# **Suggested Readings**

# Human factors and ergonomics textbooks, fundamentals and handbooks

- Eastman Kodak Company (2004). *Ergonomic Design for People at Work*. John Wiley and Sons.
- Grandjean, Kroemer, & Kroemer (1997). *Fitting the Task to the Human*. Taylor and Francis.
- Karwowski (2005). Handbook of Standards and Guidelines in Ergonomics and Human Factors. Lawrence Erlbaum Associates
- Karwowski and Marras (2006). Occupational Ergonomics. CRC Press
- Kroemer, Kroemer & Kroemer (2001). *Ergonomics: How to Design for Ease and Efficiency*. Prentice Hall
- Salvendy (Ed.), (2006) *Handbook of Human Factors and Ergonomics* (3rd ed). John Wiley and Sons.
- Sanders, M. S., & McCormick, E. J. (1993). *Human Factors in Engineering and Design* (7th ed). McGraw-Hill, Inc.
- Stanton, Hedge, Brookhuis and Salas (2004). Handbook of Human Factors and Ergonomic Methods. CRC Press.
- Stanton, Salmon and Baber (2005). Human Factors Methods: A Practical Guide for Engineering and Design. Ashgate Publishing
- WISHA Services Division, Washing State Department of Labor and Industries (2002). Office Ergonomics Practical Solutions for a Safer Workplace. http://www.lni.wa.gov/IPUB/417-133-000.pdf
- Wickens, C. D., Lee, J. D., Liu, Y., & Becker, S. E. G. (2004). An Introduction to Human Factors Engineering (2nd ed.). Prentice Hall.
- Wilson and Corlett (2005). Evaluation of Human Work. Taylor and Francis
- Woods and Hollnagel (2006). Joint Cognitive Systems. CRC Press.

## Systems / sociotechnical systems books and papers

- Carayon, P. and Smith, M.J. (2000). Work organization and ergonomics. Applied Ergonomics, 31: 649-662.
- Carayon, P. (2006). Human factors of complex sociotechnical systems. *Applied Ergonomics*, 37: 525-535.
- Clegg CW. (2000). Sociotechnical principles for system design. *Applied Ergonomics* 31: 463-477.
- Hendrick, HW and Kleiner, BM (2002). *Macroergonomics: Theory, Methods, and Applications*. Lawrence Erlbaum Associates.
- Hendrick, HW and Kleiner, BM (2000). *Macroergonomics: An Introduction to Work System Design*. Human Factors and Ergonomics Society.
- Parker, S. and Wall, TD (1998). Job and Work Design: Organizing Work to Promote Well-Being and Effectiveness. Sage Publications

### SEIPS Systems Engineering Initiative For Patient Safety Short Course on Human Factors Engineering & Patient Safety – August 13-17, 2006

- Pasmore, WA (1988). Designing Effective Organizations: The Sociotechnical Systems Perspective. John Wiley and Sons.
- Smith, M.J. and Carayon-Sainfort, P. (1989). A balance theory of job design for stress reduction. *International Journal of Industrial Ergonomics*, 4: 67-79.

# Human factors books focused on usability

- Nielsen J, Mack RL. Usability inspection methods. New York, NY: John Wiley & Sons, 1994.
- Nielsen, J. Usability Engineering. New York: AP Professional, 1993.
- Norman, DA. The Design of Everyday Things. New York: Doubleday. 1998.
- Preece, J., Rogers, Y., Sharp, H. Interaction Design. Wiley. 2002
- Rubin JR. Handbook of usability testing. New York, NY: John Wiley & Sons, 1994.
- Schneiderman, B. Designing the User Interface: Strategies for Effective Human-Computer Interaction. Reading, MA: Addison Wesley Longman, Inc. 1998.
- Wiklund ME. *Medical device and equipment design: Usability engineering and ergonomics.* Buffalo Grove, IL: Interpharm Press, 1995.

