AN pager was 11min (range 1min - 30min) with average of 4 messages between team members (range 1-30). About half of communication occurred in off-hours (after 4pm – 6am or weekends) for stroke/neurosurgery transfers. 99% of participants agreed App was more efficient method over the AN pager if allowed to use for routine patient care. 2 participants reported technical ‘start-up’ install problems.

**Outcomes Summary:**

100% reported improved preoperative planning, prevention of duplicate neuroimaging when some still CT brain images shared (31%), and better coordination of care among ARNP, MD and surgical teams.

**Objectives**

1. Review HIPAA regulation with regards to SMS-phone based messaging of patient information which may be unsecure.
2. Demonstrate results of a 30-day pilot comparing an SMS-like texting app which is HIPAA secure using encrypted methods vs the alphanumeric pager.
3. Understand the importance of mHealth technology in stroke and neurosurgery transfers.

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**P45 CLINICAL VIDEO TELEHEALTH TO THE HOME FOR MULTIDISCIPLINARY EVALUATION OF SPINAL CORD INJURED VETERANS**

**PRESENTER & CONTRIBUTING AUTHORS:**

Kevin Broder, MD, Director, Plastic Surgery/Spinal Cord Injury Telehealth Program 1,2, Richard Bodor, MD 1,2, Andrew Michael, MD 1, Tracy Duba, RN 1, Elaine Minsch, RN 1, Diane Chau, MD 1,2
1VA Medical Center - San Diego, San Diego, CA, USA, 2University of California San Diego School of Medicine, San Diego, CA, USA

**Problem:**

Spinal Cord Injured (SCI) patients are at risk of pressure ulcer formation during travel to outpatient appointments. Significant travel costs are associated with the transportation of these patients. SCI patients require special caretaker assistance transferring from specialty beds to wheelchairs and need wheelchair or gurney transport vehicles at each step. Inconvenient long wait and transport times place patients at higher risk due to their increased potential for added pressure and trauma. High risk related complications of the transport such as pressure ulcer formation can result in increased costs. Pressure ulcer care can cost $50,000 or more and months of hospitalization to cure. A modality available to facilitate the ‘at risk’ SCI patient with their basic clinic appointments addresses these problems and improves their access to care. ‘Real-time’ Clinical Video Telehealth (CVT) has been used successfully for years, allowing the remote clinical patient to visit with their own local provider while simultaneously receiving specialty consultation at the main hospital. Advances in broadband communication, video quality and mobile device technology have enabled CVT to now be extended into the patient’s own home, removing the greatest travel risks to the home-bound SCI patient.

**Solution:**

CVT to the Home is a custom video teleconference solution that allows patients to participate in live video appointments from their home with a VA clinician at the hospital. The solution is comprised of hardware and custom software applications. VA telehealth schedulers create patient appointments in a custom web application resulting in an email confirmation with secure login instructions sent to the patient. Providers receive a copy of the patient appointment email for verification. Patients utilize their own personal webcam or mobile device or the laptop of the home health nurse to connect to a provider at the hospital. The live video visit is conducted and upon conclusion, the provider documents the encounter in the electronic health record.

**Discovery:**

CVT to Home for VA San Diego SCI patients has been used to facilitate in home ‘live’ video visit to address compliance, wound care, post op evaluation, medication reconciliation, psychology and other important follow up. Providers have included SCI Rehabilitation Physicians, Plastic Surgeons and the SCI Psychologist.

**Learned:**

Spinal Cord Injured patients benefit from improved “team approach” access to care to address multidisciplinary problems. These include medication reconciliation, psychology and other follow up as well as wound care. Effective in-home evaluation and treatment of SCI patients with complex wounds and pressure ulcers is accomplished utilizing live in-home tele-video visits. Compliance with treatment recommendations is also effectively reinforced. Patients are helped with addressing improving their nutrition,
 Objectives

1. Acquire an understanding of the role clinical video telehealth to the home plays in the continuum of care provided to spinal cord injured patients.
2. Gain knowledge of the hardware and software requirements for successful use of clinical video telehealth at the home as a modality to connect patients with primary care providers and specialists.
3. Achieve insight into the benefits clinical video telehealth to the home offers to patients and providers.

P46 SCOLIOSIS PATIENTS AND PHYSICAL THERAPISTS LEVERAGING MOBILE APP FOR REMOTE CARE AND IMPROVED OUTCOMES

PRESENTER & CONTRIBUTING AUTHORS:
Naveen Khan, BA, PgDL, CEO1, John Dzivak, IT1, Karina Zapata, DPT, PhD2
1 PT PAL, Dallas, TX, USA, 2 Texas Scottish Rite, Dallas, TX, USA

The role of scoliosis-specific exercises in managing AIS remains virtually unexplored because of the lack of ability to monitor and document physical therapy remotely. Adolescents in the United States with mild curves are instructed to do nothing but wait until the curve either spontaneously stabilizes or progresses until bracing or surgery is initiated.

TSRH Physical therapists employed mobile technology to aid patients in remembering when and how to perform exercises, and enabled the therapists to monitor their respective patients’ exercise adherence.

Mobile technology was used to shift current research of clinical practice paradigms from an unclear and limited role of PT in managing AIS to a more definitive and extensive role. Physical therapists can be included as part of the medical management of AIS instead of the current standard-of-care and reducing the need for surgery.

The study pioneers the use of mobile technology to deliver exercise instruction as well as monitor adherence, providing objective information on exercise adherence that can be mapped to outcomes. The software application will not only provide information on the relationship between exercise adherence and curve progression, but will also provide information on the recommended exercise dosage for patients in the Schroth-based method group.

Patients and families prefer exercises to observation, but medical doctors are hesitant to recommend scoliosis-specific exercises due to a lack of evidence. This study may change the standard-of-care in the medical management of AIS so that patients who prefer exercises to observation can be given an alternative treatment option. If the Schroth-based method is found to be effective, then scoliosis-specific exercises may provide physical therapists with an evidence-based treatment option for managing AIS. Over 20 million adolescents are between the ages of 10 to 14 years in the United States. Since AIS affects 1 to 3 per cent of the population, at least 200,000 adolescents in the United States are at risk of curve progression and potentially eligible for PT treatment.

Objectives

1. Understand how to employ mobile technology in clinical research.
2. Understand how to design clinical trials to include technology efficacy.
3. Identify opportunities within their own organizations to leverage mobile technology.

P47 TELEHEALTH: IF YOU BUILD IT, WILL THE AVERAGE PATIENT COME?

PRESENTER & CONTRIBUTING AUTHORS:
Kevin Riddleberger, MBA, MS, PA-C, Senior Director of Clinical Solutions iTriage, Denver, CO, USA

The telehealth industry is presumed to be on the cusp of a significant growth spurt. By one estimate, telehealth will become a $4.5 billion industry by 2018; by another, it will save employers $6 billion in 2015. This make sense given the investments being made in telehealth to accelerate the cost savings, convenience and efficiency they offer patients, providers and payers. But are U.S. consumers embracing telehealth, or at least at the predicted adoption rate?

To better understand awareness and usage of telehealth, iTriage, a mobile and online health technology company, surveyed 2,681 application users over a one-week period in July 2014. In addition to overall responses, iTriage analyzed results by age, gender and technology adoption levels. Overall 85% have never used or heard of telehealth services; one-quarter think telehealth is an important offering when choosing a clinician; and 27% think insurance providers should offer telehealth.

Despite these low adoption figures, iTriage found that seniors are most likely to use telehealth for remote monitoring; young people 18 and under are most likely to use it for mental health; and millennials are most likely to use it for urgent care.

Further, iTriage found a greater interest in adoption among the technically savvy: (1) 40% who currently use video chat for other services would email their doctors, versus 26% who don’t currently use video chat; (2) 35% would text with a care provider versus 23% who don’t use video chat; and (3) 20% would video chat with their care providers versus 44% who don’t use video chat.

My hypothesis is telehealth will follow the same adoption curve as the banking industry: The tech-savy: those who’ve embraced similar solutions in other areas of their lives; will lead the charge; heads of household will follow as convenience, efficiency and cost savings become more visible; seniors, and their caregivers, will leverage it to monitor chronic conditions; and younger generations will use it for one-time services.

Objectives

1. Acquire an understanding of current consumer adoption levels of telehealth services.
2. Gain insights into trends driving consumer telehealth adoption.
3. Identify methods for increasing use of telehealth services in an average patient population.

P48 LEARNINGS FROM THE DESIGN AND IMPLEMENTATION OF A DIRECT-TO-CONSUMER VIRTUAL PRIMARY CARE CLINIC

PRESENTER & CONTRIBUTING AUTHORS:
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Traditionally, virtual care has been seen as a way to augment traditional means of care and has often been integrated into existing practices or has been offered as a stand-alone service for same-day/non urgent-care visits. Both models of virtual visits are effective however each has its drawbacks. As a means of augmenting traditional physician practices, virtual visits are still heavily reliant on brick-and-mortor physician offices and are limited by the same access issues that traditional in-person practices face. Offered as a stand-alone service for same-day/non urgent-care visits, patients are unable to build lasting relationships with providers and are unable to engage in health maintenance.

