



2012 SYMPOSIUM ON HUMAN FACTORS
AND ERGONOMICS IN HEALTH CARE:
BRIDGING THE GAP

March 12–14, 2012

Baltimore Marriott Waterfront Hotel, Baltimore, MD USA

Sponsored by the Human Factors and Ergonomics Society

2012 SYMPOSIUM PROGRAM COMMITTEE

CHAIR

Anthony D. Andre, Interface Analysis Associates & San Jose State University

PATIENT AND HEALTH-CARE PROVIDER SAFETY TRACK

Ayse P. Gurses, Johns Hopkins University School of Medicine and Bloomberg School of Public Health -
Cochair

Vicki R. Lewis, National Center for HFE in Healthcare - Cochair

Committee Members

Linsey Barker, University of Missouri

Russell J. Branaghan, Arizona State University

Barrett S. Caldwell, Purdue University

Waldemar Karwowski, University of Central Florida

Will Lee, MITRE

Susan Meadows, U.S. Food and Drug Administration, Center for Devices and Radiological Health

Enid Montague, University of Wisconsin-Madison

Laura Moody, Mercer University

Marnie Myhre, Fairview Health Services

Bridget O'Hare, Banner Health

Sarah Parker, University of Aberdeen

Valerie Rice, US Army

F. Jacob Seagull, University of Michigan

Jason Slagle, Vanderbilt University

Kent Wilson, HoverTech International

HEALTH-CARE INFORMATION TECHNOLOGY TRACK

Janine Purcell, Philips Healthcare - Cochair

Robert Schumacher, User Centric – Cochair

Committee Members

Rob Albert, GE Healthcare

Janey Barnes, User-View, Inc.

Ellen J. Bass, University of Virginia

Kelly Caine, Indiana University

David Damico, Westat

R. Darin Ellis, Wayne State University

Rollin J. (Terry) Fairbanks, National Center for Human Factors Engineering in Healthcare

Thomas Ferris, Texas A&M University

Daryle Gardner-Bonneau, Bonneau and Associates

Rich Holden, Vanderbilt University School of Medicine

Dick Horst, UserWorks, Inc.

Jenna Marquard, University of Massachusetts

Marc Resnick, Bentley University

Michelle Rogers, Drexel University

Rupa Valdez, University of Wisconsin-Madison

Matthew Weinger, Vanderbilt University and VA Tennessee Valley

Sam Zheng, Siemens Corporate Research

MEDICAL DEVICE DESIGN TRACK

Robert North, Human Centered Strategies - Cochair
Stephen Wilcox, Design Science - Cochair

Committee Members

Anthony D. Andre, Interface Analysis Associates
Susan Hallbeck, University of Nebraska Lincoln
Reade Harpham, Battelle
Emily Hildebrand, Phoenix VA Health Care System
Edmond Israelski, Abbott Adam Shames, Design Science
Cindy Miller, GE Healthcare
Shadeequa D. Miller, Medtronic/University of Wisconsin -Madison
Kang Li, Rutgers University
Christina Mendat, Radius Product Development
A. Ant Ozok, Dept. of Information Systems. UMBC
Dawn Rountree, Bayer HealthCare Diabetes Care
Olivier St-Cyr, University Health Network
Molly Follette Story, U.S. Food and Drug Administration, Center for Devices and Radiological Health, ODE
Bill Stubler, Human Factors and Usability Consultant
Melanie Turieo, Cambridge Consultants
Erik Wakefield, SonoSite

2012 SYMPOSIUM SPONSORS

Sponsoring Organizations

Lucian Leape Institute at the National Patient Safety Foundation
Health Care Technical Group of the Human Factors and Ergonomics Society

Cooperating Organizations

American Psychological Association Division 21: Applied Experimental and Engineering Psychology
HIMSS (Healthcare Information and Management Systems)
National Research Council
Association for the Advancement of Medical Instrumentation (AAMI)
medicaldevicehumanfactors.org

Other Sponsorships

Lanyards
User Centric, Inc.



TECHNICAL PROGRAM

Monday, March 12
8:30 to 10:00 a.m.

OPENING PLENARY SESSION

Monday, March 12, 8:30 to 10:00 a.m.

1. **Welcome and Acknowledgments**, Anthony D. (Tony) Andre, Interface Analysis Associates
2. **On Bridging the Gaps in Health Care Human Factors and Ergonomics**, Anthony D. (Tony) Andre, Interface Analysis Associates
3. **Keynote Address –Health Care Meets Human Factors: Flirtation or Meaningful Relationship?** Lucian L. Leape, Harvard School of Public Health (*Invited*)

BREAK–10:00 to 10:30 a.m.

Monday, March 12
10:30 a.m. to 12:00 noon

PATIENT AND HEALTH-CARE PROVIDER SAFETY TRACK

Session 1 – How to Increase the Use of Human Factors in Health Care

Monday, March 12, 10:30 a.m. to 12:00 noon

Chair: Ayse Gurses, Johns Hopkins Medicine International

1. Barry Silbaugh, American College of Physician Executives, **Embracing Imperfection: The Power of Human Factors in Health Care** (*Invited*)
2. F. Jacob Seagull, University of Michigan, **Patient Safety: Every Wheel Needs Reinventing** (*Invited*)
3. Eduardo Salas, University of Central Florida, **Transforming Health Care One Team at a Time: What Matters** (*Invited*)

HEALTH-CARE INFORMATION TECHNOLOGY TRACK

Session 1 – Setting The Context: What’s the Challenge With HIT?

