

# MONDAY, MARCH 25

v 1.25.19 - 3:23 EST

## OPENING PLENARY SESSION

8:30-10:00 a.m.

Chairs: Joseph R. Keebler, Chair & Anthony D. (Tony) Andre, Co-Chair

Keynote Address: **Richard Cook, MD**

## CCIT1 - Looking to the Future

Clinical and Consumer Health Care IT Track

Monday, March 25, 10:30 a.m.-12:00 p.m.

**Chair:** Clayton Rothwell, The Ohio State University

Lecture and Debate

1. **Beyond Disease: Technologies for Health Promotion**, Richard Holden (Indiana University School of Medicine), Rupa Valdez (University of Virginia)
2. **Predicting mortality with applied machine learning: Can we get there? Predicting mortality with applied machine learning: Can we get there?**, Emily Patterson (Ohio State), Theodore Allen (Ohio State), Christopher Hansen (Ohio State)

## HE1 - Building Human Factors Capabilities within a Hospital System: Lessons Learned Panel

Hospital Environments Track

Monday, March 25, 10:30 a.m.-12:00 p.m.

**Chair:** Michael Rayo, The Ohio State University Panel

1. **Building Human Factors Capabilities Within a Hospital System: Lessons Learned**, Michael Rayo, James Won (Children's Hospital of Philadelphia), Sarah Parker (Carillion Clinic), Matthew Weinger (Vanderbilt University), Rollin "Terry" Fairbanks (Medstar Health)

## MDD1 - IFU Formatting: Human Capabilities and Limitations

Medical and Drug-Delivery Devices Track

Monday, March 25, 10:30 a.m.-12:00 p.m.

**Chairs:** Allison Strochlic, Emergo by UL & Kevin M. Ten Brink, Intuitive Surgical  
Sponsor Presentation and Panel

1. **Sponsor Presentation: How does it all unfold? The role of format layout in the user experience of medical instructions**, Trevor Johnson, Lead, Ipsos Human Factors and User Experience & Rebecca Williamson, PhD, Lead, Ipsos Human Factors and User Experience
2. **FDA Guidance vs. Available Data on Human Capabilities and Limitations**, Charles Mauro (Mauro Usability Science), Keith Karn, Bruce Bradtmiller (Anthrotech), Megan Conrad (University of Detroit Mercy)

## PSRI1 – Healthcare Improvement Programs

Patient Safety Research and Initiatives Track

Monday, March 25, 10:30 a.m.-12:00 p.m.

**Chair:** Michael Harris, Ipsos

Lecture Session

1. **PCORI Invited Speaker (Denise Neu): Need Title**
2. **Development of a Leadership in Healthcare Improvement Program for Residents and Fellows**, (Tara Cohen, Sarah Francis, Elizabeth Lazzara, Barbara Chaparro, Joseph Keebler, Bruce Gewertz)

## PSRI10 – Information Exchange and Patient Centered Care

Patient Safety Research and Initiatives Track

Monday, March 25, 10:30 a.m.-12:00 p.m.

**Chair:**

Lecture Session

1. **Factors affecting nurse perception of shift handoff quality in critical care**, Shirley Burton (University of Illinois at Chicago), Joanna Abraham (Washington University in St. Louis)
2. **The Upside Down Hospital-What if patients owned their medical records? Co-Production of Safety with Patients and Families**, Chris Subbe, Paul Barach
3. **Measuring the Amounts of Information During Mass Casualty Incidents**, Omer Perry (Ben-Gurion University of the Negev), Eli Jaffe, Magen-David-Adom, Yuval Bitan (Ben-Gurion University of the Negev)

## CCIT2 - Usability, Adoption, and Workflow

Clinical and Consumer Health-Care IT Track

Monday, March 25, 1:30-3:00 p.m.

**Chair:** Laura Militello, Applied Decision Science

Lecture Session

1. **Cognitive Usability Evaluation of Electronic Health Record Systems**, Mark Pfaff (MITRE Corporation), Amanda Anganes (MITRE Corporation), Ozgur Eris (MITRE Corporation), Merry Ward (Department of Veterans Affairs), Jonathan Nebeker, (University of Utah)
2. **Enhancing Nursing EHR Documentation via Time-Motion Studies**, Megan Carter
3. **Three Techniques to Advance Usability Evaluation Methods for Clinical IT**, Alissa L. Russ

## **HE2 - Designing a safer and more ergonomic operating room using simulation in a Patient Safety Learning Lab (PSLL)**

Hospital Environments Track

Monday, March 25, 1:30-3:00 p.m.

**Chair:** Anjali Joseph, Clemson University Panel

Anjali Joseph, Kevin Taaffe (Clemson University), David Neyens (Clemson University), Jeff Brady (Agency for Healthcare Research and Quality), Kerm Henriksen (Agency for Healthcare Research and Quality)

## **MDD2 - User research on sensitive topics; identification of known use-related issues**

Medical and Drug-Delivery Devices Track

Monday, March 25, 1:30-3:00 p.m.

**Chair:** Reade Harpham, Priority Designs

Lecture Session

1. **The Difficult Arts of Awkward Research,** Jessica Willing-Pichs
2. **Making sense of known use problems and complaint data,** Erin Davis, Alexandria Trombley (EMERGO by UL, formally known as UL-Wiklund)
3. **Exploring social media to discover medical equipment usability issues and error-tolerant design characteristics,** Helen Fuller (Department of Veterans Affairs), Tim Arnold (Department of Veterans Affairs)

## **MDD10 – User Centered Design Approaches**

Medical and Drug-Delivery Devices Track

Monday, March 25, 1:30-3:00 p.m.

**Chair:** Steve Wilcox, Design Science Consulting LLC

Lecture Session

1. **Mind if I Awkwardly Watch You for Four Hours? Obstacles and Challenges in Contextual Research?,** Conall Dempsey (Bresslergroup), Maddy Ross (Bresslergroup)
2. **Human Factors Guidelines for Mobile Health Applications,** Natalie Abts, Russell Branaghan (Arizona State University)
3. **How do We Design for Distracted Users?: Inattention errors in the PCA model,** Kate MacNamee (Farm Design)

## **PSRI2 - Patient- and Family-Centered Care**

Patient Safety Research and Initiatives Track

Monday, March 25, 1:30-3:00 p.m.

**Chair:** Brittany Anderson-Montoya, Atrium Health Panel and Lecture

1. **The Patient in Patient Safety: Clinicians' Experiences Engaging Patients as Partners in Safety,** Elizabeth Papautsky (University of Illinois at Chicago), Richard Holden (Indiana University School of Medicine), Rupa Valdez (University of

Virginia), Valerie Gruss (University of Illinois at Chicago), Jeff Panzer (AllianceChicago & Heartland Health Centers), Shawna Perry (University of Florida)

2. **A Thematic Analysis of Family Presence During Resuscitation (FPDR) in a Paediatric Population,** Amanda Deacon, Elaine Gilfoyle (University of Calgary), Tom O'Neill (University of Calgary)

## **CCIT3 – Student Session**

Clinical and Consumer Health-Care IT Track

Monday, March 25, 3:30-4:30 p.m.

Special Session

Three finalists will present their work, followed by the results of the judging.

## **HE3 – Human Factors Integration into Primary Care Clinic Build**

Hospital Environments Track

Monday, March 25, 3:30-4:30 p.m.

**Chair:** Amy Graske, Children's Hospital of Wisconsin Panel

Amy Graske (Children's Hospital of Wisconsin), A. Joy Rivera (Children's Hospital of Wisconsin), Steve Pettit (Groth Design Group)

## **HE10 – Alarms and Adverse Events**

Hospital Environments Track

Monday, March 25, 3:30-4:30 p.m.

**Chair:** Christian Boxley, Medstar

Lecture Session

1. **Rural Hospital Nursing Skill Mix and Work Environment Associated with Frequency of Adverse Events: Evidence from a Multi-State Study,** Jessica Smith, Colin Plover (Thomas Jefferson University), Moira McChesney (University of Pennsylvania), Eileen Lake (University of Pennsylvania)
2. **Ergonomic Haptic Displays - Reducing Clinician Dependence on Patient Monitors and Auditory Alarms,** Parisa Alirezaee, Joseph Schlesinger (Division of Anesthesiology Critical Care Medicine), Jeremy Cooperstock (McGill University)

## **MDD3 - Pre-certifying excellence in digital health: human factors and user experience perspectives**

Medical and Drug-Delivery Devices Track

Monday, March 25, 3:30-4:30 p.m.

**Chair:** Korey Johnson, Bold Insight

Lecture Session

Korey Johnson, Bob Nesbitt (AbbVie), Mick Rakauskas (Baxter), Janet Ahn (Otsuka), Bakul Patel (FDA), Hannibey Wiyor (FDA)

**PSRI3 - Addressing Sexual Orientation and Gender Identify in Healthcare: Past Present and Prospective**

Patient Safety Research and Initiatives Track

Monday, March 25, 3:30-4:30 p.m.

**Chair:** Sylvain Bruni, Aptima Inc.

Panel

Brandyn Lau (Johns Hopkins Hospital), Dennis Li (Northwestern University), Noah Barasch (Johns Hopkins University)

**CCIT-POS1 – Posters/Reception**

Clinical and Consumer Health-Care IT Track

Monday, March 25, 4:30-6:00 p.m.