Stanford Health Care has created a novel care delivery model by creating a stand-alone primary care clinic conducted virtually with a brick-and-mortor office serving only as back-up for the occasional necessary office visit. This Virtual Primary Care Clinic was designed using patient-centered methods and will manage a healthy low-risk population within our own accountable care organization. Patients can choose a virtual primary care provider (PCP) instead of a traditional brick-and-mortor PCP and can then interact with this virtual PCP through email, phone, and video visits. Physical exams will be prescribed by the virtual PCP when needed. We hypothesize that the clinic will improve patient satisfaction through improved on-demand access and convenience, allow improved risk assessments of our population, and decrease utilization of the emergency department.
Patients who choose to enroll in the Virtual PCP clinic will be asked to participate in research and data regarding patient satisfaction, utilization including frequency of visits and touchpoints with the clinician, clinic efficiency, and outcomes. This data will be compared to patients enrolled in research at our traditional primary care clinics. In this poster, we will further describe the design details of the Virtual Primary Care Clinic and will present initial learnings as well as any preliminary data that we may have including initial data on patient satisfaction and clinic utilization.

Objectives
1. Understand the design of a novel virtual care delivery model.
2. Describe challenges and learnings associated with this new type of virtual care model.
3. Compare preliminary findings of patient data between a virtual and traditional clinic.

P49 VIRTUAL VISITS: MANAGING ANTEPARTUM CARE WITH MODERN TECHNOLOGY

PRESENTER & CONTRIBUTING AUTHORS:
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In 2011, MultiCare Health System (MHS) in the South Puget Sound region of Washington State introduced a new and flexible model of prenatal care, the Virtual Visit. This new model leverages technology in order to provide high quality, patient-centered and cost-effective care to low risk antepartum patients. In this program, approximately one-third (5/14) of the prenatal visits and one post-partum visit are conducted via videoconference with an obstetric nurse practitioner (ARNP). The Virtual Visit provides ease of access for low risk patients, freeing women from travel and clinic wait times, and releasing time in physician schedules to dedicate to high-risk and non-obstetric patients.

In the presentation we will describe the structure and implementation of the Virtual Visit, detailing preliminary outcomes after 30 months of deployment. At the program outset, we hypothesized that significant demographic differences would exist between the patients enrolled in the Virtual Visit and Traditional tracks, but that birth weight and gestational age at birth would not differ significantly across the two tracks. We hypothesized that non-routine healthcare utilization would be lower for Virtual Visit patients than Traditional patients due demographic difference between the cohorts and increased access to educational resources for Virtual Visit patients. No statistically significant differences in delivery or birth outcomes between the Virtual Visit and Traditional patients were identified.

An inherent strength of our program is that it is the first to demonstrate the use of videoconferencing technology in conducting routine prenatal visits, while simultaneously demonstrating that low-risk antepartum patients can receive high quality obstetric care and experience positive birth outcomes through the use of such technology and with fewer face-to-face physician visits. With no differences in birth outcomes for mothers or babies and no increase in non-routine use of the healthcare system, this model can be easily and safely adapted by other systems. Furthermore, due to the global billing model for prenatal care, the Virtual Visit frees up provider time to commit to non-obstetric and high risk patients without a loss of revenue for the practice.

Objectives
1. To introduce an innovative model of care for pregnant women and their families
2. Gain insight into new methods to engage patients
3. Describe how the OB virtual visit program provides low risk patients with a safe and unique form of prenatal care

P50 THE SECRET TO DESIGNING, DELIVERING, AND MARKETING DIRECT-TO-CONSUMER TELEHEALTH SERVICES

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How do you sell telehealth services to a consumer? Most of the marketing of telemedicine and telehealth to date has centered on marketing services to healthcare providers or tech products to early adopter consumers. Very few organizations have made the leap into direct-to-consumer services, yet presenters Geoffrey and Olivia Boyce represent a team who did just that.

Based on the success and failures of a national private, B2B telehealth company who decided to take the plunge into a B2C telehealth model, this presentation will center on real world experiences in an emerging market.

The first part of the presentation will focus on how to evaluate a potential business opportunity within this industry. After discussing potential ROI measures and market research suggestions, the focus will shift to best practices for cultivating buy-in for specific opportunity.

Next, this presentation will look into the how to design a successful telehealth service business model. With a belief that the focus of telehealth services should be on appropriately delivering excellent care to people in need, the presenters will discuss tips for keeping the consumer-experience in mind when designing and building a service delivery model.

Next, comes a discussion of the chicken and the egg challenge of telehealth service consumers. A successful model requires building circles of both providers and consumers nearly simultaneously, and the presenters will discuss the pitfalls and successes they faced in doing so. This section will also look at how to adjust messaging and do market outreach to larger organizations like payors and health systems about your consumer-focused plans.

Lastly, the presentation will dive deeply into best practices for garnering consumer support and signups. Starting with how to educate, brand and reach a consumer basis and ending with how to engage, sustain and grow a consumer tribe.

Presented by a dynamic brother-sister duo that works together, has a passion for telehealth and a penchant for innovation, this presentation aims to leave participants energized and ready to spread telehealth services to consumers worldwide.

Objectives
1. The audience will be able to evaluate a potential direct to consumer telehealth opportunity.
2. The audience will be able to identify 3 things NOT to do when pitching and marketing a direct to consumer telehealth service.
3. The audience will know 3 strategies for marketing telehealth to a consumer.

P51 CARE AT TELEMEDICINE VISITS COMPARED TO URGENT CARE VISITS FOR UPPER RESPIRATORY TRACT INFECTIONS

PRESENTER & CONTRIBUTING AUTHORS:
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In 2014, a 24/7 telemedicine clinic for low acuity acute conditions was introduced to compliment existing brick and mortar urgent care clinics of On-Demand Medicine (ODM). This is a division of Southwest Medical Associates, a multispecialty group of providers in Las Vegas, NV with a commercial patient population of over 330,000. The growth of this telemedicine clinic has been steady. In the first 3 quarters, there have been 3200
visits. But this was a small number compared to the 212,000 combined that have been looked after in the urgent care clinics. We evaluated whether a telemedicine visit lead to a difference in the frequency of follow-up care for patients seen with upper respiratory infections when compared to those seen in urgent care clinics. Claims data from the health plan were analyzed from January to September 2014 for commercial patients age 18–64 for all visits to On-Demand Medicine. In addition, medical records were reviewed to verify failures (those truly needing follow-up within 2 weeks). The cases of upper respiratory tract infection were evaluated for survival (follow-up within 2-weeks) using Cox proportional hazards models adjusted for factors of telemedicine visit, age, antibiotic treatment, select chronic medical conditions, and immunosuppressive medications. Our results showed that there were 15% fewer follow-up encounters for URIs seen initially in telemedicine visits. Preliminary findings from Cox proportional hazard analyses revealed that the only variable that had predictive value for follow-up was that of a telemedicine visit. Discussion addressed the validity of the quality measure of 2-week follow-up. Recommendations for further study of other conditions were reviewed. Finally, implications for a possible change in delivery of service were presented.

**Objectives**

1. To acquire an understanding of how telemedicine (i.e. virtual face-to-face) visits affect the outcome of simple conditions such as common cold compared to urgent care (i.e. physical face-to-face) visits.
2. To evaluate the 2-week follow-up course of patients diagnosed with the common cold in the Division of On Demand Medicine.
3. To create a research pathway in order to better understand the assessment, diagnosis, treatment, and outcomes of patients seen in telemedicine clinic versus urgent care clinics.

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**P52 A WEARABLE ECG ABNORMAL EVENT RECORDER FOR ECG MONITORING AT HOME**

**PRESENTER & CONTRIBUTING AUTHORS:**

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To practice and expand the scope of emergency telemedicine, we transformed a sport-based wearable bracelet into an ECG abnormal event recorder, which provides patients at home with convenient ECG measurement and timely alerts. Our study consists the following procedures. First, the real-time lead ECG signals were exported to a cell phone via Bluetooth from a commercial-used bracelet imbedded with an ECG chip. Second, the ECG was transmitted to an ECG interpretation server on a cloud via mobile networks to generate an ECG report with interpretations. Third, a senior cardiologist was requested to receive and diagnose an alerted ECG report via his/her cell phone if a cardiac disorder, such as atrial fibrillation, was detected by computer-assisted ECG interpretation. Additionally, every ECG recording with an abnormal ECG event will be recorded on a cloud database. This database not only provide patients with access to their medical records but can also timely inform patients and their care takers of their cardiac health status. Results indicated that this bracelet ECG recorder can be applied on the detection of cardiac rhythmic disorders, such as premature complexion, conduction delay, and AF for ECG monitoring at home. In conclusion, this bracelet-based single lead ECG recorder functions as a less expensive, more convenient and portable, and more user-friendly ECG measurement, which can record and detect abnormal ECG events. Most importantly, it can deliver recorded ECG to cardiologists for timely diagnosis and treatment recommendation whenever patients and their care takers are concerned about patients’ cardiac problems.

**Objectives**

1. Better understanding the applications of wearable devices on telemedicine
2. Gain insights into on the development of clinically-used wearable bracelets
3. Better understanding what the pervasive computing is

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**P53 EXPERIENCE OF IMPLEMENTING A PATIENTS’ GUIDE TO UKRAINIAN HOSPITALS AND MEDICAL CENTERS**

**PRESENTER & CONTRIBUTING AUTHORS:**

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**Background:** The need to improve patients’ access to healthcare by reducing the barriers they experience has been regularly described in the online reviews, yet the barriers experienced are not well defined, despite the volume of expert opinion in this area.

**Aim:** To define what is known about patients’ access to healthcare from the data within the medical database, online reviews, news.

**Methods:** A systematic search of Ukrainian hospitals database, supplemented by online searches and searches of the Internet review, identified both quantitative and qualitative studies. It is used specific criteria for inclusion of studies and quality assessment. The data were tabulated and analyzed.

**Results:** Most patients appear to have medical care, but this does not ensure adequate health access. Systemic barriers to healthcare access (lack of information about medical services and high price in private hospitals) are more significant than individual barriers.