Monday, March 12, 10:30 a.m. to 12:00 noon

Chair: Bob Schumacher, User Centric

1. Ross Koppel, University of Pennsylvania, **Human Bodies vs. Human Factors: Why HIT Is So Hard to Get Right** (*Invited*)
2. Terry Fairbanks, National Center for Human Factors Engineering in Healthcare, **Health IT Stories From the Trenches: Perspectives of a Human Factors Engineer–Turned Physician** (*Invited*)
3. Robert Wears, University of Florida, **“I’m From the EMR and I’m Here to Help You”:** How HIT Does or Does Not Support Clinical Work (*Invited*)

MEDICAL DEVICE DESIGN TRACK

Session 1 – Case Studies in Applying Human Factors for Identifying Device User Requirements and Use Risk Assessment

Monday, March 12, 10:30 a.m. to 12:00 noon

Chair: Bob North, Human Centered Strategies;

Cochair: Stephen B. Wilcox, Design Science

1. Anthony D. (Tony) Andre, Interface Analysis Associates, **It May Be Over Before It Starts: Why You Should Have Incorporated Human Factors Science Before Designing Your Device** (*Invited*)
2. Evan Edwards, Intelliject, **Design Controls Meets Human Factors: Development and FDA Approval of a Personal Auto-Injector** (*Invited*)

3. Ed Mathews, Royal College of Art, **Rethinking Emergency Medicine From the Point of View of Users and Patients** (*Invited*)

LUNCH—12:00 noon to 1:30 p.m.

**Monday, March 12
1:30 p.m. to 3:00 p.m.**

PATIENT AND HEALTH-CARE PROVIDER SAFETY TRACK

Session 2 – Human Factors Methods for Solving Complex Health-Care Problems

Monday, March 12, 1:30 to 3:00 p.m.

Chair: Barrett S. Caldwell, Purdue University

1. Michael Rosen, Johns Hopkins University, **Learning From Communication Failures: A Practical Multidisciplinary Tool**
2. Lesley Taylor, Roger J. Chapman, and Scott Wood, Veterans Health Administration, **Best Practice for Analysis and Mitigation of Reported Patient Safety Informatics Adverse Events at Veteran’s Health Administration**
3. Ken Catchpole, Cedars-Sinai Medical Center, **“So Have You Done Anything Useful?” Empirical Research and Ethnographic Experience for Improving Performance in Surgery**

HEALTH-CARE INFORMATION TECHNOLOGY TRACK

Session 2 – Advances in the Design of EHR: Thinking Beyond the Current Paradigms

Monday, March 12, 1:30 to 3:00 p.m.

Chair: Janine Purcell, Philips Healthcare

1. Jonathan Nebeker, VA Salt Lake City Health Care System/University of Utah Medical School, **Beyond Ergonomics: Supporting Expert Sense Making for Electronic Health Record Systems** (*Invited*)
2. Frank Drews, George E. Wahlen VA Medical Center/University of Utah, **Resilient Health Information Technology: The Why and How** (*Invited*)
3. David Kreda, Social Research Corporation, **Decoupling the Cognitive and Transactional User Experiences in EMRs** (*Invited*)

MEDICAL DEVICE DESIGN TRACK

Session 2 – Smart Pumps? Smarter Interfaces? Design Issues for Drug Delivery Devices and Lessons Learned

Monday, March 12, 1:30 to 3:00 p.m.

Chair: Melanie Turieo, Cambridge Consultants

1. Jan Maarten Schraagen, TNO; Martin Schmettow, University of Twente; Rutger van Merkerk, University Medical Center Utrecht, **User Interface Issues With Infusion Pumps: A Systematic Review and Guidelines for Usability Testing**
2. Joseph Cafazzo and Patricia Trbovich, University Health Network, **Making Smart Pumps Work: User Inputs for Successful Design of Safe Infusion Devices** (*Invited*)
3. Pat Baird and Sara Waxberg, Baxter Healthcare, **The Drug Delivery Device Technology Evolution: Implications for Pump User Interface Design** (*Invited*)

BREAK – 3:00 to 3:30 p.m.

**Monday, March 12
3:30 to 4:30 p.m.**

PATIENT AND HEALTH-CARE PROVIDER SAFETY TRACK

Session 3 – Usable Health Care for the Elderly

Monday, March 12, 3:30 to 4:30 p.m.

Chair: Vicki Lewis, MedStar’s National Center for Human Factors Engineering in Healthcare

1. Janet Goldberg, Washington Hospital Center, MedStar Health, **Patient Care in the Home: Health Care’s New Frontier** (*Invited*)
2. A. Ant Ozok, University of Maryland, Baltimore County, **Technology for the Elderly: A Life Improver or a Nuisance? Results From Two Case Studies Concerning Medication Management and Social Media Use** (*Invited*)

HEALTH-CARE INFORMATION TECHNOLOGY TRACK

Session 3 – Understanding Issues in Acceptance of EHR by Health-Care Professionals

Monday, March 12, 3:30 to 4:30 p.m.