Posters/Reception

1. **Understanding Health Technology Use Challenges for Older Adults with Mobility or Visual Impairments**, Maurita Harris (University of Illinois at Urbana-Champaign), Elena Remillard (Georgia Institute of Technology), Lyndsie Koon (University of Illinois at Urbana-Champaign), Tracy Mitzner (Georgia Institute of Technology), Wendy Rogers (University of Illinois at Urbana-Champaign)
2. **Nursing Handovers in Critical Care: A Retrospective Analysis of Information Content and Function**, Emily Patterson, Anne McIntire (Ohio State University), Nicholas Beecroft (Ohio State University), Mary Beth Happ (Ohio State University), Susan Moffatt-Bruce
3. **Predicting Opportunities and Challenges Prior to Transitioning to Digital Pathology: An Interview Envisioning Study with 11 Pathologists**, Emily Patterson, Lauren Mansour (Ohio State University), Metin Gurcan (Medicine Wake Forest), Zaibo Li (Ohio State University), Anil Parwani (Ohio State University)
4. **Application of Fuzzy Decision Trees in Medical Decision Making Support Systems**, Paul Barach, MD, MPH, Vitaly Levashenko, PhD (University of Zilina, Zilina, Slovakia), Elena Zaitseva, PhD (University of Zilina, Zilina, Slovakia)
5. **Does Complexity of Surgery and Type of Surgeon Influence Patient Willingness to Undergo Surgery?**, Emily Anania, Stephen Rice (Embry-Riddle Aeronautical University), Mattie Milner (Embry-Riddle Aeronautical University)
6. **Towards the Design of a Smart Glasses Application for MICU Decision-Support: Assessing the Human Factors Impact of Data Portability and Accessibility**, Anthony Faiola (University of Illinois at Chicago), Ilyasse Belkacem (Université de Lorraine), Mary Bloodworth (University of Illinois at Chicago), Dani Bergey (University of Illinois at Chicago), Isabelle Pecci (Université de Lorraine), Benoît Martin (Université de Lorraine)
7. **Using a Human-Centered Design Approach to Create a Mobile Application to Reduce Stress in Students**, Ashley Loomis, Kyle Bowersock (DePaul University), Joe Vilanueva (DePaul University), Enid Montague (DePaul University)
8. **A Targeted Literature Review of Human Factors in Health Informatics Journals**, Elizabeth Papautsky, Shirley Burton (University of Illinois at Chicago)
9. **A Three-Dimension Usability Framework of Electronic Health Records (EHR) in Emergency Departments**, Mahdi Ebnali, Ann Bisantz (University at Buffalo)
10. **Can Human Factors Be Agile? Harmonizing Human Factors, Agile, and Design Controls.**, James Parker, Ambika Chou (Underwriter Laboratories)
11. **The Potential of Digital Assistants to Support Health Self-Management for Older Adults**, Kenneth Blocker (University of Illinois at Urbana-Champaign), Lyndsie Koon (University of Illinois at Urbana-Champaign), Sean McGlynn (Georgia Institute of Technology), Wendy Rogers (University of Illinois at Urbana-Champaign)
12. **IT in Large-scale Referral Prioritization: a case study in a public health care system in southeastern Brazil**, Rodrigo Arcuri Marques Pereira, Bárbara Bulhões Lopes de Andrade (Federal University of Rio de Janeiro), Catherine Burns (University of Waterloo), Mario Cesar Vidal (Federal University of Rio de Janeiro), Hugo Cesar Bellas (Oswaldo Cruz Foundation), Isabella Koster (Oswaldo Cruz Foundation), Alessandro Jatobá (Oswaldo Cruz Foundation), Paulo Victor Carvalho (Nuclear Engineering Institute)
13. **Balancing Patient-Centered Design With the Clinical Realities of Implanted Device Data and Heart Failure Self-Management: Lessons Learned From a Multidisciplinary Team**, Victor Cornet (IUPUI School of Informatics and Computing), Davide Bolchini (IUPUI School of Informatics and Computing), Carly Daley (IUPUI School of Informatics and Computing), Richard Holden (Indiana University School of Medicine)
14. **Evaluating a technology support system for social engagement for Older Adults With and Without Cognitive Impairment**, Qiong Nie, Lydia Nguyen (UIUC), Dillon Myers (OneClick.chat), Alan Gibson (OneClick.chat), Chantal Kerssens (eyiapp), Raksha Mudar (UIUC), Wendy Rogers (UIUC)
15. **Telehealth and remote patient monitoring: Interface functionality and design considerations for patient support apps and**

- patient management portals**, Tobias Langer (Bold Insight), Korey Johnson (Bold Insight)
16. **What triggers health information search: A systematic analysis on the information needs, situations, technologies, and habits in health information search across the lifespan**, Anooosheh Ghazanfari (University of Illinois at Chicago), Jessie Chin (University of Illinois at Chicago)
  17. **Health Behavior Nudging Through Health Information Exposure and Information Search**, Jessie Chin, Ece Üreten (Hamburg University of Technology), Catherine Burns (University of Waterloo)
  18. **Uncertainty Management Among Older Adults with Heart Failure: Responses to Receiving Implanted Device Data using a Fictitious Scenario Interview Method**, Carly Daley (IUPUI School of Informatics and Computing, Parkview Mirro Center for Research and Innovation), Victor Cornet (IUPUI School of Informatics and Computing), Gauri Patekar (IUPUI School of Informatics and Computing), Swapnil Kosarabe (IUPUI School of Informatics and Computing), Davide Bolchini (IUPUI School of Informatics and Computing), Tammy Toscos (Parkview Research Center), Michael Mirro (Parkview Mirro Center for Research and Innovation, IUPUI School of Informatics and Computing, Parkview Research Center), Elizabeth Martin (Parkview Mirro Center for Research and Innovation), Romisa Rohani Ghahari (Parkview Research Center), Ryan Ahmed (Parkview Mirro Center for Research and Innovation), Amy Miller (IU School of Medicine), Richard Holden (Indiana University School of Medicine, Regenstrief Institute)
  19. WITHDRAWN
  20. **Tracking the Human Papillomavirus (HPV)-Vaccine Risk Misinformation: An Explorative Study to Examine How the Misinformation has merged, spread and vanished in User-Generated Content**, Jessie Chin, Chieh-Li Chin (University of Illinois at Urbana Champaign), Anooosheh Ghazanfari (University of Illinois at Chicago), Ganesh Jagadeesan (University of Illinois at Chicago), Ziyi Wang (University of Illinois at Chicago), Ana Ongtengco (University of Illinois at Chicago), Amy Chang (University of Illinois at Chicago), Bing Liu (University of Illinois at Chicago), Alan Schwartz (University of Illinois at Chicago), Rachel Caskey (University of Illinois at Chicago)
  21. **Cognitive Artifacts: Reviewing the Kardex® System**, Austin Mount-Campbell, Emily Patterson (The Ohio State University), David Woods (The Ohio State University), Kevin Evans (The Ohio State University), Susan Moffatt-Bruce (The Ohio State University)
  22. **A Discount Approach to Multi-Institutional Workflow Analysis to Inform Clinical Decision Support for Refugee Health**, Evan Orenstein, Katherine Yun (Children's Hospital of Philadelphia), Clara Warden (Children's Hospital of Philadelphia), Kavya Sundar (Children's Hospital of Philadelphia), Morgan Mirth (Children's Hospital of Philadelphia), Michael Westerhaus (University of Minnesota School of Medicine), Blain Mamo (Minnesota Department of Health), Jeremy Michel (Children's Hospital of Philadelphia)
  23. **A Qualitative Content Analysis to Understanding Patient Hygiene-Related Information Shared by Caregivers of Alzheimer's Patients on Online Peer Support Groups**, Manav Jain (Georgia Institute of Technology), Anvita Pudipeddi (Riverside High School), Shraddha Narasimha, Kapil Chalil Madathil (Clemson University)
  24. **Applying UCD and ZET to develop a cloud-based real time solution for air quality monitoring and its effects on child and maternal health in Mongolia**, Raphael Nobrega, Kristina De Vera (University of Waterloo), Ulziisaikhan Sereeter (IRIM Mongolia), Bataa Chuluunbaatar (UNICEF Mongolia), William Abi Abdallah (UNICEF Mongolia), Alex Heikens (UNICEF Mongolia), Plinio Morita (University of Waterloo)
  25. **Improving Clinical Experiences in Health Care with Journey Maps**, Kyle Maddox (Department of Veterans Affairs), Donna Baggetta (Department of Veterans Affairs), Kurt Ruark (Department of Veterans Affairs), Alice Mitchell (Department of Veterans Affairs)
  26. **Interprofessional Collaborative Practice: The Ultimate Distributed Cognition - It's Time to Integrate!**, Elizabeth Papautsky, Annette Valenta (University of Illinois at Chicago)
  27. **Can Eye Tracking be Used to Predict Performance Improvements in Simulated Medical Training? A Case Study in Central Venous Catheterization**, Scarlett Miller, Hong-En Chen (The Pennsylvania State University), Rucha Bihde (The Pennsylvania State University), Cassandra Sonntag (Penn State Hershey Medical Center), Jason Moore (The Pennsylvania State University), David Han (Penn State Hershey Medical Center)
  28. **The Importance of Testing Sets of Clinical Alarm Sounds to Provide Real-World HFE Impact**, Morgan Fitzgerald, Michael Rayo (The Ohio State University), Mahmoud Abdel-Rasoul

(The Ohio State University ), Susan Moffat-Bruce  
(Ohio State Wexner Medical Center)

## HE-POS1 – Posters/Reception

Hospital Environments Track

Monday, March 25, 4:30-6:00 p.m.

Posters/Reception

1. **A Macroergonomic Framework to Understand Team Cognition in Care Transitions**, Abigail R. Wooldridge, Pascale Carayon (University of Wisconsin-Madison), Peter Hoonakker (University of Wisconsin-Madison), Bat-Zion Hose (University of Wisconsin-Madison), Tom Brazelton (University of Wisconsin-Madison School of Medicine and Public Health), Benjamin Eithun (University of Wisconsin-Madison School of Medicine and Public Health), Joshua Ross (University of Wisconsin-Madison School of Medicine and Public Health), Jonathan Kohler (University of Wisconsin-Madison School of Medicine and Public Health), Michelle M. Kelly (University of Wisconsin-Madison School of Medicine and Public Health), Shannon Dean (University of Wisconsin-Madison School of Medicine and Public Health), Deborah Rusy (University of Wisconsin-Madison School of Medicine and Public Health), Ayse P. Gurses (Johns Hopkins University School of Medicine)
2. **Impact of Flow Disruptions in the Delivery Room**, Heidi Herrick, Scott Lorch (Children's Hospital of Philadelphia), Ken Catchpole (Medical University of South Carolina), Elizabeth Foglia (Children's Hospital of Philadelphia)
3. **Validity Assessment of a Real-Time Indicator of Task-Induced Fatigue among Novices in the Minimally-Invasive Surgery Environment**, Theresa Nguyen, Martina Klein (Texas Tech University), Eric Greenlee (Texas Tech University), Dixon Santana (Texas Tech University Health Sciences Center), John Griswold (Texas Tech University Health Sciences Center), Krishnanath Gaitonde (University of Cincinnati College of Medicine), Neal Ellis (Texas Tech University Health Sciences Center)
4. **Creating Meaningful Impact on Clinical Outcomes and Electronic Documents using Low-Cost Low-Tech Human Factors Solutions**, johnathan siew
5. **Identifying Environmental Challenges and Stressors for Emergency Physicians Using a Semi-Structured Survey Instrument**, Tracy Kim (National Center for Human Factors in Healthcare, MedStar Health ), Raj Ratwani (National Center for Human Factors in Healthcare, MedStar Health ), Rollin Fairbanks (Telehealth Innovation Center, MedStar Health ), Kathryn Kellogg (National Center for Human Factors in Healthcare, MedStar Health )
6. **The influence of stress responses on surgical performance and outcomes: the development of the surgical stress effects (SSE) conceptual framework**, Kristin Chrouser, Susan Hallbeck (Mayo Clinic College of Medicine), Melissa Partin (Minneapolis VA Health Care Center)
7. **Assessing User Needs in the Acute Rehabilitation Environment: A Methods Report on the development of the Acute Rehabilitation Environmental Assessment (AREA) Tool**, Lucy Stein, Ella Franklin (Medstar National Rehabilitation Hospital), Sung-tsan Yeh (Medstar National Rehabilitation Hospital), Olivia Orenca (Medstar National Rehabilitation Hospital), Matthew Kelly (Medstar National Rehabilitation Hospital), Yue-shan Yang (Medstar National Rehabilitation Hospital)
8. **Psychosocial Aspects of Workload in Nursing**, Esa Rantanen, Juanita Montoya (Rochester Institute of Technology)
9. **Association between Perceived Workload and Adverse Body Postures**, Luisa Nino, Frank Marchak (Montana State University), David Claudio (Montana State University)
10. **Patient Load in Cardiac Telemetry Monitoring: Pilot Study of Nurses' Vigilance Performance and Perceived Stress and Workload**, Matthew Nare (California State University, Long Beach), Gabriella Hancock (California State University, Long Beach)
11. **FUTURES: Forecasting the Unexpected Transfer to Upgraded REsources in Sepsis**, Alexa Profozich, Trevor Sytsma (Pepperdine University), Kristen Miller (MedStar Health), Laura Schubel (MedStar Health, National Center for Human Factors in Healthcare), Ryan Arnold (Drexel University College of Medicine), Muge Capan (Drexel University LeBow College of Business)
12. **The Burden of Emergency Medicine: Understanding the Perception of Workload in the Emergency Department and Its Impact on Medical Decision Making**, Miranda Prints (Pepperdine University), Alexa Profozich, Muge Capan (Drexel University LeBow College of Business), Daniela Fishbein (Sidney Kimmel Medical College at Thomas Jefferson University), Eric Stander (Drexel University College of Medicine), Ryan Arnold (Drexel University College of Medicine)
13. **Who is Responsible? Family Perspectives on Roles and Responsibilities in Critical Care**, Ummesalmah Abdulbaseer, Elizabeth Papautsky (University of Illinois at Chicago)