**Conclusion:** Patient opinion in this field is explained by poor-quality access to medical database. Understanding this may help the medical profession to respond to these problem more effectively. Using state global medical database will help find the best doctor for each patient.

**Objectives**

1. Define what is known about online doctor reviews and how this affects a patient’s access to healthcare.
2. Review existing data on online hospital reviews.
3. Discuss various health plans and how a patient can find the most optimal doctor for his or her medical needs.

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**P54 MANUFACTURING WIRELESS HEARTRATE SENSOR GAUGE MACHINE WITH GSM AND GPS FOR USE IN TELMEDICINE**

**PRESENTER & CONTRIBUTING AUTHORS:**

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Design and production of devices for remote wireless heart rate gauge for continuous monitoring of recipients, thereby reducing cost and fast relief effort by the innovative machine. This project investigates wireless sensors for accurate monitoring, immediate way of designing health, building a wireless sensor stethoscope heart. The device is used to send patient information with GSM for remote monitoring of ongoing patient places, seeking the position of the GPS location, in order to aid the design that avoids dangerous situations and notifies the medical team in situations of emergency, use of resources for hospital, earlier detection of medical symptoms, reduce the cost of care, the patient’s freedom of movement, allowing data transmission using wireless sensor networks.

**Objectives**

1. Discuss the significance of remote wireless heart rate gauge machines.
2. Gain a deeper understanding of how a wireless heart rate gauge effectively reduces the cost of care and improves patient outcomes.
3. Learn about how the device aids in earlier detection of symptoms by transmitting data over wireless sensor networks.
**P55** DESIRED QUALITIES IN TELPRESENTERS: RESULTS OF THE MERCY TALENT BENCHMARK STUDY

**PRESENTER & CONTRIBUTING AUTHORS:**
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Telemedicine/virtual care improves outcomes, increases patient and provider satisfaction, and builds healthcare brand recognition and differentiation for healthcare organizations. Given the unique demands on providers and their support teams, when delivering virtual care, there are personal traits/characteristics that enhance the likelihood of a positively impactful virtual encounter. To date however, few studies have evaluated virtual care talent. Since 2006, Mercy, the 5th largest Catholic health system in the US, has delivered ever-expanding virtual care services across the care continuum. In response to increasing need and the opening of the country’s first Virtual Care Center in 2015, Mercy collaborated with Talent Plus® to perform the Mercy Talent Benchmark Study. This study categorized the desirable attributes of virtual care telepresenters to foreshadow the optimum virtual care workforce of the future. Using mixed methodology, top-performing Mercy virtual care telepresenters were compared to a sample of top and contrast performing providers. The study sought to identify the differences with respect to drives, values, influence, work style, thought process, and people acumen. The Mercy Top Performer characteristics identified were achievement, mission, and ambiguity tolerance. Achievement and mission are consistent with Mercy’s goals and as such, are generalizable to similarly focused entities. However, ambiguity tolerance is an especially crucial talent given the demands of working and/or delivering care in a virtual care delivery environment and is generalizable to any high-demand, high-functioning virtual care delivery institution/system. Other desirable characteristics unique to specific roles in the virtual care environment will be highlighted.

**Objectives**
1. Identify the key steps/processes needed to identify telehealth needs, implementation methodologies, and how to sustain and expand telehealth through their organization/practice.
2. Be introduced to regulation, licensure, risk and policies that need to be addressed when implementing telehealth services.
3. Identify/Understand how implementing telehealth impacts healthcare delivery and outcomes through the use of innovative technologies and modified workflows.

**P56** STRATEGIES FOR SUCCESSFULLY IMPLEMENTING TELEHEALTH

**PRESENTER & CONTRIBUTING AUTHORS:**
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Consumers are demanding that healthcare is safe, more affordable and convenient. Providers have recognized that the use of telehealth services is one way of meeting the demands of the consumer. However, providers have also realized setting up and implementing these services has its own unique challenges.

CHRISTUS Health, an organization comprised of 28 facilities in the US, Mexico and South America, identified that innovative technologies and unique care delivery models can improve their patient’s individual health, and convenience of access to healthcare services. They centralized their telehealth services after successfully piloting a remote patient monitoring solution (RPMS) for Congestive Heart Failure (CHF) patients, that is now the foundation of the CHRISTUS Health telehealth implementation strategy plan.

There are several various uses of telehealth services available: remote patient monitoring of the patient in the home setting to the critical care setting; providing one on one appointments between patients and provider; remote outpatient physical therapy; and list continues to expand. Numerous professional organizations (including ATA) have published telehealth guidelines that outline the practice of telehealth. However, the specifics of implementing telehealth services, or a telehealth program, are not defined. To achieve positive program outcomes, a precise process of planning, implementation and continuous monitoring must be followed.

Dr. Webster will share how he identified the need of telehealth services for Christus Health, and the process of developing this service line for the organization. Ms. Jenkins will discuss the techniques and processes essential in implementing a successful telehealth program.

**Objectives**
1. Review the concepts and background of the science of talent.
2. Review results of the Mercy Talent Benchmark Study identifying specific talent characteristics that positively impact high performance when providing or supporting virtual care delivery.
3. Propose a vision for identifying and attracting high quality individuals with characteristics necessary to provide a transformative patient healthcare experience in virtual care settings.
P58 OPINION LEADERS’ PERSPECTIVE OF THE BENEFITS AND BARRIERS IN TELEMEDICINE: A GROUNDED THEORY STUDY OF TELEHEALTH IN THE MIDWEST

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This applied dissertation provided a better understanding of how opinion leaders influence the adoption of innovative programming, such as telemedicine, among hospital administrators in the Midwest. Rogers’ (2003) Diffusion of Innovations theory was applied to gather a better understanding of the adoption of telemedicine within the Midwestern region of the United States. An exploration into the effects of opinion leaders’ influence on administrators provided an examination into this process. As a result of providing a better understanding of this adoption process, additional innovative medical methods such as electronic health records, mobile devices and other forms of medical technology might be more easily accepted by hospitals.

A demographic protocol instrument gathered personal data on the chief executive officers and other administrators at 18 hospitals and healthcare organizations within the Greater Kansas City Area. In addition, the Innovativeness Scale and Perceived Organizational Innovativeness Survey (POIRS) were administered to measure individual and organizational innovativeness. Face-to-face interviews and telephone interviews with the chief administrative officers using open-ended questions provided rich data regarding the origins of telemedicine development within each organization. Advantages and challenges of telemedicine efforts were explored.

An analysis of the data revealed that a modest relationship exists between the key telemedicine leaders’ level of innovativeness and the perceived level of organizational innovativeness. The most successful activities were those that involved interviews with hospital administrators. These interviews resulted in 5 themes related to Rogers’ (2003) diffusion of innovations theory: financial feasibility; resistance to change and acceptance of new technology; access to specialists or subspecialists; collaborative governance; and champion or opinion leader roles in the adoption process. As a result of this study, it was discovered that additional research on this topic is needed that includes interviews and focus groups consisting of legislative bodies, vendors, and a variety of healthcare professionals to obtain a deeper understanding of external factors related to telemedicine adoption.

Objectives
1. Discover the top 5 factors hospital administrators considered when deciding to implement telemedicine within their organizations.
2. Gain insights into the effects of opinion leaders’ influence the adoption of telemedicine.
3. Learn the advantages and challenges of telemedicine efforts as told by hospital CEOs.

P59 THE WIN-WIN OF NURSES IN TELEMEDICINE

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In 2010, Ontario’s Ministry of Health & Long Term care launched a comprehensive Nursing Strategy designed to support nurses at each stage along the nursing career continuum. The strategy encompassed several initiatives with the goal of enhancing recruitment and retention of Ontario’s nurses. A workforce stabilization entitled ‘The 9000 Nurses Commitment’ saw the investment of 191 full time nurse resources dedicated to delivering care using telemedicine.

The Ontario Telemedicine Network (OTN) played a key role in the investment by specifically identifying the need for dedicated, trained nurses to address the burden that the rapid growth of telemedicine adoption placed on existing resources. The scarcity of nurse resources jeopardized the sustainability and growth of telemedicine in many organizations and communities.

Telemedicine Nurses currently work in a variety of sectors ranging from acute to mental health & addictions. Their scope of clinical activities include developing programs with specialists and supporting their clinical needs pre and post consult, increasing access to patients in primary care settings through the creation of focused clinics, e.g. endocrinology, mental health etc., and acting as specialists/consultants, e.g. providing mental health & addiction initial screens to determine most appropriate care path.

The TM Nurse resources are not employees of OTN and as a result, the organization needed to work collaboratively with the Local Health Integration Networks (LHINs) and the Ministry of Health to identify clinical/geographic priorities, develop plans, share best practices, roll out programs and support performance indicator collection and reporting.

In 2014, OTN in partnership with one of Ontario’s LHIN champions (and supported by Ontario’s Ministry of Health) conducted a review of the TM Nurse initiative to determine if the investment associated with the deployment of Telemedicine Nurses to the various healthcare organizations generating system value as intended.

Objectives
1. Describe successful TM Nurse Models proven to enable telemedicine growth.
2. Propose innovations to nursing roles to ensure telemedicine sustainability.
3. Demonstrate how various stakeholders can effectively collaborate to strategically place health human resources to improve patient care.