## Healthcare usability and health information technology articles

- Ash JS, Berg M, Coiera E. Some unintended consequences of information technology in health care: the nature of patient care information system-related errors.[see comment]. *Journal of the American Medical Informatics Association* 2004;11(2):104-12.
- Ash, J. S., Sittig, D. F., Poon, E.G., Guappone, K., Campbell, E., & Dykstra, R. H. (2007). The extent and importance of unintended consequences related to computerized provider order entry. *Journal of the American Medical Informatics Association*, 14(4): 415-423.
- Beuscart-Zephir MC, Brender J, Beuscart R, Menager-Depriester I. Cognitive evaluation: How to assess the usability of information technology in healthcare. *Computer Methods and Programs in Biomedicine* 1997; 54: 19-28.
- Berg, M. Patient care information systems & health care work: a sociotechnical approach. *International Journal of Medical Informatics*, 1999; 55:87-101.
- Carayon, P., Smith, P., Hundt, A. S., Kuruchittham, V., & Li, Q. (2007). Implementation of an Electronic Health Records (EHR) system in a small clinic: The viewpoint of clinic staff. *Behaviour and Information Technology*, to be published.
- Chaudrhry B, Wang J, Wu S, Maglione M, Mojica W, Roth E, et al. Systematic Review: Impact of Health Information Technology on Quality, Efficiency, and Costs of Medical Care. *Annals of Internal Medicine* 2006;144:E12-E22.
- Claus PL, Gibbons PS, Kaihoi BH, Mathiowetz M. (1997). Usability lab: A new tool for process analysis at the Mayo Clinic. In: *HIMSS Proceedings*. Chicago: Healthcare Information Management Systems Society, 1997; 2: 149-159.
- Cohen M. Over-reliance on pharmacy computer systems may place patients at great risk. *ISMP Medication Safety Alert!* 1999; 4: 1.

SEIPS Systems Engineering Initiative For Patient Safety Short Course on Human Factors Engineering & Patient Safety – August 13-17, 2006

- Gosbee JW, Lin L. (2001). The role of human factors engineering in medical device and medical system errors. In C. Vincent (ed.) *Clinical Risk Management: Enhancing Patient Safety*, 2<sup>nd</sup> Edition. London: BMJ Press. Pp. 301-317.
- Gosbee JW. The discovery phase of medical device design: A blend of intuition, creativity, and science. *Medical Device & Diagnostic Industry*. 1997; 11: 79-82. http://www.devicelink.com/mddi/archive/97/11/016.html
- Gosbee JW, Anderson T. Human factors engineering design demonstrations can enlighten your RCA team. *Quality & Safety in Health Care*. 2003; 12: 119-121.
- Gosbee, JW. A patient safety curriculum for residents and students: The VA Healthcare Systems pilot project. ACGME Bulletin. November 2002. Pp. 2-6. Online at <a href="http://www.acgme.org/Bulletin/11\_02.pdf">http://www.acgme.org/Bulletin/11\_02.pdf</a>>
- Gosbee JW. Human factors engineering and patient safety. *Quality & Safety in Health Care*. 2002; 11: 352-354.
- Gosbee, J.W., Arnecke, B., Klancher, J., Wurster, H., Scanlon, M. (2001). The Role of Usability Testing in Healthcare Organizations. In *Proceedings of the Human Factors Society 40th Annual Meeting*, pp. 1308-1311.
- Karsh B. Beyond usability for patient safety: designing effective technology implementation systems. *Quality and Safety in Healthcare* 2004;13(5):388-394.
- Karsh B, Hamilton-Escoto K, Beasley JW, Holden R. Toward and theoretical approach to medical error reporting system research and design. *Applied Ergonomics* 2006;37(3):283-295.
- Koppel, R., Metlay, J. P., Cohen, A., Abaluck, B., Localio, A. R., Kimmel, S. E., et al. (2005). Role of computerized physician order entry systems in facilitating medications errors. *Journal of the American Medical Association*, 293(10), 1197-1203.
- Lin L, Isla R, Harkness H, Doniz D, Vicente KJ, Doyle DJ. (1998). Applying human factors to the design of medical equipment: Patient-controlled analgesia. *J Clin Monitoring and Computing* 1998; 14: 253-263.
- Nemeth C, Cook R. Hiding in plain sight: What Koppel et al. tell us about healthcare IT. *Journal of Biomedical Informatics* 2005;38(4):262-263.
- Wears, R. L., & Berg, M. (2005). Computer technology and clinical work: Still waiting for Godot. *Journal of the American Medical Association*, 293(10), 1261-1263.