14. **Considering the Patient Context in Breastfeeding Education From a Human Factors Perspective**, Elizabeth Papautsky
15. **The Impact of Noise and Message Content on Message Elaboration of Psychiatric Help-Seeking Information – A Pilot Study**, Jun Rong Jeffrey Neo, Mardelle Shepley (Cornell University), Jeff Niederdeppe (Cornell University), Andrea Stevenson Won (Cornell University)
16. **NASA-TLX Assessment of Surgeon Workload Variation across Specialties**, Renaldo C. Blocker (Mayo Clinic), Katherine E. Law (Mayo Clinic), Bethany R. Lowndes (University of Nebraska Medical Center), Heidi Nelson (Mayo Clinic), M. Susan Hallbeck (Mayo Clinic)
17. **Surgeon Workload Prediction: Comparing the NASA and SURG TLX Instruments**, Bernadette McCrory, Bethany Lowndes, Kristin Chrouser (Minneapolis Veterans Affairs Health Care System), M. Susan Hallbeck
18. **Patient Care Rounds as a Conduit for Interpersonal Communication**, Milisa Manojlovich, Molly Harrod (Department of Veterans Affairs), Timothy Hofer (Department of Veterans Affairs), Megan Lafferty (University of Michigan), Sarah Krein (Department of Veterans Affairs)
19. **NASA-Task Load Index differentiates surgical approach: Opportunities for improvement in colon and rectal surgery**, Katherine Law (Mayo Clinic), Bethany Lowndes (University of Nebraska Medical Center), Renaldo Blocker (Mayo Clinic), Heidi Nelson (Mayo Clinic), Susan Hallbeck (Mayo Clinic)
20. **Biomechanical analysis of healthcare professionals during two common procedures for neonatal resuscitation**, Nicole Yamada, Anil Kumar (San Jose State University)
21. **Functional Analysis of Written Communication Needs for Inpatient Providers**, Evan Orenstein (Emory University School of Medicine), Naveen Muthu (Children's Hospital of Philadelphia), Subha Airan-Javia (University of Pennsylvania School of Medicine)
22. **Moving to Electronic Documentation in the PACU: A Work Domain Analysis Approach and Effective Results Communication**, Mario Iannuzzi, Jennifer Jeon (Sinai Health System)
23. **Developing Crisis Checklists in Hospital – Translating from Complicated to Complex Environments**, Chris Subbe, MD, PhD (Bangor University, UK), Paul Barach
24. **Use of Electroencephalography to Monitor Physician Workload and Burnout in the Operating Room: A Literature Review**, Boraan

Abdulkarim (St. Olaf College), Hunter Hawthorne, Katherine Law (Mayo Clinic), Renaldo Blocker

#### **MDD-POS1 – Posters/Reception**

Medical and Drug-Delivery Devices Track

Monday, March 25, 4:30-6:00 p.m.

Posters/Reception

1. **Experience a Live Design Review in AR/VR**, Larry Miller (219 Design), Dave Bim-Merle (219 Design)
2. **Improving cost effectiveness of Robotic Assisted Laparoscopic Prostatectomy (RALP)**, Federica Violi, Ashley Hughes (University of Illinois at Chicago)
3. **Development of Guidelines to Increase the Usability and Effectiveness of Medical Device Instructions**, Elizabeth Smyth, Kerrie Owens (Ipsos)
4. **Human Trust Factors in Robot-Assisted Surgery**, Svyatoslav Guznov, AaSHAE Eberle (AFRL), Anna Van Abel (AFRL), Marc Pfahler (GDIT)
5. **A pilot study of the shape of a mask sheet for adult women with their mouths open**, Mika Morishima (Kanazawa University), Tamaki Mitsuno (Shinshu university)
6. **Training Decay in Simulated-Use Studies: Research-Based Time Rationales**, Ryan Hilgers (BlackHagen Design), Nicholas Unger (BlackHagen Design)
7. **Contextual Inquiry: Experienced Based Best Practices**, Nicholas Unger, Thomas Hilgers (BlackHagen Design)
8. **The effectiveness of a wearable cardioverter defibrillator to alert patients using tactile, auditory, and visual cues during sleep**, Amanda Hall, Amanda Fonville (Kestra MedicalTechnologies, Inc. ), Judy Edworthy (Plymouth University Cognition Institute), Nigel Ball (Swedish Hospital ), Pam Breske (Kestra MedicalTechnologies, Inc. ), Laura Gustavson (Kestra MedicalTechnologies, Inc. )
9. **Case Studies and Considerations for Representing Training and Memory Decay in Simulated-Use Human Factors Validation Testing**, Patricia Anderson, Naomi Cherne (Core Human Factors, Inc)
10. **Dynamic Instructional Materials: How to Leverage Multimedia to Engage Your Users**, Lindsay Carrabine, Carmella Lee (Design Science), Christina Stefan (Design Science)
11. **Human Factors for Dx: Getting Started**, David Powers
12. **Speech as an Indicator of Cognitive Workload During an Upper Limb Task**, Christopher

Gaskins, Rodolphe Gentili (University of Maryland), Kimberly Kontson (Food & Drug Administration)

13. **Unstuck! Addressing Wicked Problems in Large Healthcare Systems through Embedded Design and Development Teams**, Robert Strouse, Kasandra Chambers (University of Michigan), Matthew Sapko (Nationwide Children's Hospital)
14. **Towards intelligent and accessible assistive hearing devices**, Qi Yang, Bill Chang (GN Hearing A/S), Greg Olsen (GN Hearing A/S)
15. WITHDRAWN
16. **A Pilot Study to Assess Ventilators Terminology as Proposed in ISO19223**, Reicelis Casares Li, Ece Üreten (Hamburg University of Technology), Steven Dain (University of Waterloo), Karl Weiss (Conestoga College ITAL), Catherine Burns (University of Waterloo)
17. **Participant diversity in human factors evaluations: Benefits, barriers, and identities**, Matthew Marber, Augustina Ativie (Medtronic)
18. **Defining End Users for Medical Device Testing - Why is it so difficult?**, Emily Hildebrand, Bryant Foster (Research Collective), Angela Muriset (Shire), Edmond Israelski (Consultant), FDA Representative (FDA)
19. **Human Factors Guidelines for Mobile Health Applications**, Natalie Abts, Russell Branaghan (Arizona State University)
20. **Improving Validity & Simulated Use Through Role-Playing During Summative Testing**, Shannon Halgren, Jody Solem (Sage Research & Design)
21. **Drawing the "Line" between Human Factors and Adjacent Disciplines**, Huiyang Li, Michael Lau (Insight Product Development), Wayne Ho (Healthcare Human Factors), Gerard Torenvliet (Medtronic)
22. **Study design and documentation in light of new European data privacy regulations**, Martin Rausch, Carolin A. Ruf (Sanofi-Aventis Deutschland GmbH), Molly Follette Story (Sanofi)
23. **Case Study: Improving Device Usability Through Understanding User Needs and Intuitiveness of Device Packaging**, Ronald Pollack
24. **When Answering the Usability Mail Isn't Enough**, Susan McDonald
25. **Best Practices for Reprocessing Usability Testing & User Manual Development**, Shannon Clark (UserWise, Inc.)
26. **Maintaining flexibility and prioritizing compliance with quality management**, Elizabeth Volk, Kelle Jardine (Phillips-Medisize)

## **PSRI-POS1 – Posters/Reception**

Patient Safety Research and Initiatives Track

Monday, March 25, 4:30-6:00 p.m.

Posters/Reception

1. **Checklist to Ensure Safe Opioid Prescribing in Primary Care - A Cognitive Aid for Clinicians**, Arthur Riba
2. **"But I didn't know!" How to Get Patients to Read Drug Pamphlets**, Mattie Milner, Stephen Rice (Embry-Riddle Aeronautical University), John Capps (Embry Riddle Aeronautical University), Scott Winter (Embry-Riddle Aeronautical University), Victoria Lew (Embry Riddle Aeronautical University)
3. **Safety Considerations in Oncology Care Coordination**, Onur Asan, Tina Yen (Medical College of Wisconsin)
4. **What Type of Person is Willing to Undergo a Teeth Cleaning with a Dental Robot?**, Stephen Rice, Rian Mehta (Florida Institute of Technology), Scott Winter, Emily Anania (Embry Riddle Aeronautical University), Mattie Milner, Nadine Ragbir (Embry Riddle Aeronautical University)
5. **Towards intelligent and accessible assistive hearing devices**, Qi Yang, Bill Chang (GN Hearing A/S), Greg Olsen (GN Hearing A/S)
6. **Leading Change in Healthcare: Identifying Change Leader Task Demands and Capabilities**, Amanda Woods, Margaret Luciano (Arizona State University), Thomas Aloia (University of Texas – MD Anderson Cancer Center), Eduardo Salas (Rice University)
7. **Testing an Occupational Fatigue Survey for Pharmacists**, Taylor Watterson, Michelle Chui (University of Wisconsin-Madison)
8. **Trauma, teams and telemedicine: Evaluating telemedicine and teamwork in a mass casualty simulation**, Rachel Mason, Ashley Hughes (University of Illinois at Chicago), Shirley Sonesh (Sonnschein Consulting, LLC), Megan Gregory (The Ohio State University), Eduardo Salas (Rice University), Antonio Marttos (University of Miami), Carl Schulman (University of Miami)
9. **Risky Business: Predicting patient mortality at a glance--insights from nurses and doctors**, Laura Schubel, Muge Capan (Drexel University), Ryan Arnold (Drexel University), Kristen Miller (MedStar Health)
10. **Mental Models and Clinical Decisions**, Yui-Yee Raymond, Edward Stuppel (University of Derby), Russell Branaghan (Arizona State University)
11. **Measuring mobility recovery following right-sided TKA: The first step in a neuroergonomic approach**, Emily Frankel (University of Nebraska)