P60 EFFECT OF A UNIVERSITY TELEMEDICINE PROGRAM ON HEALTHCARE SAVINGS IN TIME, TRAVEL COST, AND ENVIRONMENTAL IMPACT

PRESENTER & CONTRIBUTING AUTHORS:
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Background: The delivery of healthcare through telemedicine has been known to reduce healthcare disparities by improving access to specialty services. Telemedicine has also been shown to lower healthcare costs by efficiently allocating specialty services. While there has been extensive research in studying the economic impact of telemedicine from the provider perspective, there have only been limited large sample economic evaluations on the benefits resulting from these telemedicine consultations from a patient’s perspectives.

Objective: The objective of this study was to evaluate the economic and environmental savings resulting from the use of telemedicine.

Methods: This study is a retrospective analysis of the telemedicine consultation database at the University of California Davis Health System (UCDHS) between July, 1996 and December, 2013. We identified 35,971 consultations among 21,225 unique patients. MPmileage was used to calculate the distances between patient and client site, and the distances between patient and UCDHS. Cost saving was calculated using standard Federal mileage costs of travel. Environmental impact was calculated by determining the emissions savings by comparing the distance travelled by the patient to receive the telemedicine consultation to the distance they would have to travel to get the same consultation face to face. Values were calculated using 2008 national emissions averages provided by the EPA as a reference. Data processing was done using Python programming, the R statistical package, Microsoft MapPoint, MPmileage, Microsoft Excel, and Microsoft Access.
**Objectives**

1. Acquire an understanding of costs associated with medical appointment travel distance from a patient perspective.
2. Recognize the environmental impact of travel distance savings from the use of telemedicine.
3. Gain insights in the use of location data in hospital databases to evaluate a telemedicine program.

**Results:** We found that telemedicine visits resulted in a total travel distance savings 12,311,230.34 miles, a total travel time savings of 10,563,703.87 minutes, and a total direct travel cost savings of $6,894,289.11. Among non-corrections consultations, the average per-consultation round trip distance savings was 277.2 miles, average round trip time savings of 244.34, and an average cost savings of $155.24. With regards to emissions, we found that the use of telemedicine to reduce travel distances resulted in a reduction of emissions. In total, telemedicine resulted in a net emissions savings of 4,535.83 metric tons of CO$_2$, 115.73 metric tons of CO, 8.53 metric tons of NO$_x$, and 12.73 metric tons of VOCs. Conclusions: This study shows that telemedicine consultations can result in time savings and a positive impact on travel costs and environmental impact.

**Objectives**

1. Understand the country scenario of telemedicine in India.
2. Learn about the clinical practice of telemedicine in a developing country.
3. Understand the power of the Internet in health system development.

**P62 FOUR APPROACHES TO TELEHEALTH SERVICE AND PROGRAM DEVELOPMENT: A QUALITATIVE STUDY**

**PRESENTER & CONTRIBUTING AUTHORS:**
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A qualitative study using in-depth telephone interviews with experienced leaders found that mature university-based telehealth units used four approaches to develop telehealth services and programs. The least resource intensive approach, consultation, was used alone or combined with the progressively more intensive approaches of technical facilitation, program facilitation, and direct performance. The most widely adopted approach, units used all four approaches discriminately based upon organizational priorities. This approach was the most resource intensive and was used to support the project.

In using the consultation approach, telehealth units served as a central point of contact for information and a consultative resource for telehealth practice development. The consultative approach was comprised of eight steps: 1) request for assistance initiated, 2) resource commitments identified, 3) technical solutions specified, 4) workflow analyses conducted, 5) technology installation and testing overseen, 6) participants trained, 7) service initiation confirmed, and 8) telehealth unit’s involvement discontinued.

A second strategy was to engage the university’s academic or hospital information technology unit, or an external nonprofit entity. Some of the units that used internal resources for technical facilitation also engaged in telecommunications infrastructure development at the regional or state level. A fourth strategy was to engage in technology research and development.

The program facilitation approach was used to develop telehealth services and programs when the telehealth unit shared ownership in a project. The more resource intensive the telehealth program, the more modified the program. The program facilitation approach was comprised of eight steps: 1) request for assistance initiated, 2) resource commitments identified, 3) technical solutions specified, 4) workflow analyses conducted, 5) technology installation and testing overseen, 6) participants trained, 7) service initiation confirmed, and 8) telehealth unit’s involvement discontinued.

A fourth strategy was to engage in technology research and development.

The program facilitation approach was used to develop telehealth services and programs when the telehealth unit shared ownership in a project. The more resource intensive the telehealth program, the more modified the program. The program facilitation approach was comprised of eight steps: 1) request for assistance initiated, 2) resource commitments identified, 3) technical solutions specified, 4) workflow analyses conducted, 5) technology installation and testing overseen, 6) participants trained, 7) service initiation confirmed, and 8) telehealth unit’s involvement discontinued.

The direct performance approach was used when the telehealth unit hired, contracted with, or directly reimbursed someone to provide telehealth services. This approach was the most resource intensive, incorporated the other streams of Health IT besides offering training opportunities to WHO sponsored fellows from the region. India is acquiring a sizeable market segment in the healthcare BPO (business-process outsourcing) and KPO (knowledge-process outsourcing) industries. It is now preferred as a healthcare destination in the region so telemedicine is going to play a major role in promoting medical tourism in time to come. With the rapid expansion of mobile wireless broadband deployment, India will reap the benefit of mHealth in providing access to health for its rural population in particular to patients suffering from non-communicable disease and geriatric health problems.

**PRESENTER & CONTRIBUTING AUTHORS:**
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Since the first telemedicine experiment in 1999, India has gone through several phases of development to master the technology and been able to undertake national programs besides institutional and corporate activities around the country. To start with, most telemedicine activities were in the project mode mainly supported by federal grants from Indian Space Research Organization and Department of Information Technology, Ministry of Communication and IT. These projects helped in developing indigenous technology, software, systems and standard. Further, the pilot projects made the people aware besides testing the relevance of technology for Indian health system. However, in the year 2005 the Ministry of Health & Family Welfare constituted a National Task Force for Telemedicine which became instrumental in framing some of the national programs. For the first time budget was allocated for e-Health including Telemedicine during 11th Five Year Plan (2007–12). India has now acquired rich experience in implementing large number of telemedicine projects over a decade. There has been a revolution in fast adoption in mobile communication technology in recent years. A few corporate hospitals have developed their own telemedicine network including provision of trans-continental tele-radiology and medical transcription services. Ministry of Health & Family Welfare has implemented few projects nationwide such as Integrated Disease Surveillance Project (IDSP) in 2007, National Cancer Network (ONCONET) in 2009, National Rural Telemedicine Network in 2009, Digital Medical Library Network in 2009, National Medical College Network (www.nmcen.in) in 2014. Telemedicine standardization and practice guidelines were developed way back in 2003 by the Department of Information Technology in the Government of India. The External Affairs Ministry has taken up the Pan-African Telemedicine e-Network Project and the SAARC Telemedicine Network Projects. National Knowledge Network (www.nkn.in), a federal government initiative, is in place since 2010 which has enabled all educational institutions to get access to high speed Internet bandwidth for collaboration and knowledge sharing. The National Resource Centre (www.nrct.in) has been established at Lucknow besides five Regional Resource Centers in each geographical region of the country. School of Telemedicine & Biomedical Informatics (www.stbmi.ac.in) was established at Sanjay Gandhi Post Graduate Institute of Medical Sciences (SGPGIMS), Lucknow with the financial support from provincial and federal government which is the only academic center to offer one year diploma courses in five.
three approaches, and was undertaken to support projects on a case-by-case basis. Leaders primarily described using the direct performance approach for projects in which a clinical champion was positioned to secure extensive extramural funding to develop telehealth practices for at-risk populations. While leaders did not describe projects that used this approach extensively, a strong partnership appeared to exist between the telehealth unit and a clinical department when the direct performance approach was used.

Objectives
1. Describe four approaches used by university-based telehealth units to develop telehealth programs and services.
2. Outline the steps and strategies adopted to implement each approach.
3. Understand the rationale used by telehealth units in determining which approach to use.

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TUESDAY, MAY 5, 2015
3:00 pm–4:00 pm Tuesday, May 5, 2015

Session 91
MENTAL HEALTH
Room 404AB

MODERATOR: Elizabeth Brooks, PhD, Assistant Professor
University of Colorado Denver, Aurora, CO, USA

P64 STATE LICENSE LAWS IN TELEMENTAL HEALTH 2015: REQUIREMENTS, RESTRICTIONS, AND OPPORTUNITIES

PRESENTER & CONTRIBUTING AUTHORS:
Jay Ostrowski, MA, LPC/S, NCC, DCC, ACS, Director of Product and Business Development

Abstract: This is a presentation on the current (2015) data collected from state license boards on telemental health practice requirements, restrictions and practice opportunities. Clinicians, decision makers, and product vendors in the telemental health field face an ever-changing legal landscape across multiple disciplines. This cloud of confusion hinders development in the telemental health field. This presentation will help decision-makers create financially sound business models, clinicians confidently increase services and vendors more securely invest in product and business development. Additionally, the compilation and presentation of the current state of all telemental health practice policies, could educate policy makers on legal trends among their peers, positively influencing policy development.

Data: Root source data has been collected on the license policies from all fifty states and all five non-medical professional orientations: psychologists, counselors, social workers and marriage and family therapists. This information database is currently updated every two months and will reflect the current state of the industry at the 2015 ATA conference.

Analysis and Discussion: For each of the five fields, data will be presented on the various regulatory terms used by states, requirements and restrictions of practice among states for each profession and state proposals of future change. The presentation will answer these questions:

1. Which of the 30 + terms for telemental health are the most commonly used by state license boards?
2. Which states and licenses do not currently permit telemental healthcare?
3. Which states have no specific policy statement on telemental health.
4. Which states allow for the temporary provision of telemental health services across state lines?
5. Which states permit clinical telesupervision?
6. Which states require:
   a. An additional certification or licensure to practice telemental health?
   b. A face-to-face encounter in order to provide telemental health services?
   c. Physical proximity between provider and client?
   d. The provider to be licensed in both the provider’s and client’s state of residence?

