

Human Factors Engineering: *Conquering Hazards with Design*

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**LECTURE REFERENCES &
LINKS to RESOURCES**

Medical Device Industry and Policy Groups Embracing HFE

- ◆ HFE articles in major trade publications:
 - ◆ MD&DI
 - ◆ Silver Sheet
- ◆ AAMI/CDV-1 HE75:2007. *Human factors engineering - Design of medical devices.* Arlington, VA: Assoc. Advancement of Medical Instrumentation
- ◆ AAMI / ANSI HE74:2005. *Human Factors Design Process for Medical Devices.* Arlington, VA: Assoc. Advancement of Medical Instrumentation

Healthcare Organizations Embracing HFE

- ◆ Johns Hopkins, Univ. of Maryland, BJC – St Louis
 - Hired full time Human Factors Engineer
 - Working on adverse events, procurement, mentorship
- ◆ Mayo Clinic
 - Hired full time Human Factors Engineer
 - Usability testing of computer systems and other systems
 - Yearly conference (starting in 2006) on HFE and medicine
- ◆ University Healthcare Network (Toronto)
 - Usability testing of devices for procurement
 - Has hired several full time Human Factors Engineers

Academia

- ◆ University of Wisconsin
 - Series of courses for masters in HFE and patient safety
 - One Week HFE and Patient Safety workshop every August
 - <http://www.engr.wisc.edu/ie/>
- ◆ University of Maryland
 - Video analysis in OR and ED
 - Alarms redesign
 - <http://www.safetycenter.umm.edu/>

HFE Books and Articles

- ◆ Gosbee JW, Gosbee LL. *Using Human Factors Engineering to Improve Patient Safety*. Oakbrook Terrace, IL: Joint Commission Resources, 2005.
- ◆ Gosbee JW, Anderson T. Human factors engineering design demonstrations can enlighten your RCA team. *Quality & Safety in Health Care*. 2003; 12: 119-121.
<http://qhc.bmjournals.com/cgi/content/abstract/12/2/119?etoc>

HFE Web Resources

- ◆ FDA Web Site and Publications (free and good!)
 - <http://www.fda.gov/cdrh/humanfactors/>
 - Human Factors Engineering and Medical Devices ("*Do It By Design*" & "*Device Use Safety*")
- ◆ Red Forest Consulting
 - <http://www.RedForestConsulting.com/>
- ◆ Wiklund M. Eleven Keys to Designing Error-Resistant Medical Devices. *MD&DI*. May 2002 pp. 86-90.
<http://www.devicelink.com/mddi/archive/02/05/004.html>

HFE and Healthcare Publications

Overviews

Gawron VJ, Drury CG, Fairbanks RJ, Berger RC. Medical error and human factors engineering: where are we now? *Am J Med Qual.* 2006 Jan-Feb;21(1):57-67.

Surgery

de Leval MR. Human factors and surgical outcomes: a Cartesian dream. *Lancet.* 1997 Mar 8;349(9053):723-5.

Dain S. Normal accidents: human error and medical equipment design. *Heart Surg Forum.* 2002;5(3):254-7.

Critical Care

Walsh T, Beatty PC. Human factors error and patient monitoring. *Physiol Meas.* 2002 Aug;23(3):R111-32.

Edworthy J, Hellier E. Alarms and human behaviour: implications for medical alarms. *Br J Anaesth.* 2006 Jul;97(1):12-7.

HFE and Home Care Publications

Hancock HE, Fisk AD, Rogers WA. Comprehending product warning information: age-related effects and the roles of memory, inferencing, and knowledge. *Hum Factors*. 2005 Summer; 47(2):219-34.

Bruno L, Ahrens J. Examining "operational failures" to reduce home care errors. *Caring*. 2005 Feb; 24(2):34-5, 37, 39

Li SF, Lacher B, Crain EF. Acetaminophen and ibuprofen dosing by parents. *Pediatr Emerg Care*. 2000 Dec; 16(6):394-7.

Rogers, WA, Mykityshyn AL, Campbell RH. Analysis of a "simple" medical device. *Ergonomics in Design*. Winter 2001; 6-14

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