Medical Center), Haley Kampschnieder (University of Nebraska Medical Center), Jennifer Merickel (University of Nebraska Medical Center), Matthew Rizzo (University of Nebraska Medical Center), Kevin Garvin (University of Nebraska Medical Center), Bethany Lowndes

**12. An application of task analysis to compare task performance and mobility of participants with Parkinson's Disease to healthy controls**, Haley Kampschnieder (University of Nebraska Medical Center), Emily Frankel (University of Nebraska Medical Center), Jennifer Merickel (University of Nebraska Medical Center), Matthew Rizzo, Danish Bhatti (University of Nebraska Medical Center), Bethany Lowndes

**13. Understanding and Mitigating Operating Room (OR) Interruptions**, Suzan Ayas (University of Toronto), Birsen Donmez (University of Toronto), Teodor Grantcharov (St. Michael's Hospital), Catherine Hogan (St. Michael's Hospital)

**14. Project Fal Ward: A Human Factors Ergonomics (HFE) Project**, Jeanne Louise Schonborn, Catherine Ward (Plymouth), Laura Pickup (Lp Human Factors Consultancy)

**15. Transitional Care Planning: A Pilot Study to Explore Patient, Care Manager and Care Coordinator Perspectives**, Kara Hall, Hwei-Yen Chen (University at Buffalo), Sharon Hewner (University at Buffalo)

**16. Designing for Veterans: A User-Centered Approach to Designing Continuous Monitoring Tools for Post-Traumatic Stress Disorder (PTSD)**, Arjun Rao, Ethan Larsen (Houston Methodist Hospital), Carolina Rodriguez-Paras (Texas A&M University), Farzan Sasangohar (Texas A&M University)

**17. An accident waiting to happen: Vendor contribution to disarray in orthopedics surgery**, Timothy Disher (Embry-Riddle Aeronautical University), Jordan Hilgers (Embry-Riddle Aeronautical University), Albert Boquet (Embry-Riddle Aeronautical University)

**18. Psychosocial health risk factors and perceived work ability among home care workers**, Liyun Yang, Ingela Målqvist (Center for Occupational

and Environmental Medicine, Stockholm County Council), Magnus Alderling (Center for Occupational and Environmental Medicine, Stockholm County Council), Carl Lind (KTH Royal Institute of Technology), Annika Bergman Rentzhog (Center for Occupational and Environmental Medicine, Stockholm County Council), Mikael Forsman (KTH Royal Institute of Technology)

**19. EVaITec- Developing a strategy to implement healthcare technology based on human factors principles and findings: the case of the infusion pumps**, Laura Herrero, Elena Rojo Santos (Hospital virtual Valdecilla), Marina Cano Iglesias (IDIVAL), Juan Pedraja Vidal (Hospital virtual Valdecilla), Ignasi Maspons Molins (IDIVAL), Natalie Abts (MedStar Institute for Innovation, MedStar Health), Lucy Stein (MedStar Institute for Innovation, MedStar Health), Natalie Benda (MedStar Institute for Innovation, MedStar Health)

**20. A Journey to Improve Patients Experience in the Fine Needle Aspiration Clinic FNAC**, Jailan Gabr (Kuwait cancer Control Center, Ministry Of Health), Abdullah Akbar (Kuwait Cancer Control Center, Ministry Of Health)

**21. An ergonomic framework for researching and designing speech recognition technologies in health care with an emphasis on safety**, Tim Arnold, Helen Fuller (Veterans Affairs)

**22. Same Disaster, Different Response: A Comparison Between Government and Hospital Incident Management Teams during Hurricane Harvey**, Changwon Son (Texas A&M University), Farzan Sasangohar, S Camille Peres (Texas A&M University), Timothy Neville (Texas A&M University), Jukrin Moon (Texas A&M University), Ethan Larsen (Houston Methodist Hospital)

**23. Establishing a Health IT Safety Program at an Academic Pediatric Tertiary Care Hospital**, Naveen Muthu, Amina Khan (Children's Hospital of Philadelphia), Dean Karavite (Children's Hospital of Philadelphia), Eric Shelov (Children's Hospital of Philadelphia)

## TUESDAY, MARCH 26

### CCIT4 - Government Applications

Clinical and Consumer Health-Care IT Track  
Tuesday, March 26, 8:30-10:00 a.m.

**Chair:** Kurt Ruark, Veteran's Health Administration

Lecture Session

1. **Evaluation of Mobile Tablet Computers for Use in the Veterans Health Administration**, Jennifer Herout (Department of Veterans Affairs), Kathleen Frisbee (Department of Veterans Affairs), Nancy Wilck (Department of Veterans Affairs), Margo Kabel (Department of Veterans Affairs), Deyne Benth (Department of Veterans Affairs), Neil Evans (Department of Veterans Affairs), Gerald Markowitz (Booz Allen Hamilton), Jason Saleem
2. **Evaluation of the Veterans Crisis Line System Support**, Shilo Anders, Kyle Maddox (Veteran Health Administration), Jason Saleem (University of Louisville), Kurt Ruark (Veteran Health Administration), Jennifer Herout (Veteran Health Administration)
3. **Lessons Learned from Journey Mapping in Health Care**, Kyle Maddox, Donna Baggetta, (Department of Veterans Affairs), Kurt Ruark (Department of Veterans Affairs), Jennifer Herout (Veterans Health Administration)
4. **Enhanced Operational Requirements Gathering Using a UX Design Studio Workshop**, Blake Lesselroth (University of Oklahoma School of Community Medicine), Kathleen Adams (VA Human Factors Engineering)

### CCIT10 – Data, Cybersecurity, and Smart Monitoring

Clinical and Consumer Health-Care IT Track  
Tuesday, March 26, 8:30-10:00 a.m.

**Chair:** Farzan Sasangohar, Texas A&M University

Lecture Session

1. **Patient-related Workload Prediction in the Emergency Department: A Big Data Approach**, Xiaomei Wang, H. Joseph Blumenthal (MedStar Health), Daniel Hoffman (MedStar Health), Natalie Benda (MedStar Health), Tracy Kim (MedStar Health), Shawna Perry (University of Florida College of Medicine-Jacksonville), Ella S. Franklin (MedStar Health), Emilie Roth (Roth Cognitive Engineering), A. Zachary Hettinger (MedStar Health), Ann M. Bisantz (University at Buffalo)
2. **Electronic Health Records (EHR) Downtime and the Growing Cyber-attack Threat**, Ethan Larsen (Houston Methodist Hospital), Farzan Sasangohar

3. **Smart monitoring of population health risk behavior**, Kirti S Sahu, Arlene Oetomo, Plinio P Morita

### HE4 - Integrating human factors research and clinical practice: Clinician perspectives

Hospital Environments Track

Tuesday, March 26, 8:30-10:00 a.m.

**Chair:** Jake Abernathy, Johns Hopkins University

Lecture and Panel

1. **Integrating Human Factors Research and Surgery**, Bruce Gewertz (Cedars-Sinai Health System)
2. **Integrating Human Factors Research and Practice: Clinician Perspectives**, Bruce Gewertz (Cedars-Sinai Health System), Joyce Wahr (University of Minnesota), James Abernathy, Russell McCulloh (University of Nebraska Medical Center), Shawna Perry (University of Florida)

### MDD4 - Design requirements; simulated use environments

Medical and Drug-Delivery Devices Track

Tuesday, March 26, 8:30-10:00 a.m.

**Chair:** Sami Durrani, Fresenius Medical Care North America

Lecture Session

1. **Cross-Discipline Research Methods to Inform Design Requirements**, Carrie Leman, Beth Loring (Loring Human Factors)
2. **Bridging the Gap from Research to Requirements**, Elizabeth Roche (Ximeda)
3. **Simulating Stressful Emergency Use Scenarios During Usability Tests**, Allison Strohlich (EMERGO by UL), Andrea Dwyer

### PSRI4 - Event Investigations

Patient Safety Research and Initiatives Track

Tuesday, March 26, 8:30-10:00 a.m.

**Chair:** SQ Yin, KK Women's & Children's Hospital, Singapore

Lecture Session

1. **Methods to Improve Voluntary Event Reporting Rates**, Isaac Lynch
2. **Using Perioperative Adverse Event Investigations to move towards High Reliability: Outcomes and Systems Changes**, Joseph Keebler (Embry-Riddle Aeronautical University), Elizabeth Lazzara (Embry-Riddle Aeronautical University), Elizabeth Blickensderfer (Embry-Riddle Aeronautical University), Thomas Looke (United States)

Anesthesia Partners), Frank Rosemeier (United States Anesthesia Partners), Louis Barr (Florida Hospital Orlando), Brittany Almon (Florida Hospital Orlando), Jeffrey Kuhlman (Florida Hospital Orlando)

3. **Application of Engineering Controls and Safety Management Practices in Healthcare**, Andia Toomari
4. **Improving the Event Investigation Process: Going Beyond the Basics**, Amy Poppy (Children's Hospital Colorado), Laura Barg-Walkow

### **CCIT5 - Mixed Reality**

Clinical and Consumer Health-Care IT Track

Tuesday, March 26, 10:30 a.m.-12:00 p.m.

**Chair:** Liza Papautsky, University of Illinois Chicago

Lecture Session

1. **Assessing Augmented Reality Training for Combat Medics and Medical Students**, Laura Militello, Christen Sushereba (Unveil LLC), Emily Patterson (The Ohio State University)
2. **Virtual Reality Applications in Healthcare: Understanding the role of spatial presence formation and maintenance**, Sean McGlynn, Danniell Rhee (University of Illinois: Urbana-Champaign), Wendy Rogers (University of Illinois: Urbana-Champaign)
3. **UX design of a multi-user mixed smartphone and virtual reality medical diagnostic application**, Caroline Kingsley (Charles River Analytics), Arthur Wollocko (Charles River Analytics), Calvin Leather (Charles River Analytics), David Young (Charles River Analytics), Michael Jenkins
4. **Virtual Reality in Medical Education**, Michael Barrie (The Ohio State University College of Medicine)

### **HE5 - On the frontlines: Tales from clinician-patients**

Hospital Environments Track

Tuesday, March 26, 10:30 a.m.-12:00 p.m.

**Chair:** Ashley Hughes & Elizabeth Papautsky, University of Illinois Chicago

Panel Session

Ashley Hughes, Elizabeth Papautsky (University of Illinois at Chicago)

### **MDD5 - Device Training Programs**

Medical and Drug-Delivery Devices Track

Tuesday, March 26, 10:30 a.m.-12:00 p.m.

**Chair:** Beth Loring, Loring Human Factors LLC

Lecture Session

1. **How to Gather Training-Related User Needs During Human Factors Research and**

**Customize Training Programs for Medical Device Usage**, Kristyn Berry (Farm Design, Inc.)

2. **The impact of training devices on perception and performance by novice users of an autoinjector**, Jenna Garafalo, Huiyang Li (Insight Product Development), Michael Lau (Insight Product Development)
3. **Challenges of Simulating Training Decay in Usability Studies**, Richard Newman

### **MDD11 – Novel Methods for Medical Device Design**

Medical and Drug-Delivery Devices Track

Tuesday, March 26, 10:30 a.m.-12:00 p.m.