Data will also be presented regarding little known state policies that allow for practice across state lines for certain licenses and circumstances.

Objectives
1. Obtain an understanding of the current state of telemental health regulations.
2. Identify practice restrictions and legal policy trends in telemental health for Psychologists, Counselors, Social Workers, Addictions Counselors and Marriage and Family Therapists.
3. Identify ways to adhere to new rules for direct to consumer care.

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ABSTRACT WITHDRAWN

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Nadia Islam, PhD, LCSW, Clinical Director, USC Telehealth University of Southern California, Los Angeles, CA, USA

Telehealth is an expanding field, offering powerful tools for mental health professionals. Over the past 3 years, USC Telehealth has successfully developed a unique program that is designed to train, in a fully virtual environment, the field’s next generation of tele-mental health practitioners.

USC Telehealth is a virtual behavioral health clinic that uses secure, HIPAA-compliant video technologies to provide empirically supported interventions to clients in the convenience of their homes or other private locations. Affiliated with the USC School of Social Work, USC Telehealth also operates as a formal “teaching clinic” that trains graduate students through its field practice programs. The clinic is led by a multidisciplinary team of professionals representing social work, psychiatry, and business; its clinical services are provided by both licensed clinical social workers and graduate social work interns; and the training is an integral part of the academic program.

USC Telehealth was conceived by USC shortly after the launch of its online Master of Social Work program, with a two-fold mission to focus on: 1) the expansion of high-quality, evidence-based care to members of underserved communities; and 2) the creation of an innovative and rigorous training environment for graduate students completing practicum in remote locations.

USC is the first academic institution to operate a fully-functioning virtual teaching clinic that brings mental healthcare to consumers by leveraging videoconferencing technology. Since its launch in 2012, the clinic has served nearly 1,000 clients and provided close to 10,000 virtual telehealth sessions.

The proposed ATA oral presentation will be the first to highlight USC Telehealth as a model “teaching clinic” offering best practices not only for training practitioners but also for facilitating excellent outcomes for mental health service consumers. The program will include discussion of how the field education experience is designed to facilitate, through telehealth tools, refinement of client engagement, assessment, and interviewing skills; the development of new skills while delivering clinical interventions under close virtual supervision; and training supplied by clinical supervisors through reviews of bio-psychosocial assessment reports, treatment plans, direct observation, and regular supervisory conferences via videoconference.

The presentation will have the following learning objectives (and related take-aways):

1. Understand USC Telehealth as a model “teaching clinic” that trains next generation mental health practitioners within the confines of a virtual outpatient behavioral health clinic.

2. Gain insights into the elements of a comprehensive training protocol used to induct graduate student practitioners in the delivery of empirically supported tele-mental health interventions.

3. Gain insights into the elements of a comprehensive training protocol used to induct graduate student practitioners in the delivery of empirically supported tele-mental health interventions.

The presentation will conclude by sharing results and outcomes for both clients and graduate student practitioners who have participated in assessment, diagnosis, and treatment, solely in a virtual “face-to-face” environment. At the same time, it will also demonstrate the efficacy of a telemental health setting, integrating an entirely virtual medium for field instruction, on the educational and skills development outcomes for a new generation of tele-mental health practitioners.

Objectives

1. Understand USC Telehealth as a model “teaching clinic” that trains next generation mental health practitioners within the confines of a virtual outpatient behavioral health clinic.

2. Gain insights into the elements of a comprehensive training protocol used to induct graduate student practitioners in the delivery of empirically supported tele-mental health interventions.

3. Acquire an understanding of how to provide appropriate clinical supervision and oversight, using telehealth tools and techniques, to remotely located graduate student practitioners.
2. Recognize the benefits of telemental health as a modality of treatment for veterans with PTSD.
3. Recognize the various challenges that providers and veterans encounter when utilizing telemental health modalities.

**P68 UTILIZING TELEHEALTH TO SUPPORT TREATMENT OF ACUTE STRESS DISORDER IN A THEATER OF WAR: PROLONGED EXPOSURE VIA CLINICAL VIDEOCONFERENCING**

**PRESENTER & CONTRIBUTING AUTHORS:**
Dan Pelton, PhD, ABPP, Clinical Psychologist¹, Bethany Wangelin, PhD², Peter Tuerk, PhD³
¹Private Practice / United States Individual Ready Reserve, Gaithersburg, MD, USA, ²Mental Health Service Line, Ralph H. Johnson Department of Veterans Affairs Medical Center, Charleston, SC, USA, ³Department of Psychiatry and Behavioral Sciences, Military Sciences Division, Medical University of South Carolina, Charleston, SC, USA

Posttraumatic Stress Disorder (PTSD) and Acute Stress Disorder are prevalent mental health diagnoses associated with the military operations in Iraq and Afghanistan, and are especially significant in service members returning from combat. Prolonged Exposure therapy (PE) is a highly effective behavioral treatment for these symptoms, and providing this treatment as soon as possible, even in the midst of a soldier’s combat deployment, has strong potential benefits. In the current case study, telehealth technology was used to support the delivery of PE therapy to treat a service member diagnosed with Acute Stress Disorder in a war zone. PE was conducted face-to-face on a relatively secure forward operating base for the first half of therapy, and via clinical videoconferencing (CV) to the service member’s remote combat outpost during the latter stages of therapy. The service member exhibited marked improvements in symptoms over 10 sessions. Results are consistent with previous empirical findings and highlight the potential benefits of using telehealth to deliver evidenced-based treatment for traumatic stress disorders in a war zone. This case study provides a preliminary working model for delivering PE in an operational environment using multiple delivery systems. Benefits and clinical utility of CV-delivered exposure therapy are discussed, particularly for providers pending future operational deployments (e.g., including members of the military, independent government agencies, and first responders) and for those treating patients in remote locations.

**Objectives**
1. Understand the evidence base supporting the use of telementicine to deliver Prolonged Exposure therapy to veterans with combat-related PTSD.
2. Describe a preliminary working model for delivering PE in an operational environment using multiple delivery systems.
3. Identify 2-3 benefits of using technology to deliver evidenced-based treatment for stress disorders in an operational environment.

**P69 TELE-Psychoanalytic Psychotherapy: The Experience of Continuity and Connection Over Time**

**PRESENTER & CONTRIBUTING AUTHORS:**
Gita Zarenegar, PhD, PsyD, MFT, Psychosanalyst/Psychotherapist Private Practice, Los Angeles, CA, USA

The treatment modality of telepsychoanalytic psychotherapy (TPP) secures for the patient both continuity and connection with the treating telepsychotherapist. It provides an optimal platform for: 1. Facilitating the development of a secure (and authentic) attachment relationship in the dyad; 2. Focusing on the interpersonal relationship, and enhancing the achievement of implicit relational knowing; 3. Revealing the patient’s self-protective defenses, including dissociation, disavowal, and most pertinently, pathological accommodation; 4. Focusing on the therapeutic relationship, including the emergence of transference and counter transference, thereby facilitating the living through of relational patterns that otherwise may stay outside of the therapeutic field; 5. Providing an ideal platform for focusing on the patient’s affect and for tracking, regulating, and expanding the affective field; 6. Discovering trauma-based disorders of temporality wherein past, present, and future are folded into one another, becoming unrecognized in the patient’s experience and creating a conflation of fantasy and reality. The identification and modification of repetitive themes constructed over the course of the patient’s lifetime is basic to psychoanalytic process. The safe base provided by Contemporary, Psychoanalytically-informed Telepsychotherapy facilitates the emergence of these repetitive themes, or organizing principles. Contemporary psychoanalytic thinking has moved away from an isolated mind, or Cartesian thinking, embracing instead a combination of Relational, Intersubjective, Attachment, Complex Non-Linear Dynamic Systems, and Neuropsychological models. Through the frequency and continuity of therapy sessions within an empathically attuned nexus, patients are enabled to develop healthy and secure attachment relationships with their telepsychotherapists, and to be able to use the relationship they form as a prototype for future dyads. The contemporary psychoanalyst believes that people don’t suffer from intrapsychic pathology but, instead, from relational pathology. Within a telepsychoanalytic relationship, the patient remains within a continuous and constant relational dyad without threat of termination due to external circumstance. While trauma often emerges from the absence of a significant other’s attune responsiveness, within this platform the patient preserves his/her treatment relationship within a safe and secure attachment over time, while adhering to a model of therapy that maintains relational integrity and vitality. A corrective emotional experience becomes possible and emotional flexibility and expansiveness evolves.

**Objectives**
1. Review what contemporary psychoanalytic treatment entails.
2. Discuss the relevance of psychoanalysis or psychoanalytic psychotherapy in telemental health.
3. Understand the superiority of continuity and connection in elemental psychoanalysis.

**P70 DIDI HIRSCH MENTAL HEALTH SERVICES TELEMENTAL HEALTH CRITICAL RESPONSE**

**PRESENTER & CONTRIBUTING AUTHORS:**
Nick Gutierrez, MD, Associate Medical Director, Ebonie Vazquez, MD Didi Hirsch Mental Health Services, Culver City, CA, USA

Evidence on the use of telemental health in the remote setting demonstrates benefits for both the client and provider. Less information is yet available on the benefits of telemental health in urban settings for crisis intervention. Didi Hirsch Mental Health Services responds to 55,000 suicide calls annually. In this presentation Dr. Gutierrez introduces the effective use of telemental health in Los Angeles and the greater LA County to increase access to critical response treatment centers. Client satisfaction survey results and case examples from both Dr. Nick Gutierrez and Dr. Ebonie Vazquez will be reviewed.