Chair: Janine Purcell, Philips Healthcare

1. Richard J. Holden, Vanderbilt University, **Factors Shaping the Use and Acceptance of Health Information Technology: Results From Studies of Bar-Coding Technology, Electronic Health Records, and Computerized Provider Order Entry**
2. Lauren Zack, Athena Health, and Janey Barnes, User-View Inc., **Best Practices in Applied Research Methods for Improving Usability and Patient Safety of Electronic Health Records**

MEDICAL DEVICE DESIGN TRACK

Session 3 – Review of Human Factors Standards

Monday, March 12, 3:30 to 4:30 p.m.

Chair: Michael Wiklund, Wiklund Research & Design

1. Edmond W. Israelski, Abbott Labs, **Overview of International Medical Device Human Factors Standards** (*Invited*)
2. Matthew B. Weinger, Vanderbilt University, **A Whirlwind Tour of HE-75: Practical Use of the New Human Factors Design Standard** (*Invited*)

BREAK—4:30 to 4:45 p.m.

**Monday, March 12
4:45 to 6:00 p.m.**

POSTER SESSION 1 & RECEPTION

Monday, March 12, 4:45 to 6:00 p.m.

Patient and Health-Care Provider Safety

1. Enda Fallon, Liam Chadwick, and Wil van der Putten, National University of Ireland, Galway, **An Evaluation of a Low-Dose-Rate (LDR) Brachytherapy Procedure Using a Systems Engineering & Error Analysis Methodology for Health Care (SEABH) – (SAVE)**
2. Genevieve Dubé, Chelsea Kramer, Sébastien Tremblay, Esther Breton, and Gilles Chiniara, Université Laval, **Characterizing Teamwork in the ICU Through the Use of High-Fidelity Simulation and Cognitive Metrics**
3. Patricia L. Trbovich, Sonia Pinkney, and Anthony C. Easty, University Health Network, **Differential Effects of Infusion Pump Technology on Nurses' Performance and Perceptions**
4. Moin Rahman, HVHF Sciences, LLC, **Emergency Medical Responders and Physicians: Diagnostics, Decision Making, and Therapeutic Care in High-Stakes Situations**
5. Andrea Obi, Rishindra Reddy, Mark Daskin, Amy Cohn, Siyuan Sun, Zixiao Chen, Anurag Gulati, and Xun Xu, University of Michigan, **Evaluating and Analyzing Conflicts Between ACGME Restrictions and Adequate Training Opportunities for Transplant Surgery**
6. Laura Moody, Mercer University, **Human Factors and Lean in the ER: A Critical Review of the Literature**
7. Esa Rantanen, Joe Deeter, Sean Burke, and Yao Wang, Rochester Institute of Technology, **Human Factors Evaluation of Pharmacy Operations**
8. Kelsey L. McCoskey, U.S. Army Public Health Command, Army Institute of Public Health, **Implementing a Safe Patient-Handling Program in Military Medical Treatment Facilities**
9. Blake Lesselroth and Victoria Church, Portland VA Medical Center, **Medication Review Software to Improve the Accuracy of Outpatient Medication Histories**
10. Chieh-Li Chin, Stacey McKeever, Anna Madison, and Daniel Morrow, University of Illinois at Urbana-Champaign; Katherine Davis and Elizabeth A.H. Wilson, Northwestern University; Darren Kaiser, Northwestern Medical Faculty Foundation; Michael Wolf, Northwestern University; Thembi Conner-Garcia and James Graumlich, University of Illinois College of Medicine at Peoria, **Medtable™: An EMR-Based Tool to Support Collaborative Planning for Medication Use**
11. Kelly Caine and Rima Hanania, Indiana University, **Patient Preferences for Granular Control Over Personal Health Information in EMRs**
12. Andrea Cassano-Piché, Mark Fan, and Anthony C. Easty, University Health Network, **Mitigating Risks Associated With Administering Multiple Infusions: Methods for Organizing**

