

Health Care TG News



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HFES 50TH ANNUAL MEETING

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Message from the Chair, Caroline CL Cao, PhD.

Growing awareness of human factors

As I write this message, I am nearing the end of my sabbatical year away from teaching and administrative duties at Tufts. I have been fortunate enough to be able to spend my sabbatical at the Vanderbilt University Medical Center with Matt Weinger and the Center for Perioperative Research in Quality. The use of simulation for medical education and training at Vanderbilt is growing by leaps and bounds, with dedicated support from the hospital at all levels. My experience and observations at the Medical Center have re-affirmed my conviction that patient safety improvement is a multi-disciplinary endeavour. Furthermore, the long and slow road to success demands complete, sustained commitment from all stakeholders in the health care system, ranging from administrators to educators, from clinicians to patients, from engineers to psychologists, etc.

Awareness of human factors and ergonomics in health care seems to be gathering momentum and reaching a wider population. Efforts to improve health care delivery and patient safety have generated considerable excitement. In particular, much attention has been focused on the use of medical simulation for training and evaluation. This is fi-

nally garnering some attention from funding agencies, as evidenced by the recent RFA from AHRQ. I hope the trend for funding research in this area continues.

Awareness of human factors and ergonomics in health care seems to be gathering momentum and reaching a wider population

We are now less than five months before the largest HFES Annual Meeting in 50 years! I am very excited about the meeting to be held in San Francisco in October, with more sessions over five full days! The HCTG has a great technical programme, thanks to Jake Seagull and all who submitted their work to be presented.

I look forward to seeing you all in San Francisco in October!

~Caroline Cao

RESEARCH NOTES: HEALTHCARE ENGINEERING AT PURDUE UNIVERSITY



The Group Performance Environments Research (GROUPER) Lab, founded and directed by Prof. Barrett Caldwell, studies multiple research areas, with a focus on knowledge sharing, information flow, and expertise development/coordination in complex task environments. GROUPER research efforts at Purdue University are centered on field studies of knowledge sharing and distributed team coordination, supplemented by growing efforts to develop appropriate quantitative simulations of team behavior using feedback control models. GROUPER also conducts some smaller laboratory projects involving human participants.

Performance Enhancement Resources for Comprehensive Healthcare (PERCH), one of GROUPER's major research areas, strives to improve the efficient and timely availability of information, to enhance the quality and safety of healthcare delivery. This mission focuses on increasing coordination and the value of knowledge shared between

healthcare consumers, providers and services. GROUPER and Prof. Caldwell are currently seeking graduate students with an interest in the PERCH research area to join the lab.

Current PERCH research projects focus on the coordination and collaboration of healthcare providers at the team and organization level. Example projects include the extension of foraging theory to information and resource acquisition for healthcare delivery; looking at hospital functions, information flows, and task coordination needs through a system-of-systems approach for improving hospital level performance; and the use of Crew Resource Management (CRM) principles to improve healthcare team coordination outcomes.

Purdue University is one of the nation's leading schools for graduate engineering education.

The Purdue College of Engineering has recently been ranked #6 in the United States, and the department of industrial engineering is currently ranked #4, in *US News and World Report* graduate

Engineering program rankings. The GROUPER Lab is recognized internationally for its research contributions in the human factors area of sociotechnical systems. GROUPER values the synergy found in interdisciplinary projects, with recent lab members having backgrounds in Aerospace, Electrical, Mechanical, and Industrial Engineering, as well as Computer Graphics, Computer Science, and Psychology.

Students interested in pursuing a graduate degree in human factors, who are also interested in being part of a collaborative research team working on one of the previously described topics, are encouraged to consider GROUPER for their studies. Students are expected to have the background necessary for admission into the Purdue Industrial Engineering graduate program. Additional information and instructions can be found at: <http://grouper.ecn.purdue.edu>





LISTSERV DISCUSSIONS

OUTSOURCING OR INTERNAL MODEL FOR HUMAN FACTORS PRACTICE?