**Objectives**
1. Attain insights into the provision of telemental health services for intercity crisis response.
2. Promote use of telemental health for patient-centered mental healthcare.
3. Obtain awareness of impact of telemental health on patient satisfaction.

**P71 EXAMINING THE PROPENSITY TO ADOPT TELEHEALTH TECHNOLOGIES TO DELIVER SUBSTANCE ABUSE TREATMENT SERVICES**

**PRESENTER & CONTRIBUTING AUTHORS:**
Joyce A. Hartje, PhD, Project Manager-Evaluation, Nancy A. Roget, MS University of Nevada Reno, Reno, NV, USA
Just because an organization integrates new technologies to deliver services, there is no guarantee that staff and/or customers will embrace using that technology. Research has examined the complexity of individuals’ relationships with technological innovation, identifying several paradoxes experienced when dealing with new technologies. However, much of the previous work has focused on predicting technology acceptance based on individual behaviors or attitudes toward specific technologies, with little attention given to consumers’ chronic predispositions towards adopting new technologies. Several theories have been used to examine: the choices an individual makes to accept or reject a particular innovation and the extent to which that innovation is integrated into the appropriate context (adoption); how an innovation spreads through a population (diffusion); and beliefs and attitudes that are formed over time that may influence decisions about the innovations adopted or rejected. This study extends previous research conducted on advancing an understanding of why one individual chooses to adopt a technology while another resists. A Web-based survey was administered to professionals working in the substance abuse treatment field (N = 171). Survey items were developed using a psychometric scale designed to measure consumers’ propensities to adopt a broad range of new technological products and services consumers’ adoption of, and ongoing relationships with, new technologies. The instrument examines propensity to adopt technology on four dimensions: (1) Optimism - a belief that technology provides increased control and flexibility in life; (2) Proficiency - confidence in one’s ability to quickly and easily learn to use new technologies, as well as a sense of being technologically competent; (3) Dependence - a sense of being overly dependent on, and a feeling of being enslaved by, technology; and (4) Vulnerability - a belief that technology increases one’s chances of being taken advantage of by criminals or firms. Results suggest positive correlations between individuals’ self-ratings on these four dimensions, attitudes toward using technology, and their propensity to deliver substance abuse treatment services using telehealth technologies. Complete item analysis will be presented. From this study, it can be concluded that technology adoption is a complex, developmental process through which individuals construct unique (but malleable) perceptions of technology that influence the adoption process. Successfully facilitating a technology adoption needs to address cognitive, emotional, and contextual concerns.

**Objectives**

1. Demonstrate an understanding of the technology adoption research.
2. Identify factors that relate specifically to technology adoption and the provision of substance abuse treatment services.
3. Cite strategies that will promote technology adoption related to cognitive, emotional, and contextual concerns.

**Results:** There were 662 appointments for 179 patients with 19 different zip-codes that took place during the study period. The patients were from 13 to 20 years old. The average age of the patient was 15.9 years old. Over 90% of the patients were Missouri Medicaid patients, with the remainder being covered by private insurers. We examined the distance between patients and in-person child and adolescent psychiatrists. If telehealth is taken out of the equation, the range of distance between patients and providers is 1.14 mi to 301.6 mi. The average distance a patient is from the closest provider is 22.2 miles. The patient farthest from the provider lives 301.6 miles away. While patients utilizing child and adolescent telepsychiatry services come from various parts of the state, providers are mostly clustered in urban locations along the Interstate 70. This greatly limits access to specialty care for rural and other vulnerable populations. Telehealth provides adequate and timely access to child and adolescent psychiatry services for youth that may otherwise not be able to get needed care.

**Conclusion:** Mental health crisis and access to care barriers for rural population have been more or less successfully addressed by telehealth for several decades now. However, the shortage of specialty physicians adds an additional layer of complexity to this issue. Healthcare organizations with informatics tools such as telemedicine need to focus their efforts on maximizing usage to allow more access for underserved population.

**Objectives**

1. Gain insight into child and adolescent telepsychiatry services in rural Missouri specific to outpatient and delinquent youth in custody.
2. Learn if they are other options for this population to receive care, if telehealth was not available.
3. Learn possible opportunities and applications for other similar programs.

**TUESDAY, MAY 5, 2015**

**Session 92**

**PEDIATRICS**

**Room 404AB**

**MODERATOR:** Bryan Burke, MD, Professor of Neonatology

University of Arkansas for Medical Sciences, Little Rock, AR, USA

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**P72 OVERVIEW OF CHILD AND ADOLESCENT TELEPSYCHIATRY SERVICES AT UNIVERSITY OF MISSOURI, COLUMBIA**

**PRESENTER & CONTRIBUTING AUTHORS:**

Mirna Becvaric, MHA, PhD Candidate1,2, Timothy Greene, BS1, Laine Young-Walker, MD3, Lanis Hicks, PhD4, Rachel Mutrux, BS2

1University of Missouri, Informatics Institute, Columbia, MO, USA,
2University of Missouri, Missouri Telehealth Network, Columbia, MO, USA,
3University of Missouri, Department of Psychiatry, Columbia, MO, USA,
4University of Missouri, Health Management and Informatics, Columbia, MO, USA

**Objective:** This study compared University of Missouri child and adolescent telepsychiatry services patients’ specific zip-codes to child and adolescent psychiatrists’ locations to learn if telehealth was an appropriate option for this group of patients.

**Methods:** Management analyst system Cognos/Analyzer was used as a data source. Patient and provider specific zip-codes were processed using GeoKettle software and ArcGIS explorer was used for map visualization.
**P74 DESIGNING A LOW-COST PLATFORM FOR PARENT CHILD INTERACTION TELERTHERAPY**

**PRESENTER & CONTRIBUTING AUTHORS:**
Karen van Bakergem, LMSW, Clinical Social Worker, James McElligott, MD, MSCR, Lori Upshur, BA  
*Medical University of South Carolina, Charleston, SC, USA*

**Background:** Research has shown that preschoolers can and do experience incapacitating mental health problems that can impede normal development and cause significant distress for them and their families. Parent Child Interaction Therapy (PCIT) is an evidenced based treatment for children age 2 to 7 with externalizing behaviors (i.e. aggression, defiance, disruptive behavior, and noncompliance). Considerable research has been completed to show the efficacy of PCIT and that the effects are maintained up to 6 years after treatment has ended. PCIT is becoming more available in more urban and suburban communities; however, rural areas continue to have difficulty accessing quality, evidence-based services.

**Objectives:**
1. Describe the benefits of parent child interaction teletherapy;  
2. Articulate the technological challenges in performing PCIT over telehealth; and  
3. Demonstrate at least one successful approach to providing PCIT via telehealth.

**Findings:** Among the evidence-based practices, PCIT is particularly amenable to being provided via telemedicine given that the specialized PCIT therapist is not in the room with the family for the majority of treatment. Even in clinic-based PCIT, a bug-in-the-ear device is used to provide live coaching. We are conducting a pilot feasibility study comparing a clinic-based delivery and a telemedicine delivery of PCIT. From a technology standpoint, we are using a laptop, running Vidyo Desktop with a USB attached Logitech BCC950. One of the biggest requirements of the therapy is the need for the provider to communicate directly to the parent without the child hearing the instructions. We selected the BCC950 because of the presence of a standard 3.5mm earphone jack. In order to allow the private communication, we plug-in a Bluetooth transmitter that connects to an earpiece that the parent wears. After the parent-only interaction, the transmitter is disconnected from the Logitech allowing the video conference to continue with everyone present in the exam room. The additional benefit of Vidyo and the BCC950 is the Far End Camera Control (FECC). Very few USB-connected devices allow for the control needed for successful Parent/Child Interactive Therapy. The ability of FECC via Vidyo has allowed us to keep costs down and yet still have the benefit of FECC.

**Conclusion:** Parent Child Interaction Teletherapy is demonstrated on a low-cost platform. This application of telehealth has significant potential to alleviate disparities in the quality of mental health provision for young children.

**Objectives**
1. Describe the benefits of parent child interaction teletherapy.  
2. Articulate the technological challenges in performing PCIT over telehealth.  
3. Demonstrate at least one successful approach to providing PCIT via telehealth.

**P75 TIME TO REBOOT: TRANSITIONING FROM RESEARCH TO MAINSTREAM CLINICAL CARE**

**PRESENTER & CONTRIBUTING AUTHORS:**
Anne Marie Healey, RN, BSN, MSW, Nurse Leader Pediatric Telemedicine  
*University of Rochester Medical Center, Penfield, NY, USA*

Many programs have been successful at starting a telemedicine service with significant research funding and university support. The natural progression to move from a research project to a self-supported clinical enterprise has proven to be perilous for most programs. This talk will review the steps required to successfully jump this chasm and point out the unexpected pitfalls along the way. Rightsizing your program is the key to achieving financial sustainability and being able to offset the fixed costs of your equipment, connectivity and telepresenters. Developing a business plan may not show a return on investment during the initial transition period but should be able to stand alone within a three year period. With new accountable care reimbursement plans, using telemedicine to help your organization achieve pay for performance measures may be more lucrative than the traditional fee for service models. Quality of care standards recommend routine health maintenance visits every three months for children with a variety of chronic conditions including asthma, attention deficit hyperactivity disorder, diabetes and obesity. Most urban primary care practices experience a no-show rate of close to 50% for these tune-up visits. Barriers to access, competing demands for parents and student’s time, financial constraints are all cited as reasons for this poor adherence rate. School based telemedicine offers solutions to most of these issues as long as service can be conveniently brought to the child and is welcomed by the school. Data will be presented comparing chronic care visit completion for children utilizing telemedicine access compared to children being seen in the hospital based continuity clinic. Length of visit/productivity will be measured for the medical provider as well as the roaming telepresenter as they travel from school to school in an urban setting (63 schools within a 7 mile radius). Infrastructure costs will be examined to help identify unanticipated costs that might sabotage your program.