- and Analyzing a Large, Highly Interconnected Field Data Set**
13. Russell J. Branaghan, Arizona State University; Emily A. Hildebrand, Phoenix VA Hospital; Qiawen Wu, Cognitive Engineering Research Institute, **The Trouble With Reusable Medical Equipment: The Case of Endoscopes**
 14. Scott Wood and Aartee Ignaczak, VHA Office of Informatics and Analytics, **Simulation Methods to Teach Patient Safety**
 15. Sallie J. Weaver, Asad Latif, and Peter J. Pronovost, Armstrong Institute for Patient Safety & Quality and Johns Hopkins School of Medicine, **Physician Perceptions of Workload: The Effects of Unit Type and Individual Differences in Training and Tenure**
 16. Frank Mazza and Judy Kitchens, Seton Healthcare Family, **Road to Zero Preventable Birth Injuries**
 17. Ken Catchpole, Cedars-Sinai Medical Center; Doug Wiegman, Sacha Duff, and Renaldo Blocker, University of Wisconsin-Madison; Danny Shouhed, Eric Ley, Jennifer Blaha, and Bruce Gewertz, Cedars-Sinai Medical Center, **Observation of Process, Teamwork, and Error in Surgery: A Measurement Framework**
 18. Yuan Zhang (presented by Alicia Kurowski), University of Massachusetts, Lowell, **Sleep Quality Among Employees in Long-Term Care Centers: The Contribution of the Work Environment**
 19. Marc Resnick, Bentley University, **The Effect of Affect: Understanding the Impact of Emotional Context on Emergency Room Decision Making**
- Health-Care Information Technology*
20. Dean Karavite, Robert W. Grundmeier, and Alexander G. Fiks, The Children's Hospital of Philadelphia, **A Comprehensive Approach to Comprehensive Decision Support**
 21. Onur Asan and Enid Montague, University of Wisconsin, Madison, **An Analysis of Patient-Physician Information Sharing and Collaboration**
 22. Wayne Zachary and Russell Maulitz, CMZ Health Technologies, **Cognitive Interaction Analysis of Clinical Encounters**
 23. Timothy R. McEwen and John M. Flach, Wright State University; Nancy Elder, University of Cincinnati, **Development and Evaluation of an Ecological Display for the Detection, Evaluation, and Treatment of Cardiovascular Risk**
 24. Drew Link, Margaux M. Price, Leo Gugerty, and Jennifer Parham-Mocello, Clemson University; Dorritt Billman, NASA Ames Research Center, **Effects of Domain Knowledge in Searching for Internet Health Information**
 25. Michael F. Rayo, Jr. and David Woods, Ohio State University; Matthew Weinger, Vanderbilt University; Emily S. Patterson, Ohio State University, **Escaping Alarm Overload**
 26. Blake Lesselroth, Kathleen Adams, and Victoria Church, Portland VA Medical Center, **Evaluation of Point-of-Care Technologies Supporting Inpatient Admission Medication History Collection: Automatic Patient History Intake Device (APHID)**
 27. Corey Bain, Kaiser Permanente, **Implementation of EMR System in Health-Care Facilities**
 28. Taylor Anderson, Cheryl Bolstad, and Mica Endsley, SA Technologies, Inc., **Situation Awareness-Oriented Design (SAOD) and the CDC BioPHusion Center**
 29. Erik Pupo, Deloitte, **Using Clinical Information Models to Improve Health Information Exchange Usability**
 30. Emily Polander, Wright State University, **"We're Bringing Bio Back": Putting Biomedical Back into Lay Mental Models of Alcoholism**
 31. Marissa A. Vallette and Barrett S. Caldwell, Purdue University, **Activity Cycles and Information Alignment**
 32. Elizabeth T. Newlin-Canzone, Martina Balestra, Maggie Lohnes, and Robert McCready, The MITRE Corporation, **Applying Human Factors Principles to the Design of an Open-Source Software System to Report Clinical Quality Measures**

Medical Device Design

33. R. Reade Harpham and Chad Gibson, Battelle, **Easy to Use Is Not Enough**
34. David Morris, Jennifer Martin, and John Crowe, University of Nottingham, **A Framework for Placing a Value on the Usability of Medical Devices**
35. Beth Lyall, Greg Harron, and Rebekah Vint, Research Integrations, Inc., **A Systematic Approach to Addressing Human Factors Considerations Applicable to the Design of Medical Devices**
36. Robert Tannen, Bresslergroup, **Designing Medical Devices for Healthcare Provider Safety**
37. Bernadette McCrory, Bethany R. Lowndes, and Elizabeth Thraillkill, University of Nebraska-Lincoln; Chad A. LaGrange, University of Nebraska Medical Center; M. Susan Hallbeck, University of Nebraska-Lincoln, **Competitive Usability Testing of Single-Site Surgery Access Devices**
38. Jennifer Martin, University of Nottingham, **Designing Medical Devices for Home and Patient Use**
39. Adriana Petrova and Semra Peksoz, Oklahoma State University, **Development of a Medical Support Garment for a Patient With Giant Omphalocele**
40. Robert J. Stephens, National Center for Human Factors Engineering in Healthcare; Rollin J. (Terry) Fairbanks, National Center for Human Factors Engineering in Health Care/Georgetown University; Theresa Guarrera, University at Buffalo, SUNY; A. Zach Hettinger, National Center for Human Factors Engineering in Healthcare, **Difficulties of Mass Customization in Medical Devices: Case Review of a Glucose Management Incident**
41. Rochelle Mendonca, University of the Sciences in Philadelphia; Roger O. Smith, University of Wisconsin-Milwaukee, **Development of a Methodology to Measure the Accessibility of Medical Devices: The MED-AUDIT (Medical Equipment Device Accessibility and Universal Design Information Tool)**
42. Richard A. Tauson, U.S. Army Research Laboratory, **Evolution of a Litter Lift System in Military Ambulances**
43. James A. Kleiss, Emil Georgiev, and Scott Robinson, GE Healthcare, **Relating Auditory Device Signals to Medical Messages Using Semantic Profiling**

Tuesday, March 13
8:30 to 10:00 a.m.

**PATIENT AND HEALTH-CARE PROVIDER
SAFETY TRACK**

**Session 4 – Identifying and Assessing Patient
Safety Hazards**

Tuesday, March 13, 8:30 to 10:00 a.m.

