

Medication Safety Issue Brief

Focusing on the Human Factor

4

of 6 in a series

Series II

Building devices and systems that are safer and easier for people to use is the focus of part four in a six-part series designed to help senior management reduce medication errors in their hospitals. This series of six issue briefs was developed by the American Hospital Association, the American Society of Health-System Pharmacists and *Hospitals & Health Networks* with the generous support of Aventis Pharmaceuticals. You may tear out this card for future reference. Additional copies of both this series and an earlier series, published in 2001, are available as a PDF on the ASHP and *H&HN* Web sites (www.ashp.org and www.hhnmag.com). ASHP members can also call the ASHP's fax-on-demand service.

• SUMMARY

If it's true that "to err is human," then it makes sense that the best way to avoid mistakes is to address the human factors that let them happen. The science of human factors engineering sounds intimidating, but it is simply the idea of designing devices and processes to be easier and more intuitive to use, thus reducing the opportunity for mishaps. Hospitals are increasingly turning to specialists who can apply these ideas to improve the safety of medical care, and training their own patient safety teams in the principles of human factors engineering.

• ISSUE BRIEF

Put simply, human factors engineering is the study of the relationship among people, the tools they use and the environments in which they live and work. Human factors applied to health care is an idea that can be used with tools such as root-cause analysis and usability studies. Analyses of medical errors can pinpoint human factors such as a readout with too small a font or instructions that are too complex.

Experts are convinced that human factors are considerations for a safe work environment, but addressing the issue isn't as simple as going out and hiring a human factors engineer for your hospital. For one thing, there just aren't enough of them to go around. Most human factors engineers work in computer science or aviation; training programs for specializing in health care are just getting off the ground.

But some average-sized hospitals have managed to get specialists to help them create better, safer designs on both a small and large scale. For instance, at Concord (N.H.) Hospital, the cardiac surgery unit used a human factors expert in aviation to help design a better process for communicating with patients, families and the rest of the patient care team in the intensive care unit. Surgeon Paul Uhlig, M.D., says the specialist was able to codify the health professionals' ideas about a more open, team approach to rounds. "He was able to take things we wanted to do and put them into terms that made them happen," says Uhlig, medical director of the hospital's cardiac program. "It was so much more effective because of 40 years of experience in other fields, such as aviation safety. It was like putting a booster rocket on our efforts."

In West Bend, Wis., leaders of St. Joseph's Community Hospital have used human factors analysis on a much larger scale: to help design a new hospital. CEO John Reiling says human



The Medication Safety Issue Briefs are a joint project of the American Hospital Association's Quality Agenda, the American Society of Health-System Pharmacists and *Hospitals & Health Networks*, and are made possible through the generous support of Aventis Pharmaceuticals.



ACTION Agenda

Here is a list of action items you can use to promote human factors principles:

- Management should educate itself about human factors principles and fully understand them before moving ahead.
- Patient safety staff should get training in the specifics of human factors and related tools such as usability studies.
- Don't hire a human factors specialist until your organization's patient safety efforts evolve enough to take action on the specialist's findings.
- When a chance for redesign comes up, standardize location of equipment, supplies and room layout, as well as care process.
- Recognize "work-arounds" as a danger signal. When staff members design elaborate, ad hoc ways to avoid troublesome devices or processes, it's a sign those devices and processes need to be fixed.

ADDITIONAL RESOURCES

- "Human Factors Engineering," backgrounder by VA National Center for Patient Safety; available online at www.patientsafety.gov.
- Gosbee, J., "Human factors engineering and patient safety," *Quality and Safety in Health Care*, December 2002.
- Larson, L., "Putting Patient Safety in the Blueprint," *Trustee* feature about St. Joseph's in West Bend, Wis., February 2003.
- "Designing a Safe Hospital," brochure from the Center for the Study of Healthcare Management, University of Minnesota's Carlson School of Management; available online at <http://sjwbconstruction.infopop.cc/articles/DesigningSafeHospital.pdf>.

Medication Safety Issue Brief

Focusing on the Human Factor

factors concepts underlay nearly everything the hospital did. "We wanted to get rid of all the stuff that would cause people to make errors," Reiling says. "We would design around the errors themselves and make things safer."

In particular, planners focused on the limitations of short-term memory, and the conditions that make it less reliable—noise, interruptions, boredom, stress and fatigue. Among the innovations for the future St. Joseph's was the addition of a room outside the MRI, equipped with metal detectors, to ensure that nothing metallic goes inside and causes an accident. Also, patient rooms were standardized; rather than having outlets for adjacent rooms share the dividing wall, they are identically placed on the same wall in each room.

John Gosbee, a human factors specialist with the Veterans Affairs health system, recommends that hospital managers ensure that they understand the importance of human factors principles in their patient safety efforts, and that these sophisticated techniques be used in the correct context. It's possible to jump into them too early and be frustrated with having too much information, making it difficult to act. For instance, a root-cause analysis may result in more detailed reasons for a failure, but the staff may lack the ability to take the next step. Instead of hiring a specialist right away, Gosbee says, organizations need to become grounded in an understanding of how humans work with devices. "It is not just another set of principles and techniques," he says. "It provides a 'tried and true' framework for building and strengthening that elusive safety culture."

• CASE STUDY

Concord (N.H.) Hospital: This 295-bed hospital's cardiac surgery team developed a team approach to improve communication during rounds. While they believed they were already providing good care, the team wanted to improve communication with patients and families and among themselves for even better quality and safety. Working with a human factors expert, the team developed a structured process for rounds that emphasizes the involvement of everyone connected with the patient.

The group gathers at 8:45 a.m. each day to discuss the patient's care plan. The team openly discusses any problems that arose during care, and those "system glitches" are recorded for further review and action by the patient safety team. While it was a struggle early on to get all those people in one room at one time, the "collaborative communication cycle" has paid dividends, the hospital reports, both in patient satisfaction and outcomes. Pharmacists say that the process helps avoid medication errors because all parties involved—including the patient—have a chance to discuss medication decisions. ●