**Objectives**
1. Participants will learn the steps to take to successfully transition a telemedicine program from grant/research to a self-supported clinical enterprise.  
2. How to right size your program so as to achieve financial sustainability and to be able to offset fixed costs of equipment, connectivity and telepresenters.  
3. Gain insight into using telemedicine to help your organization achieve pay for performance measures with new accountable care reimbursement plans.

**P76 COST OF CARE ASSOCIATED WITH PEDIATRIC RHEUMATOLOGY CLINIC VISITS AND INTEREST IN TELEMEDICINE**

**PRESENTER & CONTRIBUTING AUTHORS:**
Elizabeth A. Kessler, MD, MS, Physician, Chelsey Smith, CCRC, Anderson Rawni, MA, CCRC, Mara L. Becker, MD, MSCE  
*Children’s Mercy Kansas City, Kansas City, MO, USA*

**Background and Purpose:** Nearly 1 in 250 children live with arthritis, yet there are less than 250 board certified, practicing pediatric rheumatologists in the United States, approximately 90 percent of which are located in and around large cities. Travel to clinic appointments can be a significant time and monetary commitment. Telemedicine may be a solution to improve patient access to pediatric rheumatologists and reduce the cost of care. There have been no reported studies to date regarding the use of telemedicine in pediatric rheumatology. The objective of this study is to describe the cost to families associated with pediatric rheumatology care and identify interest in telemedicine.

**Methods:** Optional surveys were offered to parents and patients aged 18 or older in a pediatric rheumatology clinic located within a tertiary care hospital setting. Questions included the distance or time traveled to the appointment, the amount of work and school missed, the price of meals and lodging, and whether families would be interested in a telemedicine option. Statistical analyses were conducted on the current sample (n = 93) and subsamples of respondents living less than 50 miles and more than 50 miles from the clinic using SPSS version 20. Descriptive and inferential analyses, including Fischer’s Exact and Linear-by-Linear Association tests, were performed.
Results: The mean distance traveled one-way to rheumatology appointments was 66 miles ($SD = 70$; range: 1.5–300); the average time traveled one-way was 68 minutes ($SD = 59$; range: 10–210). 68 respondents (73%) missed work for the appointment; 42 (45%) spent money on meals and/or lodging. 38 of 89 (42%) respondents were interested in a telemedicine clinic option. When stratified by distance, respondents living at least 50 miles from the clinic were significantly more interested in telemedicine than those living less than 50 miles away (59% vs. 33%; $p = 0.013$). Increased amount of parental work missed was associated with greater interest in telemedicine ($\chi^2 = 4.52$; $df = 1$; $p = 0.033$).

Conclusions: Consistent with the American Academy of Pediatrics estimate that about one-fourth of children with rheumatic disease live 80 miles or more from the nearest pediatric rheumatologist, 25% of our sample reported traveling at least 80 miles for their clinic appointment. Findings suggest that greater distance or time traveled and the amount of work missed are significantly associated with interest in a telemedicine clinic option. Telemedicine may reduce the cost of care for families living in less densely populated and underserved areas, and we will expand this survey to patients being seen via telemedicine to investigate this hypothesis and validate our preliminary findings.

Objectives
1. Describe cost incurred by families to attend a pediatric rheumatology clinic appointment.
2. Gain insight into factors associated with parental interest in a pediatric rheumatology telemedicine clinic.
3. Illustrate potential cost savings to families by utilizing telemedicine for pediatric rheumatology.

P77 INNOVATIVE HIGH RISK OB TELEHEALTH: DIAGNOSTIC AND SUPPORTIVE CARE FOR THE MOTHER AND UNBORN BABY

PRESENTER & CONTRIBUTING AUTHORS:
Mary Ames, MD, Maternal Fetal Medicine Specialist
Marshfield Health Systems, Marshfield, WI, USA

High risk pregnancies are on the rise with the decreasing age for onset of chronic conditions, poor health habits in women of childbearing age, and social and economic factors such as the rise in poverty levels.

Risk factors for a high risk pregnancy include health conditions such as high blood pressure (70% of pregnant women), polycystic ovarian syndrome, diabetes, kidney disease, thyroid disease, obesity, and autoimmune and infectious diseases such as HIV/AIDS. Age risk factors include teen pregnancy and first-time pregnancy after age of 35. Lifestyle risk factors also play a role in high risk pregnancy - alcohol use and cigarette smoking. A pregnancy becomes high risk when the pregnant mother or unborn baby have a health concern or one or multiple risk factors that increase the risk of complications developing during pregnancy or at the time, or after birth. Although a high-risk pregnancy can be diagnosed by a primary care provider, often a high risk pregnancy needs the specialized skills of a team that is trained in managing and predicting complications in a high-risk pregnancy, thus much more monitoring is needed than with a normal pregnancy. This specialty trained team cares for the mother and unborn child in order to ensure that she carries the baby to term and delivers a live, healthy infant. As in all service specialties, the concentration of high risk OB specialists is typically in urban areas and academic medical centers. High risk pregnancies occur all over the globe and access to high risk OB specialists is scarce. Marshfield Health Systems’ Telehealth and Maternal Fetal Medicine programs created a unique and innovative solution to this problem of access. Through the use of telehealth, network extenders, and remote ultrasound access, both to live and archived studies, telehealth creates a connection with the patient that provides real-time results. A MFM High Risk OB telehealth suite was implemented with the ability of the physician specialist to monitor the progress of 10 different ultrasounds happening at the same time, and connections with the ultrasound tech and with the patient as well. This workshop takes the participant through the process for developing the clinical program and workflow based on patient and provider need; for developing the network architecture that made everything possible; and for identifying the impact on clinical outcomes, cost, and patient/provider satisfaction with the program. Dr. Mary Ames, a highly regarded specialist in Maternal Fetal Medicine will provide a demonstration of the system and talk about her experiences in other telemedicine programs and the differences that were achieved with this remarkable telehealth program for High Risk OB patients and their unborn children. Patient interviews will be presented to learn first-hand the value of such a program to patients and their families.

Cost analysis of setting up the program, reimbursement procedures, and medico-legal issues regarding the care of pregnant females and unborn children will also be covered in this poster.

Objectives
1. Understand the need for access to high-risk OB specialists and determine appropriate clinical workflow to provide services through telehealth.
2. Describe the clinical, cost, and patient/provider implications of implementing a telehealth High Risk OB program.
3. Identify the architectural and network components necessary to implement a remote High Risk OB program including remote access to imaging and live patient encounters.

P78 UTILIZING TELEMEDICINE TO SUPPORT LOCAL PROVIDERS DURING NEONATAL RESUSCITATION

PRESENTER & CONTRIBUTING AUTHORS:
Jennifer L. Fang, MD, Fellow, Neonatal-Perinatal Medicine, Beth L. Kreosky, BS, MBA, Matthew S. Bushman, BS, Joan K. Broers, MS, RN, Christopher E. Colby, MD
Mayo Clinic, Rochester, MN, USA

Background: Approximately 10% of newborns will require some assistance to begin breathing after birth, and 1 in 1000 newborn deliveries will require extensive resuscitative measures. When these neonatal emergencies occur in a community hospital, the local resources and expertise can be quickly overwhelmed. Not only can these high-risk situations result in a poor patient outcome, but this also places the care providers and institution at risk for substantive litigation. In a simulated setting, previous work has demonstrated that using telemedicine to link a neonatologist with a less-skilled bedside provider can improve adherence to the standard of care and performance of critical resuscitative steps.

Objectives: To complete a clinical pilot using telemedicine to support care providers in local, community hospitals during neonatal resuscitations and urgent newborn consultations.

Methods: From March 2013 to September 2014, this service was implemented at six health system sites, with each hospital having 500–1500 annual deliveries. Prior to implementation, a site visit was performed to introduce the system, process and technologies. To activate the telemedicine consult, the local provider contacted our Emergency Communications Center to gain immediate access to the consulting neonatologist. If the clinical situation was deemed appropriate for a telemedicine consult, the neonatologist used video-conferencing software to place a direct call to the site-specific, mobile device. The following data was collected: case description, patient outcome, and user information and experience.

Findings: During the 18-month study period, the telemedicine service was implemented for 35 cases. It was activated by every health system site, with use proportional to delivery volume. All neonatologists had the opportunity to provide consultative services. Twenty-three cases involved emergent, neonatal resuscitation, while the remaining 12 were for urgent, newborn con-
sultations. In nearly 30% of the cases, transportation to the referral center was avoided, and the infant was able to remain in the local hospital. This resulted in an estimated cost-savings of $400,000. For the infants who required transfer to the regional NICU, the median length of stay was 4.5 days (range 2–43 days). A wireless, tablet-based video-conferencing software was used during the pilot. With this technology, users experienced issues with connectivity, audio quality and video quality. This included inability to establish a connection on the first call attempt, lack of audio when users spoke simultaneously, slow frame rates, and lack of high definition video. A multi-disciplinary technical team was established to evaluate the AV inconsistencies and failures and determine root causes. Improvements to the system, policies, and infrastructure are ongoing.