Chair: Laura Moody, Mercer University

1. Stephanie Terezakis, Johns Hopkins University,
**Improving Patient Safety in Radiation
Oncology: Simple Tools for a Complex
Discipline** (*Invited*)
2. Joe Deeter, Rochester General
Hospital/Rochester Institute of Technology; Esa
Rantanen, Rochester Institute of Technology,
Human Reliability Analysis in Health Care
3. Shawna Perry, Virginia Commonwealth
University Health System; Rollin (Terry)
Fairbanks, National Center for Human Factors
Engineering in Healthcare; Sandra S. McDonald,
Shands Jacksonville, **RCA in the Wild:
Challenges of Utilizing Root Cause Analysis in
Health Care**

**HEALTH-CARE INFORMATION
TECHNOLOGY TRACK**

Session 4 – Policy and Certification

Tuesday, March 13, 8:30 to 10:00 a.m.

Chair: Bob Schumacher, User Centric

1. Sharona Hoffman, Case Western Reserve
University, **Meaningful Use and Certification
of Health Information Technology: What
About Safety?** (*Invited*)
2. Steven D. Harris, Rational Healthcare; Robert A.
North, Human Centered Strategies, LLC,
**Mining MAUDE: Perspectives on EHR and
Device Design From the FDA**
3. Richard Horst, UserWorks, Inc., **The Usability
Certification Quandary in Health Care**

MEDICAL DEVICE DESIGN TRACK

**Session 4 – Panel: Lessons in Implementing
Human Factors in the Medical Device Industry**

Tuesday, March 13, 8:30 to 10:00 a.m.

Chair: Stephen B. Wilcox, Design Science

Moderator: Rob Albert, GE Healthcare;

Comoderator: Edwin Madigan, McKesson

Panelists: Edmond W. Israelski, Abbott Labs; Cindy
A. Miller, GE Healthcare; Eric Bergman,
LifeScan, Inc.; Merrick Kossack, Intuitive
Surgical; Bonnie Hautamaki, McKesson

BREAK – 10:00 to 10:30 a.m.

Tuesday, March 13
10:30 a.m. to 12:00 noon

**PATIENT AND HEALTH-CARE PROVIDER
SAFETY TRACK**

**Session 5 – Human Factors Interventions to
Improve Patient Care**

Tuesday, March 13, 10:30 a.m. to 12:00 noon

Chair: Enid Montague, University of Wisconsin-
Madison

1. Andrea Cassano-Piché, Rachel White, and
Anthony C. Easty, University Health Network, **A
Collaborative, Multijurisdictional Prospective
Study of Safety Risks in Canadian
Ambulatory Intravenous Chemotherapy
Centers**
2. Catherine Campbell, Children's Hospital of
Eastern Ontario/Carleton University; Avi Parush
and Thomas Garvey, Carleton University;
Jacqueline Ellis, Children's Hospital of Eastern
Ontario/University of Ottawa; Régis
Vaillancourt and Daniel Lebreux, Children's
Hospital of Eastern Ontario, **Addressing Risk
Factors in Morphine Administration: A
Collaborative Prototyping Approach**
3. Charlene Deuber, Children's Hospital of
Philadelphia; Ayse Gurses, The Johns Hopkins
University Quality and Safety Research Group;
John Chuo, Children's Hospital of Philadelphia,
**Increasing Compliance With Oxygen
Saturation Targets to Improve Safety in Very
Preterm Infants**

HEALTH-CARE INFORMATION TECHNOLOGY TRACK

Session 5 – Design and Usability

Tuesday, March 13, 10:30 a.m. to 12:00 noon

Chair: Bob Schumacher, User Centric

1. David Brick, Village Cardiology, **Why Usability Is Important: A Perspective From the Front Line** (*Invited*)
2. Mary Kate Foley, Athena Health, **Design and Usability of Health Records: Tales From the Front** (*Invited*)
3. Varuna Prakash and Patricia Trbovich, University Health Network, **Designing Health Care IT for Interruption-Filled Environments: Redesigning Interface Elements of a Chemotherapy Medication System**

MEDICAL DEVICE DESIGN TRACK

Session 5 – Testing Methodologies Compliant With Regulatory Expectations

Tuesday, March 13, 10:30 a.m. to 12:00 noon

Chair: Ron Kaye, FDA

1. Korey Johnson, User Centric, Inc., **Formative Usability Testing With a Purpose: More Than Just a Checkbox**
2. Gavin Lew, User Centric, Inc.; Ed Israelski, Abbott; Paul Pribatz, Northwestern University, **Improving Use Error Identification by Adding Simulated Use and Environmental Cues to FMEA**
3. Merrick Kossack, Intuitive Surgical, **Complex Device Validation Testing Challenges for Premarket Approval** (*Invited*)

LUNCH – 12:00 noon to 1:30 p.m.

**Tuesday, March 13
1:30 to 3:00 p.m.**

PATIENT AND HEALTH-CARE PROVIDER SAFETY TRACK

Session 6 – Improving Health Care Using Human Factors

Tuesday, March 13, 1:30 to 3:00 p.m.