**Chair:** Susan McDonald, Ximedita

Lecture Session

1. **A Case Study in Conducting a Human Factors Summative Test of a New, Complex Medical System**, Ashleigh Shier, David Gilmore, Wayne Ho
2. **Emergency Ethnography: Using Observational Research to Promote Efficient Drug Delivery in Hospitals**, Larry McGrath (Design Science), Nicholas Zampa (Biogen), Carmella Lee (Design Science)
3. **Introducing a Methods Toolbox to Quantitatively Assess Patient Capabilities During Autoinjector Use: Insights from a Formative Human Factors Study**, Peter Sneringer (Design Science), Christoph Jordi (Ypsomed)

### **PSRI5 - Public Health / Infection prevention**

Patient Safety Research and Initiatives Track

Tuesday, March 26, 10:30 a.m.-12:00 p.m.

**Chair:** Joseph R Keebler, Embry-Riddle Aeronautical University

Panel and Lecture Session

1. **The intersection between public health and human factors: Finding solutions to infection prevention challenges in outpatient dialysis**, Priti Patel
2. **Operationalizing Human Factors to Support CLABSI Standardization and Improvement**, Andrea L. Cooks, Erika L. Stalets (Cincinnati Children's), Jackie Hausfeld (Cincinnati Children's), Jeffrey Simmons (Cincinnati Children's), Mary C. Sitterding (Cincinnati Children's), Maria Geiser (Cincinnati Children's)

### **CCIT6 - Older Adults**

Clinical and Consumer Health-Care IT Track

Tuesday, March 26, 1:30-3:00 p.m.

**Chair:** Wendy Rogers, University of Illinois Urbana-Champaign

Panel Session

**Challenges Confronting Older Adults in Today's Healthcare Landscape: Design Guidance from CREATE**, Wendy Rogers, Sara Czaja (Weill Cornell Medicine), Neil Charness (Florida State University), Walter Boot (Florida State University)

**CCIT11 – Knowledge Elicitation, End Users, and Teams**

Clinical and Consumer Health-Care IT Track

Tuesday, March 26, 1:30-3:00 p.m.

**Chair:** Austin Mount-Campbell, Christiana Care Health System

Lecture Session

- 1. Lessons Learned from Knowledge Elicitation in Complex Clinical Environments: Iteration is not just for Design**, Dean Karavite (Children's Hospital of Philadelphia), Naveen Muthu (Children's Hospital of Philadelphia), Gerald Shaeffer (Children's Hospital of Philadelphia), Frances Balamuth (Children's Hospital of Philadelphia), Mary Catherine Harris (Children's Hospital of Philadelphia), Robert Grundmeier (Children's Hospital of Philadelphia)
- 2. A Multi-method Approach for Facilitating Joint End-user, Vendor, and Multi-disciplinary Subject Matter Expert Input to Health Information Technology Recommendations**, Ellen Bass (Drexel University), Carl Pankok (Drexel University), Paulina Sockolow (Drexel University)
- 3. Who is on my team?: Insiders' perspectives from primary healthcare**, Shimeng Du (University of Wisconsin-Madison), Douglas Wiegmann (University of Wisconsin-Madison), John Beasley (University of Wisconsin-Madison), Laura Farrell (University of Wisconsin-Madison), Amanda Hoffmann (University of Wisconsin-Madison), Linsey Steege (University of Wisconsin-Madison), Yudi Wang (University of Wisconsin-Madison), Tosha Wetterneck (University of Wisconsin-Madison)

**HE6 - Introduction to the Human Factors Transforming Healthcare (HFTH) Network Panel**

Hospital Environments Track

Tuesday, March 26, 1:30-3:00 p.m.

**Chair:** Antonia (Joy) Rivera, Children's Hospital of Wisconsin

Panel

Joy A. Rivera, Adjhaporn Khunlertkit (Bumrungrad International Hospital), Sarah Fouquet (Children's Mercy Kansas City), Ken Catchpole (Medical University of South Carolina), Y. Raymond Chan (Children's Mercy Kansas City)

**MDD6 - Contextual research and virtual reality**

Medical and Drug-Delivery Devices Track

Tuesday, March 26, 1:30-3:00 p.m.

**Chair:** Laurie Reed, Farm Design Inc.

Lecture Session

- 1. Surprises of Contextual Research**, Conall Dempsey, Keith Karn (Human Factors in Context)
- 2. I Want To Learn in Context!**, Josh Harling (Bresslergroup), Alex Visconti (Bresslergroup)
- 3. Experience A Live Design Review in AR/VR**, Amanda Morgan (219 Design), Larry Miller (219 Design)

**PSRI6 - High-level / admin / big picture**

Patient Safety Research and Initiatives Track

Tuesday, March 26, 1:30-3:00 p.m.

**Chair:** Logan Gisick, Embry-Riddle Aeronautical University

Panel and Lecture Session

- 1. Human Factors Practitioners' Contributions to the Joint Commission International Patient Safety Goals (IPSG)**, Adjhaporn Nana Khunlertkit, Joy A. Rivera (All Children's Hospital Wisconsin), Sid Ponnala (Children's Hospital of Wisconsin), Aekanun Keeratisarun (Bumrungrad International Hospital), Shanqing (SQ) Yin (KK Women's and Children's Hospital), Laurie Wolf (Carilion Clinic), Sarah Parker (Carilion Clinic)
- 2. Barriers to Shared Mental Models in Care Transitions between Pediatric Trauma Bay and Pediatric Intensive Care Unit**, Kristen Webster (Johns Hopkins University), Ayse Gurses (Johns Hopkins University), Ashimiyu Durojaiye (Johns Hopkins University), Nicolette McGeorge (Johns Hopkins University), Cagla Oruc (Johns Hopkins University)

**CCIT7 - Digital Healthcare: Moving beyond the data input/output problem toward enhancing clinical judgment**

Clinical and Consumer Health-Care IT Track

Tuesday, March 26, 3:30-4:30 p.m.

**Chair:** John Flach (Mile Two)

Panel Session

Libby Duryee (Asymmetric), John Flach (Mile Two), Jeff Graley (Mile Two), Peter Reynolds (Wright State Boonshoft School of Medicine), Bryan Young (Asymmetrik)

**HE7 – Clinician Wellness**

Hospital Environments Track

Tuesday, March 26, 3:30-4:30 p.m.

**Chair:** Farzan Sasangohar, Texas A&M University

Lecture Session

1. **Sustaining personal fulfillment in healthcare**, Bruce Gewertz (Cedars-Sinai)
2. **From joy and fulfillment to fear and loathing, clinician well being and burnout**, Joyce Wahr

### **HE11 – Multitasking and Workload**

Hospital Environments Track

Tuesday, March 26, 3:30-4:30 p.m.

**Chair:** SQ Yin, KK Women's & Children's Hospital, Singapore

Lecture Session

1. **Auditory attention in high-stakes team environments: Effects of multitasking on speech intelligibility**, Clayton Rothwell, Matthew Shotwell (Vanderbilt University), Daniel Ashmead (Vanderbilt University), Judy Edworthy (Plymouth University), Joseph Schlesinger (Vanderbilt University)
2. **Operating Hurts: A study of EAES surgeons**, Susan Hallbeck

### **MDD7 - Human factors and medical device instructions for use: it's not just good business it's the law**

Medical and Drug-Delivery Devices Track

Tuesday, March 26, 3:30-4:30 p.m.

**Chair:** Samuel Alper, Bold Insight

Panel Session

Samuel Alper, Korey Johnson (Bold Insight), Jenny Covington (Bowman and Brooke LLP), Steve Arndt (Explico Engineering Co.)

### **PSRI7 - Aids in the home**

Patient Safety Research and Initiatives Track

Tuesday, March 26, 3:30-4:30 p.m.

**Chair:** Sid Ponnala, University of Wisconsin-Madison

Lecture Session

1. Applications of Human Factors and Health Literacy in Pharmacovigilance, James Duhig, Fabio Lievano (AbbVie), Rebecca Feuer (AbbVie), Cheryl Foit (AbbVie), Linda Scarazzini (AbbVie)
2. Cognitive Artifacts Supporting Medication Management Tasks During the Hospital-to-Home Care Transition: Implications for Design, Ephrem Abebe, Ayse Gurses (Johns Hopkins University), Yan Xiao (University of Texas-Arlington)

### **CCIT-POS2 – Posters/Reception**

Clinical and Consumer Health-Care IT Track

Tuesday, March 26, 4:30-6:00 p.m.

Posters/Reception

1. **The Potential of Tele-Technology for Delivering Wellness Interventions to Adults Aging with Mobility Impairments**, Tracy Mitzner, Elena Remillard (Georgia Institute of

Technology), Lyndsie Koon, Taylor Mackin (University of Georgia), Jenay Beer (University of Georgia), Wendy Rogers

2. **Trigger Identification of High Risk Medication Orders: Potassium as an Example Study**, Adam Krukus, Daniel Hoffman (Medstar Health), Swaminathan Kandaswamy (Medstar Health), Joseph Blumenthal (Medstar Health), Danielle Weldon (Medstar Health), Lucy Stein (Medstar Health), Eta Berner (University of Alabama at Birmingham), Aaron Zachary Hettinger (Medstar Health)
3. **Virtual Reality as a Prototyping Tool in Healthcare Design Research: Current Paradigms, Limitations, and Recommendations for the Future**, Jun Rong Jeffrey Neo, Saleh Kalantari (Cornell University)
4. **An Explorative Longitudinal Study on the Four-Year Patient Portal Use among an Underserved Patient Population**, Ana Ongtengco, Kevin Roy (University of Illinois at Chicago), Liang Zhang (University of Illinois at Chicago), Jessie Chin (University of Illinois at Chicago)
5. **The Evolution of Patient Tracking Displays for an Ambulatory Surgical Setting: A Case Study**, Andrea Berman (Surgical Information Systems), Cindy Morales (Surgical Information Systems)
6. **Disparity in the Non-Use of Internet Among Caregivers of Chronic Disease Patients: Results from a population-based study**, Ayokunle Olagoke, Ashley Hughes (University of Illinois Chicago)
7. **Representing the True and False Information about Human papillomavirus (HPV) vaccines**, Bowen Dong (University of Illinois at Chicago), Philip S. Yu (University of Illinois at Chicago), Bing Liu (University of Illinois at Chicago), Jessie Chin (University of Illinois at Chicago)
8. **Reducing Alert Fatigue for Comfort Care and Palliative Care Hospital Patients**, Emily Patterson, Christopher Hritz (Ohio State University), Susan Moffatt-Bruce (Ohio State University)
9. **Usability of a home-use blood pressure monitor system: An evaluation of the device and instructional materials**, Isis Chong (Purdue University), Jackie Soyoun Cha (Purdue University), Yuhao Peng (Purdue University), Denny Yu (Purdue University)
10. **Healthchart – An Extensible and Interactive Health Data Visualization**, Jeritt Thayer, Daria Ferro (Children's Hospital of Philadelphia), Levon Utidjian (Children's Hospital of Philadelphia), Robert Grundmeier (Children's Hospital of