On March 21, 2006, Michele Marut posted this message to the HCTG list-serv:

“This article <http://www.devicelink.com/mddi/archive/05/08/016.html> mentions how some medical device companies outsource human factors while others use an internal team. I’ve seen this discussed elsewhere but never saw the pros and cons of each method described. Would anyone be willing to share their thoughts on this with the group or myself? “

This is Michele’s summary of the discussion

Michele Marut is a Human Factors Specialist with Respironics, Inc.

The question did seem to resonate with a few others as a total of 11 people responded directly to me or posted their responses to the list serv.

Overall integrating human factors into product development is very similar in and outside of the healthcare community. With that in mind familiar arguments arose on the pros and cons of using internal and external resources. It seems even firms that rely more heavily on external resources still need the internal presence to champion and enable optimal solutions.

Clarence Dickson articulated it best with the table shown below:

	In house	Outsourced
Pros	<ul style="list-style-type: none"> ◆ Good Access – know company, people, product, and politics. ◆ Good Access – works quickly to accomplish task. ◆ Authority – has authority to make changes. ◆ Motivation – company loyalty. 	<ul style="list-style-type: none"> ◆ Independence – a true user advocate. ◆ Authority – if brought in by senior management. ◆ Motivation – to build reputation for future work
Cons	<ul style="list-style-type: none"> ◆ Independence – conflict of interest between what is best for user vs. what is best for company. ◆ Authority – may not be positioned to make changes, i.e. low level staff position. ◆ Access – too much information can become confusing. ◆ Motivation – don’t upset anyone. 	<ul style="list-style-type: none"> ◆ Access – don’t know company, people, product, and politics, therefore may not find best answer. ◆ Access – may waste time. ◆ Authority – may not be able to make changes. ◆ Motivation – may not care about “best solution,” since pay may be based on “a solution.”

Healthcare does differentiate from consumer products by requiring and demanding a higher attention to the safety of one of the primary users –the patient and adherence to multiple regulatory standards. With these in mind some respondents noted that it may be seen as a selling point to use outside consultants to conduct independent or 3rd party usability studies for validation.

Discussion Topic

FDA Critical Paths Opportunities List

Ila J. Elson has a question for HCTG members: “The FDA has published their Critical Path Opportunities List (<http://www.fda.gov/oc/initiatives/criticalpath/>) in March for speeding the development and approval of medical products. Some of the projects on the list could be addressed with contributions from the Human Factors community (like, performance standards for imaging displays). What are members doing to address this list of needs? What could we do to work together for standardizing or streamlining our work?”

Please join the discussion and submit your responses to hfes-healthcareTG@hfes.org



UPCOMING CONFERENCES & COURSES

July 10-14, 2006

IEA 2006

16th World Congress on Ergonomics.
The ergonomics world congress is held only once every three years information:
<http://www.ica2006.org/>

August 14-18, 2006

2006 SEIPS Short Course on Human Factors Engineering & Patient Safety

The 2006 Systems Engineering Initiative for Patient Safety (SEIPS) Short Course on Human Factors Engineering and Patient Safety This short course is designed to provide an understanding of human factors and systems engineering and how this approach to patient safety can improve performance, prevent harm when error does occur, help systems recover from error, and mitigate further harm. The SEIPS 2006 two part, five day course for professionals presents nationally recognized speakers lecturing on a variety of Human Factors Engineering and Patient Safety topics including:

- ◆ Design of the Physical Environment
- ◆ Human Factors Engineering
- ◆ Sociotechnical Systems and Macroergonomics
- ◆ Cognitive Ergonomics
- ◆ Technology Implementation
- ◆ Job Design
- ◆ Usability Testing
- ◆ Health Care Information Technology

More information:
<http://www2.fpm.wisc.edu/seips/>

October 8-11, 2006

2006 IEEE International Conference on Systems, Man, and Cybernetics

Theme for the conference is "Emerging Information Technology for Human-Machine Systems and Cybernetics". SMC 2006 strives to bring together people in

the area of SMC to provide an international forum for the reporting of current developments, to summarize the state-of-the-art, and to exchange new ideas and advances on all aspects of systems engineering, human machine interfaces, and emerging cybernetics. More information:
<http://ins.cn.nctu.edu.tw/smc2006/>

October 4-6, 2006

Human Factors in Healthcare: Practical Applications to Improve Patient Safety

From the Mayo Clinic College of Medicine.