Chair: Robert Stephens, MedStar's National Center for Human Factors Engineering in Healthcare

1. Leo C. Rotello, Johns Hopkins Community Physicians, **The Impact of Human Factors at the Patient Bedside: From Research to Reality** (*Invited*)
2. Michael Smith, Traber Giardina, and Hardeep Singh, Houston VA HSR&D Center of Excellence, **Overcoming Barriers in Health Care: Strategies for Resilience in Coordination of Follow-Up for Cancer Diagnosis**
3. Robert L. Wears, University of Florida, **Joint Cognition in the Emergency Department: Implications for Safety and Quality** (*Invited*)

HEALTH-CARE INFORMATION TECHNOLOGY TRACK

Session 6 – Organizing the Enterprise to Deliver Better Usability

Tuesday, March 13, 1:30 to 3:00 p.m.

Chair: Janine Purcell, Philips Healthcare

1. Nancy Staggers, University of Maryland, **Solving Wicked Problems in HIT With a Usability Maturity Model** (*Invited*)
2. Teresa Zayas-Cabán and Kevin Chaney, Agency for Healthcare Research and Quality; Ritu Agarwal, Catherine Anderson, Kenyon Crowley, and P. K. Kannan, University of Maryland, **Improving Consumer Health IT Application Development: Lessons From Other Industries**
3. Ruthann Lipman, Lake Erie College of Osteopathic Medicine; Robert Budacki, ENT Specialists of Northwest PA; David Eibling, University of Pittsburgh, **Re-Engineering the Health Care Team: The Effect of Assigning Information Tasks to a New Team Member**

MEDICAL DEVICE DESIGN TRACK

Session 6 – Special Challenges in the Design and Testing of Surgical Instruments

Tuesday, March 13, 1:30 to 3:00 p.m.

Chair: Cindy Miller, GE Healthcare

1. Mike Ballash, Sharon Branch, Carinne Granchi, and Michael Conditt, MAKO Surgical, **Ergonomics of Robotic Orthopedic Surgery: A Program to Simultaneously Improve Operating Room Efficiency and Quality of Care**

2. Ben Andrack, Trevor Byrnes, Martin Weide, Luis E. Bernal Vera, Gerold Bausch, and Werner Korb, University of Applied Sciences, **Use of a Surgeon as a Validation Instrument: Haptic Interaction Analysis in a High-Fidelity Simulation Environment**
3. Dan Haberstitch and Cory Kimball, Ethicon Endo-Surgery, **Applying Human Factors in the Surgical Environment** (*Invited*)

BREAK – 3:00 to 3:30 p.m.

**Tuesday, March 13
3:30 to 4:30 p.m.**

PATIENT AND HEALTH-CARE PROVIDER SAFETY TRACK

Session 7 – Physical Ergonomics in Health Care

Tuesday, March 13, 3:30 to 4:30 p.m.

Chair: Sarah Parker, MedStar's National Center for

1. Arthur St. Andre, Washington Hospital Center/MedStar Health, **A Clinician's Perspective on the Hospital Built Environment Now and in the Future** (*Invited*)
2. Susan Biesbroek, Jonas Shultz, Andrew W. Kirkpatrick, and John Kortbeek, Alberta Health Services, **Human Factors Evaluation of an Interventional Trauma Operating Room Mockup**

HEALTH-CARE INFORMATION TECHNOLOGY TRACK

Session 7 – Cases in Point: HIT Applications

Tuesday, March 13, 3:30 to 4:30 p.m.

Chair: Janine Purcell, Philips Healthcare

1. David Eibling, University of Pittsburgh/VA Pittsburgh, **Voogle: A Query-Based Application That Rapidly Locates, Accesses, and Aggregates VA Patient Information to Reduce Provider Cognitive Load**
2. Jenna Marquard, University of Massachusetts Amherst; Barry Saver, University of Massachusetts Medical School; Brian Amster and Junghee Jo, University of Massachusetts Amherst; Peggy Preusse, Diane Kirk, and Lawrence Garber, Fallon Clinic, **In-Home Observations of Patients' Uptake and Use of**

the CONDUIT-HID Consumer Health Informatics Interventions

MEDICAL DEVICE DESIGN TRACK

Session 7 – Instructions for Use: Design and Testing Considerations

Tuesday, March 13, 3:30 to 4:30 p.m.

Chair: Bob North, Human Centered Strategies

1. Pat Patterson, Agilis Consulting, **Keep Reading! Designing and Validating Effective User Instructions and Manuals** (*Invited*)
2. Tony Fernandes, UE Group, **When IFUs Are Critical: Design for a Personal Drug Delivery Product**

BREAK – 4:30 to 4:45 p.m.

**Tuesday, March 13
4:45 to 6:00 p.m.**

POSTER SESSION 2& RECEPTION

Tuesday, March 13, 4:45 to 6:00 p.m.