- Philadelphia), Joseph Zorc (Children's Hospital of Philadelphia)
11. **Designing Design – a method for creating successful design languages in the medical space**, Joe Fegelman (UL, LLC), Cory Costantino (UL, LLC), Mary Burton (UL, LLC), Max Ayers (UL, LLC)
  12. WITHDRAWN
  13. **Evaluation of a prototype tactile display to support physiological monitoring in anesthesia**, Kylie Gomes (Clemson University), Sara Riggs (Clemson University)
  14. **Transdisciplinary Co-Design to envision the needs of the ICU of the future**, Laura Maguire, Daniel E. Vasquez (The Ohio State University, Wexner Medical Center), Amanda Haney (The Ohio State University Wexner Medical Center), Cindy Byrd (The Ohio State University Wexner Medical Center), Elizabeth B.-N. Sanders (The Ohio State University)
  15. **How mHelath with higher usability effects on patients with breast cancer?**, Mahdi Ebnali (University at Buffalo), Kamal Azam (Tehran University of Medical Sciences), Adel Mazlomi (Tehran University of Medical Sciences)
  16. **Patient and Provider Comfort and Concerns in Mobile Health Application Use in Healthcare**, Mark Call, Sarahfaye Dolman (MedStar Health Research Institute), Kristen Miller (MedStar Health National Center for Human Factors in Healthcare)
  17. **Guidance for Custom Alarm Design: You Don't Have to "Crank it up to 11"**, Morgan E. Reynolds, Michael F. Rayo (The Ohio State University), Morgan Fitzgerald (The Ohio State University), Mahmoud Abdel-Rasoul (The Ohio State University), Susan D. Moffatt-Bruce (The Ohio State University)
  18. **Characterizing Trainable Interactions in an EMG Video Game Designed to Train Prosthetics Users**, Paul Barclay, Matt Dombrowski (University of Central Florida), Peter Smith (University of Central Florida)
  19. **A toolkit for evaluating interventions to improve decision making: The garden path approach**, Simon Fernandez, Laura Militello (Unveil LLC), Christen Sushereba (Unveil LLC), David Bahner (The Ohio State University), Michael Barrie (The Ohio State University), Emily Patterson (The Ohio State University)
  20. **"I Still Haven't Found What I'm Looking For": HIT and Community Care Coordination**, Dawn Opel
  21. **Usability in Health Care: A Journey From Risk Reduction to Value Creation**, Barbara Koop
  22. **Impact of Electronic Medical Records on Patient-Provider Communication**, Maryam Zahabi, Adriana Lyman (Wichita State University)
  23. **Facilitators and Barriers to the Successful Implementation of Electronic Whiteboards in Hospital Emergency Departments**, Kathryn Alvero, Dan Nathan-Roberts (San José State University)
  24. **Implementing the VA Essential Medication Information Standards Directive; Adapting Human Factors Approaches to Track Compliance to Standards and Government Policy**, Margo Kabel MS, Maureen Layden MD (Veterans Health Administration), Eric Spahn Pharm.D (Veterans Health Administration)
  25. **Future Direction of Healthcare: Leverage Text Analytics to Identify Health Information Technology Trends**, Yimo Ho (NC State University), Peiyu Hou (NC State University), Karen Chen
  26. **Measuring Resident Performance in an EHR Based Simulation Using the Situation Awareness Global Assessment Technique**, Irit Rasooly, Evan Orenstein (Children's Hospital of Atlanta), Naveen Muthu (Children's Hospital of Philadelphia)
  27. **Understanding Concept of Health and Approaches to Health Maintenance Among Low-income African American Older Adults**, Christina Harrington
  28. **How to Improve Patient Compliance through Persuasive Technology and UX Design**, Cheng-Jhe Lin (National Taiwan University of Science and Technology)
  29. **The Influence of Computer Agent Characteristics on User Preferences in Health Contexts**, Renato Azevedo, Dan Morrow (University of Illinois at Urbana-Champaign), Kuangxiao Gu (University of Illinois at Urbana-Champaign), Thomas Huang (University of Illinois at Urbana-Champaign), Mark Hasegawa-Johnson (University of Illinois at Urbana-Champaign), Priya Soni (University of Illinois at Urbana-Champaign), Shuyuan Tang (University of Illinois at Urbana-Champaign), Tarek Sakakini (University of Illinois at Urbana-Champaign), Suma Bhat (University of Illinois at Urbana-Champaign), Ann Willemsen-Dunlap (UICOMP; Jump Simulation Center), James Graumlich (UICOMP)
  30. WITHDRAWN
  31. **The challenges of data visualization for precision medicine**, Tatiana Bevilacqua, Raphael Nobrega (University of Waterloo), Helen Chen

(University of Waterloo), Plinio Morita  
(University of Waterloo)

- 32. Validation of Real-Time ICU Decision and Communication Support**, Christopher Nemeth, Jeremy Pamplin, MD (U.S. Army Telemedicine and Advanced Technology Research Center (TATRC)), Dawn Laufersweiler (Applied Research Associates, Inc.), Gregory Rule, PE (Applied Research Associates, Inc.), Sarah Murray MSN, RN (Army Institute of Surgical Research), Maria Serio-Melvin, MSN, RN (Army Institute of Surgical Research), Jose Salinas, PhD (Army Institute of Surgical Research)

## **HE-POS2 – Posters/Reception**

Hospital Environments Track

Tuesday, March 26, 4:30-6:00 p.m.

Posters/Reception

- 1. A Medical Student Mentoring Program During an Obstetrics and Gynecology Clerkship: Medical Student and Resident Perceptions Five Years In**, Tiffany Leverenz, Jennifer Duong (University of Kansas School of Medicine), Blaine Campbell (St. Vincent Hospital Evansville), David Grainger (University of Kansas School of Medicine), Barbara Chaparro (Embry-Riddle Aeronautical University)
- 2. Outpatient clinic patient rooming workflow – better practices for better staff and patient experiences**, Carolyn Sommerich, Steve Lavender (The Ohio State University), Kevin Evans (The Ohio State University), Elizabeth Sanders (The Ohio State University)
- 3. Process redesign in a hospital environment: A case study addressing massive post-partum hemorrhage**, Marina Cano, Laura Herrero (IDIVAL), Juan Pedraja (HvV), Elena Rojo (HvV), Ignasi Maspons (IDIVAL), Lucy Stein (Medstar National Center for Human Factors in Healthcare), Nat Benda (Medstar National Center for Human Factors in Healthcare), José Maestre (HvV)
- 4. Using Natural Hand Positions to Improve Anthropometric Product Design Data**, Christopher Curry (University of Minnesota), Emily Seifert (University of Minnesota), Linsey Griffin (University of Minnesota), Susan Sokolowski (University of Oregon)
- 5. Insitu Simulated Workflow Assessment of Large Volume Infusion Pump**, Rebecca Berg, Connie Cholewczynski (Bridgeport Hospital), Jeannette Bronsord (Yale New Haven Hospital), Stephanie Sudikoff (Yale New Haven Health)
- 6. Implementation of live bedside video feed to improve surgeon situation awareness in robot-assisted surgery: A pilot study**, Yaoyu Fu, Qian

Zhang (University at Buffalo), Zaeem Lone (Roswell Park Comprehensive Cancer Center), Lora Cavuoto (University at Buffalo), Khurshid Guru (Roswell Park Comprehensive Cancer Center)

- 7. A study on Effects of Different Types of Distractions/Interruptions in Operating Room**, Javad Sadeghi (Oregon State University), James Dolan (Oregon Health and Science University), Ken Funk (Oregon State University), Charlie Borzy (Oregon Health and Science University), Xinhui Zhu (Oregon State University)
- 8. More than a feeling: perceived cognitive workload to determine workforce**, Allison Kosydar, James Won (Children's Hospital of Philadelphia)
- 9. Visualization of log file data supports comparison of RN activity across work shifts**, Dana Womack
- 10. Do active assist transfer devices improve transfer safety for patients and caregivers in hospital and community settings? A scoping review**, Elisa Galle, Tara Packham (Hamilton Health Sciences)
- 11. Virtual Reality as a Prototyping Tool in Healthcare Design Research: Current Paradigms, Limitations, and Recommendations for the Future**, Jun Rong Jeffrey Neo, Saleh Kalantari (Cornell University)
- 12. Using Tactile and Multimodal Notifications on Smart Watch in Clinical Settings: The Effects of Environmental Noise and Modality of Notifications**, Huiyang Li, Hemanth Krishna Chundi (Binghamton University)
- 13. Integrated Model: Patient Safety and Staff Wellbeing. Addressing Latent Systemic Conditions by Human Factor-based Leadership**, Michael Privitera
- 14. Deconstructing Surgeon Workload Using the SURG TLX**, Bernadette McCrory, Matthew Trzinski (Montana State University), Nicholas Ward (Montana State University), Bethany Lowndes (University of Nebraska Medical Center), David Claudio (Montana State University), M. Susan Hallbeck (Mayo Clinic)
- 15. Patients in pain: Decision making, trust, and cooperation.**, Preston Long, Harry Freeman (University of South Dakota), Doug Peterson (University of South Dakota)
- 16. Interruptions Experienced by Emergency Nurses: Implications for Subjective and Objective Measures of Workload**, Katherine Law (Mayo Clinic), Hunter Hawthorne (Mayo Clinic), Renaldo Blocker (Mayo Clinic)
- 17. Drowsy Driving Among Shift Work Nurses: A Qualitative Data Analysis**, Alec Smith, Farzan

Sasangohar (Texas A&M University), Anthony McDonald (Texas A&M University), Nena Bonuel (Houston Methodist), Holly Shui (Houston Methodist), Christine Ouko (Houston Methodist), Lorelie Lazaro (Houston Methodist)

**18. Swift, iterative, and data-driven design solution for EMR human-factor issues**, Cheong Ang

**19. Beyond RCA: Organizational Learning for Patient Safety**, Kristen Gorman (Carilion Clinic), Kathryn Kellogg (MedStar Health), Laurie Wolf (Carilion Clinic), Tom Gronow (University of Colorado Hospital), Yan Xiao

**20. A Systems Approach to Investigate Unnecessary Admissions and Readmissions in Emergency Departments (EDs)**, Samuel Bonet Olivencia (Texas A&M University), Farzan Sasangohar

**21. Issues related to interoperability in the hospital environments and lessons we learned**, Yushi Yang, Lori Paine (Johns Hopkins University), Allen Chen (Johns Hopkins University)

**22. Transdisciplinary Co-Design to envision the needs of the ICU of the future**, Laura Maguire, Daniel E. Vasquez (The Ohio State University, Wexner Medical Center), Amanda Haney (The Ohio State University Wexner Medical Center), Cindy Byrd (The Ohio State University Wexner Medical Center), Elizabeth B.-N. Sanders (The Ohio State University)

**23. Understanding the Impact of Using an Induction Room for Anesthetic Induction of Children who are Undergoing an Ambulatory Surgical Procedure and Their Parents**, Deborah Wingle, Anjali Joseph (Clemson University )

**24. A systematic review of video camera usage in the operating room for human factors & ergonomics research**, Nawang Singhe (University of Wisconsin-Madison), Katherine Law (Mayo Clinic), Hunter Hawthorne (Mayo Clinic), Renaldo Blocker (Mayo Clinic)