This course is an introduction to human factors for all people in healthcare--physicians, mid-level providers, quality leaders, hospital administrators, software developers--who want to learn how human factors can help improve patient safety.

Patient safety is a top priority for healthcare organizations throughout the United States. A consistent theme has emerged that the interactions of people with their technological environment contributes significantly to the safety of systems and processes within healthcare.

The Mayo Clinic Conference on Human Factors in Healthcare will provide a forum dedicated to understanding core elements of human factors science, how each element influences system safety, and methods for appropriately utilizing the tools and methodologies to improve the quality and safety of patient care.

More information:
<http://www.mayo.edu/cme/oct2006.html>

June 26-29, 2006

2nd National Health-Care Ergonomics Conference

A conference for a wide range of health professionals including administrators, safety specialists, risk managers, ergonomists, occupational medicine providers and emergency medical providers.

Special Events:

- ◆ Nursing home and long-term care administrators special session
- ◆ Therapists and other rehabilitation professionals information on safe patient handling environment
- ◆ Nursing assistant instructors session on caregiver safety
- ◆ Nursing educators session on safe patient handling curriculum for schools of nursing

"Working on preventing injuries in healthcare will require stronger partnerships, innovative education, prevention work regarding muscle strains and repetitive-motion injuries, and using creative thinking to meet a 21st-century challenge"

More information:
http://www.orosha.org/conferences/OSHA_conference/Health_ergo.html



HFES 50th Annual Meeting

Message from the Program Chair

It's not too early to plan for HFES in San Francisco! You can start reviewing our preliminary technical program, even before the official program is published. We had a nice collection of submissions this year to the Health Care TG covering a wide range of topics in healthcare. We were able to accept 42 submissions that have been organized into 8 sessions plus poster sessions for the upcoming conference.

The Health Care TG sessions have been tentatively organized as follows:

- ◆ HC1 - Understanding and Facilitating Collaboration in Healthcare (Invited Symposium)
- ◆ HC2 - Teams, Communication and Culture in Medical Care
- ◆ HC3 - Modeling and Decision Making in Healthcare
- ◆ HC4 - Adverse Events and Reporting Systems in Healthcare
- ◆ HC5 - Modes of Perception in Medical Tasks
- ◆ HC6 - Workflow, Interruptions and Information Exchange in Healthcare
- ◆ HC7 - Patients as Partners in Treatment (Invited Symposium)
- ◆ HC8 - Reports from the Field: Evaluation of Medical Equipment, Materials and Methods

In addition, there are two jointly sponsored sessions, organized in collaboration with the Environmental Design TG and with the General Sessions. The first is a collection of investigations about evaluating medical environments and examining equipment that can produce medical problems. The second is a panel discussing the Veterans Administration Medical System's error reporting system, MEDCAS.

- ◆ ED3 - Diagnosing Environments: Environmental and Medical Human Factors
- ◆ GS5 - Learning from Investigation: Reviewing the First Year of MEDCAS (Discussion Panel)

The detailed schedule is listed on the next page. Sessions are scheduled as follows:

	Tues	Wed	Thurs	Fri
8:30-10:00		HC2	HC4	HC6
10:30-12:00			ED3	HC7
1:30-3:00		HC3	HC5	HC8
3:30-5:00	HC1		GS5	

Please note that HFES has scheduled a full day of sessions on Friday, unlike previous conferences that ended early on the last day. As you may notice, the Health Care TG has been assigned three time slots on Friday. Please plan ahead to stay through the end of the conference so that you can get to see all of the sessions.