Patient and Health-Care Provider Safety

1. Denny Yu, Adam Frischknecht, Steve Kasten, and Thomas Armstrong, University of Michigan, **Standardizing Surgeon Technique: Finding Critical Variations for Training and Assessment**
2. Jennifer Moore, Larry Avery, and Thomas Aten, BMT Designers & Planners; Darren Wilson, Department of Homeland Security; James Green, National Institute for Occupational Safety & Health; Allison Jacobs, BMT Designers & Planners, **The Application of Human Factors Engineering and Crashworthiness Research to the Development of Ambulance Design Standards**
3. Marnie Myhre, Fairview Health Services, **The Other 21st-Century Health-Care Issue: An Interactive Ergonomic Workshop to Address the Problem of Workplace Injuries**
4. Michelle Bryant and Anne McLaughlin, North Carolina State University; Fran Walsh, Kimberly Clark, **The Role of Knowledge, Beliefs, and Surface Types on the Risk Judgments of Environmental Service Workers**

5. Roger J. Chapman, Lesley Taylor, and Scott Wood, Veterans Health Admission, **Using Norman's Stages of User Activity to Trace and Catalog Errors From Reported Patient Safety Informatics Adverse Events**
6. Susan Biesbroek, Alberta Health Services; Elise Teteris, University of Calgary, **A Human Factors Review of the EMS Ground Ambulance Design**
7. Alicia Kurowski, Bryan Buchholz, and Laura Punnett, University of Massachusetts-Lowell, **A Physical Workload Index to Evaluate a Safe Resident Handling Program for Clinical Staff in Nursing Homes**
8. Jonathan Jolly and Emily A. Hildebrand, Phoenix VA Hospital/Arizona State University; Russell J. Branaghan, Arizona State University, **Mandatory Usability Testing of Manufacturers' Reprocessing Instructions for Reusable Medical Equipment (RME)**
9. Richard Horst, UserWorks, Inc., **Recruiting Qualified Participants for Health-Care Human Factors**
10. Sacha Duff and Renaldo Blocker, University of Wisconsin-Madison; Ken Catchpole, Cedars-Sinai Medical Center; Doug Wiegman, University of Wisconsin-Madison; Danny Shouhed, Eric Lay, Jennifer Blaha, and Bruce Gewertz, Cedars-Sinai Medical Center, **Transactive Memory as a Theoretical Framework Underpinning the Significance of Flow Disruption Data for System Analysis**
11. Munira Jessa, Alberta Health Services; Julia Hendry, Calgary Laboratory Services; Jonas Shultz, Susan Biesbroek, and Jason Kumagai, Alberta Health Services, **Visual Interventions to Communicate Critical Information in Transfusion Medicine**
12. David Eibling, University of Pittsburgh/VA Pittsburgh; Linda Cicconi, VA Pittsburgh; Michael Mangione, University of Pittsburgh/VA Pittsburgh, **Standardized Color Coding Back Table Solutions in an Operating Room**
13. Jacqueline Loweree-Schmitz, Natalia V. Espino, Paulina Cano, Arunkumar Pennathur, and Luis R. Contreras, University of Texas at El Paso; Rebeca Ramos and Rosalba Ruiz-Holguin, Alliance for Border Collaboratives, **Community**

Health Workers in Low-Resource Settings: A Work Systems Perspective

Medical Device Design

14. Rosalee Meyer, David Wourms, and James Gleeson, Battelle, **Force and Torque Data Collection From Limited Hand Strength Populations for Medical Device Design**
15. Meera Ramachandran and Sashidharan Komandur, Clemson University, **Survey of Anthropometric Data Collection Methods on Indian Population for Design of Proportional Medical Devices**
16. Lee Leichter, P/L Biomedical, **Lessons Learned Applying Human Factors to Drug Delivery Products**

Health-Care Information Technology

17. Enid Montague and Jie Xu, University of Wisconsin-Madison, **Care Provider and Patient Trust in Health Technology: Implication From an Experimental Study of Passive Users**
18. Lacey Colligan, University of Virginia; Henry Potts, University College London; Robert A. Sinkin, University of Virginia, **Changes in Cognitive Workload of Pediatric Nurses During Implementation of a Vendor-Built Electronic Health Record**
19. J. G. Dwyer and E. S. Heitmiller, Johns Hopkins Medicine, **Controlled Substance Reconciliation Improvement Initiative Following Introduction of Electronic Anesthesia Data Record Implementation**
20. Yuval Bitan and Michael F. O'Connor, University of Chicago, **Correlating Data From Different Sensors to Increase the Positive Predictive Value of Alarms: An Empirical Assessment**
21. Michelle R. Rogers, Margaret O'Neill, and Renee Turchi, Drexel University, **Development of a Decision Support Tool for Primary Care Providers in Pediatric Obesity Management**
22. Marc L. Resnick and Panagiotis Kapasakalidis, Bentley University, **Development of an Electronic Patient Record Selection Instrument**