**25. The Application of Construct Validity to Hand Hygiene Research**, Jun Rong Jeffrey Neo, Li Xuan Amanda Tang (Cornell University)

**26. Evaluation of Patient Turning Devices to Reduce Muscular Demands among Caregivers**, Jaejin Hwang, Megha Madoo (Northern Illinois University), Hemateja Ari (Northern Illinois University), Jie Chen (Northern Illinois University), Jeong Ho Kim (Oregon State University)

- 1. Exploration of parenteral medication use with high-fidelity simulation of discrete use steps**, Chris Franzese, Rashmi Sharma (Genentech), Jenny M. Wu (Genentech), Marty Coyne (Matchstick)
- 2. Observational study of use problems related to drug libraries of infusion pumps**, Juan Pedraja, Elena Rojo (Hospital virtual Valdecilla), Marina Cano (Instituto de Investigación Valdecilla), Laura Herrero (Instituto de Investigación Valdecilla), Ignasi Maspons (Instituto de Investigación Valdecilla), Lucy Stein (National Center for Human Factors in Healthcare)
- 3. Exploring the Use of Robots in Military Medical Settings**, Michaela Topacio (United States Air Force Academy), Elizabeth Phillips
- 4. Review of Concerns and Remaining Gaps Related to FDA Human Factors Validations: Needs and Weaknesses of Key Stakeholders Within a Developing Regulatory Framework**, Katia M. Rojas, Leon Cosler (Binghamton University), Daryl L. Santos (Binghamton University)
- 5. Considering the Implications of Rejected (Failed) FDA Human Factors Validations and the Need to Ensure Project Success - A Dynamic Problem**, Katia M. Rojas, Leon Cosler, Nasim S. Sabounchi (Binghamton University), Daryl L. Santos
- 6. Assessing Impact of E-prescribing on Patient Safety in Pharmacy Settings- A Mixed Methods Study**, Shweta Shah, Kimberly Galt (Creighton University), Kevin Fuji (Creighton University), Ted Kaufman (Creighton University)
- 7. The Generation of an Integrated Tools Set through the Application of Human Factors Engineering Methods and Techniques to Enable Human Factors Data-Driven Decision Making in Complex Systems and Dynamic Programs**, Kaitlin Stinson, Mikaylah Gross (Eli Lilly), Amy Bartee (Eli Lilly), Mary Farrell (Ipsos), Luis Valencia (Ipsos), James Myers (Ipsos), Janice Neokratis (Ipsos), Marissa Vallette (Ipsos)
- 8. Acceptance of subcutaneous injections of large volume and high viscous solutions**, Stephan Riedel
- 9. Integrated Product Development**, Elizabeth Volk, Elizabeth Volk
- 10. International Usability Studies - Best Practices for Overseas Usability Research**, Joe Pratt
- 11. When a User Interface is too Small; An Autoinjector Case Study**, Sean Hagen
- 12. Enabling biologic drug delivery of volumes beyond 1 ml with ergonomic injection solutions**

#### **MDD-POS2 – Posters/Reception**

Medical and Drug-Delivery Devices Track

Tuesday, March 26, 4:30-6:00 p.m.

Posters/Reception

- for targeted user populations**, Tzvetelina Chevolleau (BD), Megan Lan
13. **Physician and patient trust in robotic surgery**, Chloe Topolski (Wright State University), Caroline Cao (Wright State University)
  14. **(Not) in it for the money: Understanding the choice to participate in simulated-use human factors studies**, Marc Egeth, Erin Pohl (Core Human Factors, Inc.), Sarah Fairchild (Core Human Factors, Inc.), Sam Sye (Core Human Factors, Inc.), Loan Nguyen (Core Human Factors, Inc.), Steve Rybicki (Core Human Factors, Inc.)
  15. **Introducing a Methods Toolbox to Quantitatively Assess Patient Capabilities During Autoinjector Use: Insights from a Formative Human Factors Study**, Peter Sneeringer, Christoph Jordi (Ypsomed AG)
  16. **Procedural context in simulated use evaluations: As important as physical environment, and it's not training**, Katie Pingrey (Bold Insight), Ashley Chiu (Bold Insight), Korey Johnson (Bold Insight)
  17. **How does it all unfold? The role of format layout in the user experience of medical instructions for use**, Trevor Johnson, Rebecca Williamson (Ipsos), Mary Farrell (Ipsos), David Hirning (Ipsos)
  18. **Utilizing User Personas to Tackle the "Human" Factor**, Jay Zignego
  19. **Replicating home setups when testing with vulnerable populations**, ANKE ADENWALA (Bold Insight), YVETTE GRANGER
  20. **Tailoring the Usability Engineering Process**, Richard Newman
  21. **Understanding the Hemophilia Self-Injection Process**, Emily Hildebrand, Joseph O'Brian (Research Collective), Russell Branaghan (Research Collective), Bryant Foster (Research Collective), Anders Orn (Research Collective)
  22. **Designing Studies that Uncover and Connect Business and User Needs**, Teresita Liebel, Tara Feuerstein (Farm Design Inc.)
  23. **Emergency Ethnography: Using Observational Research to Promote Efficient Drug Delivery in Hospitals**, Larry McGrath (Design Science), Nicholas Zampa (Biogen), Carmella Lee (Design Science)
  24. **A Framework for Communication in Complex Healthcare Environments: The Case of the Electrophysiology Lab**, M. Robert Garfield, Judith Tiferes (Abbott)
  25. **Creating the Right Environment for Simulated Use, It's Elemental!**, Susan McDonald
  26. **A Case Study in Conducting a Human Factors Summative Test of a New, Complex Medical System**, Ashleigh Shier, David Gilmore, Wayne Ho
  27. **Training Decay Selection for Usability Validation: A Roadmap for Empirical Training Decay Curve Calculation**, Shannon Clark, Kelli Sum (San Jose State University), Lana Sneath (UserWise, Inc.), Daniel Nathan-Roberts, Ph.D., CHFP (San Jose State University)
  28. **Designing Safe and Effective Medical Devices: The User Experience Factor and the Goals of Human Factors Research**, Kristyn Berry
  29. **Behavior Change and Persuasive Components in mHealth: A Scoping Literature Review**, Karim Zahed (Texas A&M University), Farzan Sasangohar
  30. **Experience a Live Design Review in AR/VR**, Larry Miller (219 Design), Dave Bim-Merle (219 Design)
- PSRI-POS2 – Posters/Reception**  
Patient Safety Research and Initiatives Track  
Tuesday, March 26, 4:30-6:00 p.m.  
Posters/Reception
1. **A Work System Approach to Characterizing Pharmacists' Role in Medication Management for People Living with Cystic Fibrosis**, Ashley Morris, Olufunmilola Abraham (University of Wisconsin-Madison)
  2. **Measuring surgical flow and teamwork in minimally-invasive surgery: A review of the literature and study methodology**, Jordan Hilgers (Embry-Riddle Aeronautical University), Beatrice Podtschaske (Intuitive), Alison Algarin (Embry-Riddle Aeronautical University), Nicholas Reuss (Embry-Riddle Aeronautical University), Albert Bouquet (Embry-Riddle Aeronautical University)
  3. **How Well do Dynamic Models of Teamwork from Surgical Simulation Performances Reflect those of Live Patient Encounters?**, Ron Stevens, Trysha Galloway (The Learning Chameleon, Inc.), Ann Willemsen-Dunlap (Order of Saint Francis Hospital), Jamie Gorman (Georgia Tech)
  4. **Monitoring Opioid Withdrawal Symptoms: Gaps and Opportunities for Research and Practice**, Joseph Nuamah, Ranjana Mehta (Texas A&M University), Farzan Sasangohar (Texas A&M University), Madhav Erraguntla (Texas A&M University)
  5. **A Systems Approach to Optimize Detection and Reporting of Patient Safety Hazards and Adverse Events in the Emergency Department**, Arthur Riba
  6. **Development and Application of a Patient Safety Dashboard**, Arthur Riba

7. **Exploring Relationships Between Nurse-Patient Interactions and Duration of Emergency Room Triage**, Christian Boxley (MedStar Health), Lucy Stein, Rachel Wynn (Medstar National Rehabilitation Hospital), Kristen Miller (MedStar Health), Raj Ratwani (MedStar Health), Krista Ratwani (Aptima, Inc.), Andrew Naber (Aptima, Inc.)
8. **Descriptive Analysis of the Design, Implementation, and Evaluation of Structured Anesthesia Handoff Protocols in Current Literature**, Emily Rickel, Logan Gisick (Embry-Riddle Aeronautical University), Andrew Griggs (Embry-Riddle Aeronautical University), Richard Simonson (Embry-Riddle Aeronautical University), Joseph Keebler (Embry-Riddle Aeronautical University), Elizabeth Lazzara (Embry-Riddle Aeronautical University)
9. **Involving Frontline Staff to develop solutions for mitigating Serious Safety Events in Hospitals: Using a Co-Design and Resilience Engineering Approach**, Aastha Patel, Olivia Zajdman (Healthcare Human Factors), Anjum Chagpar (Healthcare Human Factors)
10. **Surgical Delay Taxonomy and Domino Effect**, Kimberly LaForge (Veterans Administration), Tim Arnold (VA National Center for Patient Safety), Helen Fuller (VA National Center for Patient Safety)
11. **Checklists: A Review of Their Origins, Benefits, and Current Uses as A Cognitive Aid in Medicine**, Alex Chaparro, Elizabeth Lazarra (Embry-Riddle Aeronautical University), Joseph Keebler (Embry-Riddle Aeronautical University)
12. **Helicopter EMS accidents: An updated analysis**, Richard Simonson (Embry-Riddle Aeronautical University), Levi Demaris (Embry-Riddle Aeronautical University), Joseph Keebler (Embry-Riddle Aeronautical University), Alex Chaparro (Embry-Riddle Aeronautical University)
13. **Score at the Door: A retrospective data analysis of sepsis scoring criteria in the Emergency Department.**, Christopher Bonk, Laura Schubel (MedStar Health), Brandon Ferrell (Georgetown University School of Medicine), Sanjhai Ramdeen (Georgetown University School of Medicine), Robin Littlejohn (MedStar Health), Diana Ladkany (MedStar Washington Hospital Center), Kristen Miller (MedStar Health)
14. **Influence of Hierarchy on Communication in the Operating Room during Robot-Assisted Surgery**, Taylor Kunkes, Lora Cavuoto (University at Buffalo), Jeff Higginbotham (University at Buffalo), Ann Bisantz (University at Buffalo), Khurshid Guru (Roswell Park Comprehensive Cancer Center)
15. **Utility of Invisible Design in Developing a Pharmacy System Intervention**, Apoorva Reddy, Corey Lester (University of Michigan - Ann Arbor), Jamie Stone (University of Wisconsin - Madison), Cynthia Phelan (University of Wisconsin - Madison), Richard Holden (Indiana University School of Medicine), Michelle Chui (University of Wisconsin-Madison)
16. **Examining the Post-Crash Wreckage: Finding the What, Why, and How Behind Medication Error**, Megan Corsi, Bryan McCarthy (University of Chicago Medicine), Randall Knoebel (University Of Chicago Medicine), Andrew Davis (University of Chicago Medicine), Michael O'Connor (University of Chicago Medicine), Seth Hartman (University of Chicago Medicine), Anthony Stull (University of Chicago Medicine), Michael Wall (University of Chicago Medicine)
17. **A comparison of the efficacy of three glove removal methods**, Joel Mumma (Georgia Institute of Technology), Kate Ferencsik (Georgia Institute of Technology), Elizabeth Harvey (Georgia Institute of Technology), Lauren McClelland (Georgia Institute of Technology), Roshni Patel (Georgia Institute of Technology), Elena Kusiak (Georgia Institute of Technology), Francis Durso (Georgia Institute of Technology)
18. **Providing Data-Driven Practice Habit Feedback for Advanced Practice Providers**, Kristen Webster (Johns Hopkins Hospital), Kathryn Hines (Johns Hopkins Hospital), Martha Kennedy (Johns Hopkins Hospital), Dauryne Shaffer (Johns Hopkins Hospital), Deborah Hobson (Johns Hopkins Hospital), Brandyn Lau (Johns Hopkins Hospital), Peggy Kraus (Johns Hopkins Hospital), Michael Streiff (Johns Hopkins Hospital), Christine Holzmuller (Johns Hopkins Hospital), Oluwafemi Owodunni (Johns Hopkins Hospital), Elliott Haut (Johns Hopkins Hospital)
19. **Usability of Hand Hygiene Observation Apps**, Amanda Sivek (ECRI Insitute), Erin Sparnon (ECRI Insitute), Patrice Tremoulet
20. **Usability Evaluation of a Pediatric Decision Support Application**, Annelise Chaparro (University of Kansas School of Medicine), Sarah Fouquet (Children's Mercy Hospital Kansas City), William Shelstad (Embry-Riddle Aeronautical University), Robert Schremmer (Children's Mercy Hospital Kansas City), Joseph Keebler (Embry-Riddle Aeronautical University), Elizabeth Lazzara
21. **Better Together: Demonstrating the Value of Partnership between Human Factors Engineers and Safety Professionals in Real-World Safety Event Reviews**, Mary Herold