We are also developing an informal lunchtime session to highlight work being done internationally in healthcare human factors. If you are interested in participating as a presenter, please contact me. Keep your eyes out for the event on the final schedule.

All the sessions promise to be interesting and diverse, and will cover cutting-edge topics.

We look forward to seeing you in San Francisco!

HCTG NEWS

The HCTG Newsletter is published three times a year. To contribute to the newsletter, please contact the newsletter editor.

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HCTG Sessions at 50th HFES

HC1 Understanding and Facilitating Collaboration in Healthcare

Tuesday October 17, 2006. 3:30 PM - 5:00 PM

Chair: Cynthia Dominguez Co-chair: Yan Xiao

1. Jeffrey Brown "Multidisciplinary perspectives on collaborative care"
2. Ayse Gurses "A distributed cognition approach to understanding information transfer in mission critical domains"
3. Anna McHugh "Barriers and Facilitators of Common Ground in Critical Care Teams"
4. Christopher Nemeth "Managing Uncertainty: How Clinicians Preserve Care Continuity Through ICU Sign-Outs"
5. Emily Patterson "Structured Interdisciplinary Communication Strategies in Four ICUs: An Observational Study"

HC2 Teams, Communication and Culture in Medical Care

Wednesday October 18, 2006. 8:30 AM - 10:00 AM

Chair: Ayse P. Gurses Co-chair: Sara Kramer

1. Yael Einav "The Justification and Benefits of Team Briefing in the Operating Room"
2. Rhona Flin "Experimental evaluation of a behavioural marker system for surgeons' non-technical skills (NOTSS)"
3. Ben-Tzion Karsh "Exploring the Determinants of the Provision of Quality Nursing Care"
4. Terry von Thaden "The Perception of Just Culture Across Disciplines in Healthcare"
5. Melanie Wright "Piloting Team Coordination Training at Duke University Health System"

HC3 Modeling and Decision Making in Healthcare

Wednesday October 18, 2006. 1:30 PM - 3:00 PM

Chair: Emilie Roth Co-Chair: Munira Jessa

1. Meghan Dierks "Risk and Recovery in Complex Medical Domains: Use of Modeling Tools to Understand Hidden Interactions and Variations in Risk Across Different Phases of Care"
2. Rebecca Green "Medical Terminology and the Sources Used to Explore Unfamiliar Terms"
3. Calvin Ka Lun Or "The Patient Technology Acceptance Model (PTAM) for Homecare Patients with Chronic Illness"
4. Marc Resnick "The Influence of Resource Pressure on Medical Treatment Decisions"
5. Sara Waxberg "Is Residency Evaluation Score a Good Predictor of Success?"

HC4 Adverse Events and Reporting Systems in Healthcare

Thursday October 19, 2006. 8:30 AM - 10:00 AM

Chair: Doug Weigmann

1. Samuel Alper "Violations in the medication administration process"
2. Kenneth Funk "A Methodology to Identify Systemic Vulnerabilities to Human Error in the Operating Room"
3. William Lee "WARD: An Exploratory Study of an Affective Sociotechnical Framework for Addressing Medical Errors"
4. Ido Morag "Development of a Novel Reporting System and Approach for Improving Healthcare Quality and Safety in Hospital Wards"
5. Kristopher Thornburg "Categorizing Adverse Medical Device and Medication Event Frequency"