23. Rochelle Mendonca, University of the Sciences in Philadelphia; Roger O. Smith, University of Wisconsin-Milwaukee, **Effects of Accessibility Labeling on Medical Device Purchase Decisions of Individuals With Disabilities**
 24. Theresa Guarrera, University at Buffalo, SUNY; Robert Stephens and Lindsey Clarke, National Center for Human Factors Engineering in Health Care; Nicolette McGeorge, University at Buffalo, SUNY; Rollin J. (Terry) Fairbanks, National Center for Human Factors Engineering in Health Care/Georgetown University; Shawna Perry, Virginia Commonwealth University; Robert Wears, University of Florida/Imperial College London; Li Lin and Ann Bisantz, University at Buffalo, SUNY, **Engineering Better Health IT: Cognitive Systems Engineering of a Novel Emergency Department IT System**
 25. Jessica Wardlaw and Muki Haklay, University College London, **Supporting Decision Making Through the User Interface: Health Information Technology in a Public Health-Care System Context**
 26. Leigh A. Baumgart, Ellen J. Bass, Jason A. Lyman, and John Voss, University of Virginia, **Supporting the Investigation of Clinical Practice Through Interactive Population-Based Reporting**
 27. Molly Schaeffer, Beyond the Box Solutions, Inc.; Barbara J Moore, Northeastern University, **User-Centered Design – Clothing the EMR Emperor**
 28. Xianjun Sam Zheng, Siemens Corporate Research/Tsinghua University; Stefan Christov, University of Massachusetts Amherst; Yu Sun, University of Alabama at Birmingham; Xiping Song, Siemens Corporate Research, **UWoN (User Workflow Notation): A Visualization Tool for User Workflow Analysis and Modeling for Developing Health-Care IT**
 29. Karen Dunn Lopez, University of Illinois at Chicago; Chieh-Li Chin, Rachael Ramsey, and Jordan Petry, University of Illinois Urbana-Champaign; William Schuh, Carle Foundation Hospital; Daniel Morrow, University of Illinois Urbana-Champaign, **Effects of an EHR System in an Urgent/Convenient Care Clinic: Implications for Redesign**
 30. Priyadarshini Pennathur, Johns Hopkins University; Yan Xiao, Baylor Health Care System; Michelle MacDonna, Sharon Owens, and Ayse P. Gurses, Johns Hopkins University, **Multidisciplinary Discharge Communications: To Structure or Not to Structure?**
 31. Jennifer Cloud-Buckner and Jennie J. Gallimore, Wright State University, **Safety in Managing Patient Test Data: Assessing Perceptions, Attitudes, and Actions**
- Medical Device Design*
32. Tracy L Mitzner, Jenay M Beer, Cory-Ann Smarr, Charles C Kemp, and Wendy A. Rogers, Georgia Institute of Technology, **Mobile Manipulators: An Emerging Class of Robots for Health and Medicine**
 33. Thomas K. Ferris and Mardelle Shepley, Texas A&M University, **Multidisciplinary Human-Centered Approach to the Design of Incubation Systems**
 34. Chris Vincent and Ann Blandford, University College London; Yunqiu Li, Swansea University, **QOC-E: A Mediating Representation to Support the Development of Shared Rationale and Integration of HF Advice**
 35. Jennifer Wagner, VA Nebraska Western Iowa Health Care System/MidWest Mountain Veterans Engineering Resource Center, **Real-World Usability Assessment**
 36. Atish Rajkomar and Ann Blandford, University College London, **Understanding Situated Interactions of Lay Users With Home Hemodialysis Technology**
 37. Philip Roman, University of Maryland; Yasser M. Dahab and Peter J. Pronovost, Johns Hopkins Hospital, **Monitors, Alarms, and Goal-Directed Care: The Special Case of the Perioperative Patient**
 38. Chun Wu, University of Toronto; Jennifer Jeon and Joseph Cafazzo, University Health Network; Catherine M. Burns, University of Waterloo, **Work Domain Analysis for Designing a Radiotherapy System Control Interface**

39. Alexandra Rosewall Lang, Jennifer Martin, John Crowe, and Sarah Sharples, University of Nottingham, **Codesigning With an Adolescent Medical Device User: Meeting the Needs of Young Users Through Inclusive Medical Device Design Practices**

Patient and Health-Care Provider Safety

40. Erik Prytz, Rebecca A. Kennedy, Mark W. Scerbo, and Michael Montano, Old Dominion University, **A Secondary Task for Measuring Mental Workload in Laparoscopy**
41. Brittany L. Anderson-Montoya, Mark W. Scerbo, Rebecca Kennedy, and Lee A. Belfore II, Old Dominion University; Alfred Z. Abuhamad, Stephen S. Davis, and Suneet P. Chauhan, Eastern Virginia Medical School, **A Simulator for Fetal Heart Rate Monitoring**
42. Robert Turner and Mark Scerbo, Old Dominion University; Gayle Gliva-McConvey and Patrick Walker, Eastern Virginia Medical School, **Addressing Conflicts Among Health-Care Professionals Through Simulation With Standardized Health-Care Professionals**

**Wednesday, March 14
8:30 to 10:00 a.m.**

**Session 8 – Joint Panel Discussion: Challenges in
Home Health Care**

Wednesday, March 14, 8:30 to 10:00 a.m.

Chair: Vicki Lewis, MedStar's National Center for
Human Factors Engineering in Healthcare

Panelists: K. Eric Dejonge, Washington Hospital
Center; M. Chris Gibbons, Johns Hopkins Urban
Health Institute; Mary Brady, U.S. Food and
Drug Administration; Wendy A. Rogers,
Georgia Institute of Technology; Lisa Winstel,
National Family Caregivers Association

BREAK – 10:00 to 10:30 a.m.

**Wednesday, March 14
10:30 a.m. to 12:00 noon**

**CLOSING PLENARY SESSION: FDA HUMAN
FACTORS Q & A**

Wednesday, March 14, 10:30 a.m. to 12:00 noon

Chair and Moderator: Anthony D. Andre, Interface
Analysis Associates

Panelists: Ron Kaye & Quynh Nhu Nguyen, U.S.
Food and Drug Administration