(MedStar Health), Travis Mitchell (MedStar Health), Jessica Howe (MedStar Health), Rebecca Butler (MedStar Health), Mark Call (MedStar Health), Lucy Stein

- 22. Healthcare Personnel Attitudes and Perceptions of Risk Factors for Doffing of Enhanced Personal Protective Equipment,** Patience Osei (Johns Hopkins University School of Medicine), Ife Oresanwo (Johns Hopkins University School of Medicine), Lauren Benishek (Johns Hopkins University School of Medicine), Lisa Maragakis (Johns Hopkins University School

of Medicine), Ayse Gurses (Johns Hopkins University School of Medicine)

- 23. The Human Factors Medical Device Consortium: An Industry and academia collaboration,** Frank Drews (University of Utah), Kevin Cluff (Abbvie), Anne McLaughlin (NCSU), Patricia DeLucia (Rice University), Anil Kumar (San Jose State University)
- 24. Aging, Disability, and Needs for Physical Activity Interventions,** Lyndsie Koon, Tracy Mitzner (Georgia Institute of Technology), Maurita Harris (University of Illinois), Wendy Rogers (University of Illinois)

## WEDNESDAY, MARCH 27

### CCIT8 - Audible alarms

Clinical and Consumer Health-Care IT Track  
Wednesday, March 27, 8:30-10:00 a.m.

**Chair:** Morgan Fitzgerald, The Ohio State University  
Lecture Session

- 1. The final mile – why aren't people implementing our sounds?,** Michael Rayo, Morgan Fitzgerald (The Ohio State University), Lauren Mansour (The Ohio State University), Emily Patterson (The Ohio State University), Susan Moffatt-Bruce (The Ohio State University Wexner Medical Center)
- 2. A broad and inclusive strategy for developing audible alarms for standardization,** Judy Edworthy, Joe Schlesinger (Vanderbilt University), Matthew Bolton (University of Buffalo), Melanie Wright (Trinity Health), Alexandra Bruder (Vanderbilt University), Laura Fuhr (Vanderbilt University), Matthew Shotwell (Vanderbilt University), Daniel Ashmead (Vanderbilt University), Meng Li (University of Buffalo), Xi Zheng (University of Buffalo)

### HE8 – Simulation

Hospital Environments Track  
Wednesday, March 27, 8:30-10:00 a.m.

**Chair:** Bernadette McCrory & Bethany Lowndes, University of Nebraska Medical Center  
Panels

- 1. How and Why Healthcare Administrators and Human Factors Practitioners Should Embrace Healthcare Simulation,** Brittany Anderson-Montoya
- 2. Making Simulation Work Across a Health System,** Russell Metcalfe-Smith
- 3. Evaluating Human Patient Simulation Fidelity and Effectiveness for Combat Medical**

**Training,** Jennifer Winner, Teresa L. Millwater (U.S. Air Force School of Aerospace Medicine)

- 4. Using an Escape Room to Investigate Team Cohesion,** Tara Cohen, Brittany Bancroft (Cedars-Sinai Medical Center), Sarah Francis, Anusha Koka (PennState), Elizabeth Lazzara, Barbara Chaparro, Joseph Keebler, Bruce Gewertz

### MDD8 - Regulatory imperatives

Medical and Drug-Delivery Devices Track  
Wednesday, March 27, 8:30-10:00 a.m.

**Chair:** Ed Israelski, Human Factors Consultant  
Lecture Session

- 1. How Risk Management Fails Usability: Failure Modes of Risk Management and Human Factors and Best Practices for Use-related Risk Analysis Activities,** Tara Feuerstein (Farm Design), Pat Baird (Philips)
- 2. No Human Factors Validation Needed: How Comparative and Threshold Analyses Can Be Successful Alternatives to Validation Testing,** Melissa R. Lemke, Deb Billings Broky (Agilis Consulting Group)
- 3. A Framework for Conducting Integrated HF Validation and UI Design Validation Tests,** Rachel Aronchick, Erin Davis (UL)
- 4. Impact of the New EU Medical Device Regulations on Human Factors,** Martin Rausch(Sanofi)|Carolyn Ruf, Molly F. Story (Sanofi)

### PSRI8 – Design/implementation for multidisc. users and teams

Patient Safety Research and Initiatives Track  
Wednesday, March 27, 8:30-10:00 a.m.

**Chair:** Liza Papautsky, University of Illinois Chicago  
Lecture Session

1. **Evaluation of Technologies for Barcode Medication Administration (BCMA)**, Laura Barg-Walkow, Juliette Brinks (Children's Hospital Colorado)
2. **Methods for utilizing multidisciplinary team to create novel visual alarm designs that improve recognition of patient decompensation and alarm response**, Chelsea Horwood, Susan Moffatt-Bruce (The Ohio State University Wexner Medical Center), Morgan Fitzgerald (The Ohio State University Department of Integrated Systems Engineering), Michael Rayo (The Ohio State University Department of Integrated Systems Engineering)
3. **Designing emergency medical response bags for first responders**, Yuval Bitan, Eli Jaffe (Magen David Adom in Israel), Yoel Donchin (Hebrew University)

### **CCIT9 - Patient-Centered Technology**

Clinical and Consumer Health-Care IT Track  
Wednesday, March 27, 10:30 a.m.-12:00 p.m.

**Chair:** Marissa Vallette, IPSOS

Lecture Session

1. **The After Visit Summary Not an After Thought**, Nivedita Mohanty (AllianceChicago), Rich Holden (Indiana University School of Medicine)
2. **Delivering Patient Information and Access to Mental Health Counseling for ICU Families: Towards a Human-Centered Mobile Health System for Room-to-Family Communication**, Anthony Faiola (University of Illinois at Chicago), Joanna Abraham (Washington University in St. Louis), Elizabeth Papautsky (University of Illinois at Chicago)
3. **Comparison of Gait Speed Estimation of Multiple Sensor-based Technologies**, Plinio Morita, Adson Silva Rocha (University of Waterloo), George Shaker (University of Waterloo), Doojin Lee (University of Waterloo), Jing Wei (University of Waterloo), Brandon Fong (University of Waterloo), Anjali Thatte (University of Waterloo), Amir-Hossein Karimi (University of Waterloo), LinLin Xu (University of Waterloo), Avery Ma (University of Waterloo), Alex Wong (University of Waterloo), Jennifer Boger (University of Waterloo)

### **HE9 - Potpourri - Teamwork Checklists and Wayfinding**

Hospital Environments Track

Wednesday, March 27, 10:30 a.m.-12:00 p.m.

**Chair:** Katherine Forsyth, Mayo Clinic

Lecture Session

1. **Examining Associations between Hospital Size and Interprofessional Teamwork in Infection Prevention**, Megan Gregory, Clayton Rothwell (The Ohio State University College of Medicine), Sarah MacEwan (The Ohio State University College of Medicine), Ann Scheck McAlearney (The Ohio State University College of Medicine)
2. **The Development of a Daily Patient Room Cleaning Checklist**, Patience Osei, Clare Rock (Johns Hopkins University School of Medicine), Verna Scheeler (Johns Hopkins University School of Medicine), Sara C. Keller (Johns Hopkins University School of Medicine), Sara Cosgrove E. (Johns Hopkins University School of Medicine), Ayse Gurses (Johns Hopkins University School of Medicine), Anping Xie (Johns Hopkins Armstrong Institute for Patient Safety)
3. **Exploring Hospital Wayfinding Systems: Touchscreen Kiosks Apps and Environmental Cues**, Christy Harper, Spencer Jefferies (End to End User Research), Andrea Crosser (End to End User Research), Angie Avera (University of Houston-Clear Lake City), Tyler Duke (University of Houston-Clear Lake City)

### **MDD9 – CDRH/CDER FDA Panel**

Medical and Drug-Delivery Devices Track

Wednesday, March 27, 10:30 a.m.-12:00 p.m.

**Chair:** Anthony Andre, Interface Analysis

Panel Session

Irene Chan (FDA), Xin Feng (FDA)

### **PSRI9 - Modeling in Flow**

Patient Safety Research and Initiatives Track

Wednesday, March 27, 10:30 a.m.-12:00 p.m.

**Chair:** Shilo Anders, Vanderbilt University

Lecture Session

1. **A Work Systems Analysis of Sterile Processing**, Myrte de Alfred, Ken Catchpole (MUSC), Kevin Taafe (Clemson University), Larry Fredendall (Clemson University), Emily Huffer (Clemson University)
2. **Command and Control for Managing Patient Flow**, Abdulrahman Alhaider (Virginia Polytechnic Institute and State University), Nathan Lau (Virginia Polytechnic Institute and State University), Paul Davenport (Carilion Clinic), Melanie Morris (Carilion Clinic)
3. **Are simulation-derived models of neurodynamic and communication responses to task events representative of those from live-patient encounters?**, Ron Stevens, Jamie Gorman (Georgia Tech), Trysha Galloway (The Learning Chameleon Inc.), Ann Willemsen-Dunlap (Order of Saint Francis Hospital)