HC5 Modes of Perception in Medical Tasks

Thursday October 19, 2006. 1:30 PM - 3:00 PM

Chair: Caroline Cao Co-chair: Grace Zhou

1. Caroline Cao "Improving Depth Perception in Laproscopic Surgery Using Color-Contrasting Shadows"
2. Yukari Enomoto "Effects of Visualization Tools on Cardiac Telephone Consultation Processes"
3. Dawn Riddle "Integrating Instructional Strategies and Haptic Technologies to Enhance the Training Efficacy of an Army 91Q (Combat Medic) Medical Skills Training Simulation"
4. Ryan Schoonmaker "Vibrotactile feedback enhances force perception in minimally invasive surgery"
5. Alexandra Wee "Effect of Mnemonics in Learnability of Melodic Medical Alarms with Registered Nurses"

HC6 Workflow, Interruptions and Information Exchange in Healthcare

Friday October 20, 2006 8:30 AM-10:00 AM

Chair: Greg Jamieson Co-chair: Andrea Cassano-Piche

1. Caroline Cao "Fixation and Attention Allocation in Anesthesiology Crisis Management: An Abstraction Hierarchy Perspective"
2. Sandra Garrett "Task Coordination and Group Foraging in Healthcare Delivery Teams"
3. Stephanie Guerlain "Converting to an Electronic Beside Flowsheet in the Pediatric Intensive Care Unit: the Effects on Workflow and Information Exchange"
4. Richard Sledd "Characterization of Sign-Out in Pediatric Acute Care Wards to Inform Process Improvement"
5. Douglas Wiegmann "An Empirical Investigation of Surgical Flow Disruptions and Their Relationship to Surgical Errors"

...Continued

HC7 - Patients as Partners in Treatment

Friday October 20, 2006 10:30 AM-12:00 PM

Chair: Helen Altman Klein Co-chair: Laura Militello

1. Markus Feufel "Facilitating the Use of At-Home Colorectal Screening Tests: The Effect of Cognitive and Motivational Instruction Manipulations"
2. Jamye Hickman "Doctor-Patient Communication: Guidelines for Improvements"
3. Devorah Klein "Medication Adherence: Many Conditions, A Common Problem"
4. Katherine Lippa "How Patients Understand Diabetes Self Care"
5. Vimla Patel Discussant

HC8 - Reports from the Field: Evaluation of Medical Equipment, Materials and Methods

Friday October 20, 2006 1:30 PM-3:00 PM

Chair: Ben-Tzion Karsh

1. Agnieszka Bojko "Eye Tracking Study on the Impact of the Manufacturer's Logo and Multilingual Description on Drug Selection Performance"
2. Jon Boyer "Development of a group-based exposure assessment strategy for characterizing physical workload in health-care workers"
3. Hui Dong "Pinch Forces and Instrument Tip Forces during Dental Scaling"
4. Munira Jessa "Human Factors Evaluation of Automatic External Defibrillators in a Hospital Setting"
5. Emily Seto "Usability Evaluations as Part of the Procurement Process: Case Study of Hospital Point of Care Carts"

ED3 - Diagnosing Environments: Environmental and Medical Human Factors

Thursday October 19, 2006 10:30 AM-12:00 PM

Chair: Nancy Stone

1. Scott Haynes "Use of a Wheelchair Seating System to Measure Postural Effects on User Comfort and Typing Performance"
2. Alan Hedge "Why does ergonomic furniture reduce but not eliminate musculoskeletal symptoms in offices?"
3. Sonja Koneczny "Combining checklists and staff surveys - a powerful tool to evaluate operating rooms"
4. Douglas Wiegmann "Identifying Systemic Factors that Impact Performance in the Cardiac Surgery Operating Room"
5. Teresa Zayas-Cabán "Health Information Maps: Combining Macroergonomics Concepts with Facilities Layout Tools"

GS5 - Learning from Investigation: Reviewing the First Year of MEDCAS

Thursday October 19, 2006 3:30 PM-5:00 PM

Chair: Christopher Nemet Co-chair: Richard Cook

1. Richard Cook
2. Jay Crowley
3. Meghan Dierks
4. Yoel Donchin
5. Christopher Nemeth
6. Emily Patterson
7. Tina Powell