**Conclusion:** Telemedicine may be a cost-effective way to optimize patient outcomes and support local providers during neonatal resuscitations. Continued work is needed to evaluate measurable effects on patient outcomes and to explore future use cases, long-term requirements, and environment constraints. Based on our experiences, it is critical to have a certified technology infrastructure to ensure care providers have the most reliable, highest quality audiovisual solution for this type of emergent, synchronous telemedicine consultation.

**Objectives**

1. Identify how telemedicine is being used for neonatal resuscitations.
2. Understand the potential cost-savings associated with its use.
3. Recognize additional opportunities for investigation and improvement in the area of emergent, neonatal telemedicine consultation.

**P79 PROTOTYPING PEDIATRIC TELEHEALTH VIRTUAL VISITS TO IMPROVE OUTCOMES IN CYSTIC FIBROSIS**

**PRESENTER & CONTRIBUTING AUTHORS:**
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Cystic Fibrosis (CF) is a life-shortening genetic disorder. Patients with CF are expected to be seen in clinic at least 4 times a year. These visits last on average, 159 minutes and involve seeing several care providers who each assess patients, make recommendations and provide education. The visits can be overwhelming and, as expected, not all of the information discussed at the visit is retained by patients and care givers. In addition, people with CF are susceptible to infections that can decrease life expectancy. Strict infection control guidelines mandate separating people with CF from one another in order to reduce the chances of cross-infection. Lengthy and frequent clinic visits may lead to increased exposure to harmful infections. We describe a parent-driven prototype of a pediatric telehealth intervention using simple available technology to reduce time spent in clinic. Interaction between parents and care providers in between visits was also used in some cases, and can impact visit flow and outcomes. The intervention focuses on enabling ancillary providers on the CF clinical team -respiratory therapist, social worker, and dietician - to interact with parents and patients in a virtual visit in their homes. Virtual visits with the ancillary providers will reduce time spent in clinic, improve communication and improve outcomes (e.g., the respiratory therapist can observe breathing treatments as actually performed in the home), ease congestion in the clinic, and reduce the rate of no shows. It may reduce the risk of acquiring an infection in the clinic/hospital setting. Measures include ease of use, patient and provider satisfaction with the intervention, and reduction of time spent in the clinic visit. The project was conceptualized and driven by the Pulmonary Medicine Family Partner at our hospital. Design requirement and outcomes were co-determined among parents, clinicians, and technologists. Working together with our families to design home-based telehealth services leads to higher overall patient and provider satisfaction with interventions.

**Objectives**

1. Gain insights into best practices for developing virtual visits for chronic diseases management.
2. Acquire an understanding of interventions using uncomplicated available technology.
3. Achieve an understanding of co-designing with patients and clinicians.

**P80 RISK FACTORS FOR ONSET OF DIABETIC RETINOPATHY IN A PEDIATRIC DIABETES OCULAR TELEMEDICINE PROGRAM IN CARACAS, VENEZUELA**

**PRESENTER & CONTRIBUTING AUTHORS:**
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The Joslin Vision Network Pediatric Diabetes Eye Care Program is an ATA category 3 ocular telehealth program for evaluation and management of diabetic retinopathy (DR). The program was initiated in a setting with limited access to eye care at the Pediatric Endocrinology Clinic at the Hospital de Niños J.M. de los Ríos in Caracas, Venezuela in November 2006.

Steroscopic nonmydriatic digital retinal imaging (3x45°, 2x30° fields and external image per eye) was obtained from patients presenting for medical care through July 2014. Images were graded for DR level using a validated protocol.

Retrospective chart review was performed on patients with no DR at baseline who had the potential for 4 years of follow-up. Recorded demographic information included age, gender, DM duration, age of DM onset, A1c and DR onset.

A total of 310 patients aged 18 years with type 1 DM (T1DM) were imaged. Imaging represented the first eye exam for 46%. The rate of progression of DR by year was 6.1%, 5.2%, 6.1% and 9.8% at years 1 through 4, respectively, among those completing each year of follow-up.

Of this cohort, 70%(218) did not complete 4 years of follow-up while 30%(92) did. Baseline A1c was available for 70%(N = 153) and 65%(N = 60), respectively. At baseline, patients who did not complete 4 years of follow-up were older (mean 11.4 ± 3.8 vs 9.1 ± 2.8 years [p < 0.0001]), had longer DM duration [mean 3.1 ± 3.2 vs 2.2 ± 2.8 years [p = 0.01]], later age of DM onset [mean 8.3 ± 4.0 vs 6.9 ± 3.2 years [p = 0.002]], were pubescent [66% vs 41% [p < 0.0001]] and had higher A1c [mean 10.1 ± 2.6 vs 9.0 ± 2.3 [p = 0.003]]. There were no statistically significant differences in gender.

Of the 92 patients that completed 4 years of follow-up, 90%(83) did not develop DR and 10%(9) developed DR. Of the 83, 26 very mild, 1 moderate and 2 severe nonproliferative DR) on retinal imaging. Baseline A1c was obtained in 61%(N = 51) vs 100%(N = 9). At baseline, patients who developed DR were older [mean 12.6 ± 1.7 vs 8.8 ± 2.6 years [p = 0.0003], had longer DM duration [mean 5.4 ± 3.5 [IQR 3.0–7.0] vs 1.9 ± 2.5 [IQR 0.1–3.0] years [p = 0.001]] and were pubescent (89% vs 36% [p = 0.003]). There were no statistically significant differences in age of DM onset, gender or A1c.

In this cohort of inner city pediatric patients with T1DM in Venezuela, there was substantial onset of DR with over 6% development at 1 year and nearly 10% by 4 years. The development of DR was associated with older age, longer DM duration and puberty.

Patients who were lost to follow-up were older, more likely to have onset of puberty, had longer DM duration, older age of DM onset, and higher A1c. Those lost to follow-up were at increased risk for developing DR. Among patients with no DR, DM duration greater than 3–5 years was associated with
development of DR with up to one third of eyes with DR progressing to sight threatening retinopathy by 4 years of follow-up. These data emphasize the need for early retinal evaluation and continued follow-up in this setting of pediatric T1DM patients.

Objectives
1. To determine risk factors for the onset of diabetic retinopathy (DR) in a pediatric type 1 diabetes population at 4 year follow-up in an inner city hospital in Caracas, Venezuela.
2. To determine the rates of progression of DR by year in a pediatric type 1 diabetes population.
3. To compare baseline characteristics of patients with 4 years of follow-up to those who did not complete 4 years of follow-up.

P81 USING AVATARS TO ENGAGE OVERWEIGHT AND OBESE ADOLESCENTS AN AN APP-BASED TELEHEALTH WEIGHT MANAGEMENT PROGRAM

PRESENTER & CONTRIBUTING AUTHORS:
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Obesity in children has reached unprecedented levels; 43 million children under the age of five were overweight, creating far-reaching health and economic implications. A new analysis prepared for The Fiscal Times by Scott Kahan, director of the National Center for Weight & Wellness at George Washington University, pegs the total cost of obesity at $305.1 billion annually. The burden of obesity-related illness could be reduced by lifestyle changes such as improved nutrition and physical exercise. The recommendation of intensive lifestyle management for all overweight and obese children is a task that is not being met in our current healthcare disease management model. Potentiating the beneficial effects of clinically validated in-person weight management programs is essential.

Evidence has accumulated about the efficacy and user acceptance of computer-based interventions (CBI) to modify behaviors. Given the interest that youths have in avatars from their experience with avatars in computer games, consumer health applications designed with avatars may be a cost-effective way to engage them in behavioral lifestyle support tools. In response to this potential, this study explored two research questions: “How can avatars in a CBI facilitate superior self-care in the context of a chronic care model focused on adolescent overweight and obesity?” and “What are the opportune contexts for the use of avatars to facilitate healthy behaviors for overweight adolescents?”

This study used a three-phase User-Centered Design (UCD) approach with teens (ages 12 to 17) participating in an intensive lifestyle modification summer camp program: Phase 1 - analysis of overweight adolescent, needs, barriers, technical infrastructure, and human-computer interaction preferences (10 user-driven design focus groups); Phase 2 - design, prototyping, usability (77 one-on-one usability assessments) and Phase 3 - final development and proof-of-concept field evaluation. This submission covers Phases 1 and 2 in relation to avatars. All focus groups and usability assessments were audio taped and then transcribed. Two members of the research team performed open coding of transcripts to identify and define themes related to each research question. A third researcher reviewed all codes.

Overall, the teens had great interest in including avatars to assist their self-management efforts and make self-management more “fun”, and “entertaining”. They felt the avatars could reinforce the guidance and support provided from lifestyle modification programs and that interacting with the avatar would fit within their lifestyle. They viewed the avatars as a way to set future goals with respect to how they look. They indicated avatars could serve as a coach, buddy, teacher, and motivator; and avatars should be designed to provide empathic support and guidance. They indicated the need for two avatars, one being a representation of themselves and another being a coach or teacher. Participants indicated the avatars could receive rewards such as new clothes, exercise equipment or accessories in response to healthy behaviors.

The results of this study support that the use of avatars as a means to increase engagement of overweight adolescents’ participation in a weight management program, in their use of behavioral lifestyle support tools.

Objectives
1. Indicate how avatars can facilitate superior self-management when used in mobile apps to extend the continuum of care via telehealth.
2. Identify some design and feature preferences overweight and obese adolescents have for avatars in computer-based interventions.
3. Identify facilitators and barriers to the use of avatars to extend self-care efforts by overweight teens.
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