# Human factors / usability organizations websites

- Demonstrations of "inattentional blindness" www.Viscog.com
- www.useit.com <u>Extremely practical</u> set of HFE links, articles, tools, and tidbits especially as applied to computer systems. Operated by leader in the field, Jakob Neilsen, with several commentaries and lay press reports.
- http://www.fda.gov/cdrh/humanfactors/ **Fantastic web site** about applying practical human factors tools and principles to medical device and software design. "Do it By Design" is especially good primer on HFE process (free download).
- http://www.hf.faa.gov/Webtraining/Usability/usability1.htm Nice web-based HFE training. Designed by FAA human factors professionals for all the people in the FAA that build or buy devices and software (e.g., air-traffic control software).
- http://usability.gov/basics/index.html
- http://www.stcsig.org/usability/resources/toolkit/toolkit.html

#### SEIPS Systems Engineering Initiative For Patient Safety Short Course on Human Factors Engineering & Patient Safety – August 13-17, 2006

- Human Factors and Ergonomics Society. www.hfes.org
- International Ergonomic Association. www.iea.cc
- ACM/Special interest group on computer human interaction (SIGCHI) sigchi.org
- Usability Professionals Association www.upassoc.org
- Information Architecture Institute/ newsletter iainstitute.org
- HCI Bibliography < http://www.hcibib.org/>
- (Jesse James Garrett's) Information architecture resources jjg.net/ia/
- Information Design resources/newsletter www.boxesandarrows.com
- Usability First www.usabilityfirst.com

# Books focused on organizational safety

- Reason (1990). Human Error. New York: Cambridge University Press.
- Reason (1997). Managing the Risks of Organizational Accidents. Ashgate Publishing.
- Perrow (1984, 1999). Normal Accidents. Princeton University Press
- Weick and Sutcliffe (2001). Managing the Unexpected. Jossey-Bass.

# Patient safety books

- Bogner (Ed). (1994) Human Error in Medicine. Lawrence Erlbaum.
- Bogner (Ed). (2003). Misadventures in Health Care: Inside Stories. Lea Publishing.
- Carayon, P. (Ed.) (2007) Handbook of Human Factors in Health Care and Patient Safety. Lawrence Erlbaum Associates: Mahwah, New Jersey.
- Gawande (2003). Complications: A Surgeon's Notes on an Imperfect Science. Picador.
- Gosbee JW, Gosbee LL. Using Human Factors Engineering to Improve Patient Safety. Oakbrook Terrace, IL: Joint Commission Resources, 2005.
- Institute of Medicine (2000) To Err is Human. National Academy Press
- Institute of Medicine (2004). Patient Safety: Achieving a New Standard for Care. National Academy Press.
- Institute of Medicine (2004). Keeping Patients Safe: Transforming the Work Environment of Nurses. National Academy Press.
- Institute of Medicine (2007). Preventing Medication Errors. National Academy Press
- Spath (2000). Error Reduction in Health Care: A Systems Approach to Improving Patient Safety. Jossey Bass Wiley.

# Human factors engineering and safety articles relevant to patient safety

- Bogart DH. Feedback, Feedforward, and Feedwithin: Strategic Information in Systems. *Behavioral Science* 1980; 25:237-249.
- Carayon, P. and Friesdorf, W. (2006). Human factors and ergonomics in medicine, in *Handbook of Human Factors and Ergonomics*, G. Salvendy, Editor. John Wiley & Sons: New York. p. 1517-1537.
- Carayon, P., Hundt, A.S., Karsh, B.-T., Gurses, A.P., Alvarado, C.J., Smith, M. and

Brennan, P.F., (2006). Work system design for patient safety: The SEIPS model. To appear in *Quality & Safety in Health Care*.

- Cook R, Rasmussen J. "Going solid": a model of system dynamics and consequences for patient safety. *Quality and Safety in Health Care* 2005;14:130-134.
- Dejoy DM. Managing Safety in the Workplace an Attribution Theory Analysis and Model. *Journal of Safety Research* 1994;25(1):3.
- Gosbee JW. Human factors engineering and patient safety. *Quality & Safety in Health Care*. 2002; 11: 352-354.
- Gosbee JW. Human Factors Engineering is the Basis for a Practical Error-in-Medicine Curriculum. Technical Report G99-1. University of Glasgow. [http://www.dcs.gla.ac.uk/~johnson/papers/HECS 99/Gosbee.htm]
- Gosbee JW, Ritchie EM. Human-computer interaction and medical software development. *interactions*. New York: ACM Press, 1997; 4: 13-18.
- Karsh B, Alper SJ, Holden RJ, Or KL. A human factors engineering paradigm for patient safety designing to support the performance of the health care professional. *to appear in Quality and Safety in Healthcare* 2006.
- Saladow J. Continuum of care and human factors design issues. *J Intraven Nurs* 1996; 19(3 Suppl): 20-24.
- Schneider PJ. Applying human factors in improving medication-use safety. *Am J Health-Syst Pharm.* 2002; 59(12)
- Welch, D.L. (1998). Human factors in the health care facility. May/June 1998: 311-316.