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AT RISK

ASHRM
NORTH CAROLINA CHAPTER

A risk management publication written by the members of the North Carolina Chapter of the American Society for Healthcare Risk Management

President's Letter

Each year, the board develops a work plan to guide us through our activities for the upcoming year. Earlier this year the board met to discuss the work plan and other items vital to the chapter. Let me briefly share with you some of the activities that your board worked on during the year.

- Explored ways to enhance our sponsorship program by providing increased value to our sponsors
- Using the newsletter as a tool to increase communication of board activities to the board
- Participation on the steering committee for the Southeast Regional Risk Management Conference
- Incorporated "how to" tools for risk managers into the spring and fall meeting programs
- Provide new member information to be included in the chapter newsletter
- Involve our legislative contact in at least one meeting per year (Fall)
- Identify and develope opportunities to expand the use of the NC ASHRM web page

These are just a few of the numerous items listed on our work plan.

Moving on, I want to personally thank each of you who helped make the spring Southeast Regional Program a success. Special thanks goes out to Vicki Haddock, Bobbie Hendrix, Rich Thompson, Cynthia Defusco, Sheila Elliott, Doug Borg and the rest of our board for their hard work putting the program together.

In addition, if you didn't attend the fall meeting this year, you missed a treat! The programs were exceptional. This year we offered an optional Wednesday afternoon session for new risk managers or those who wanted to brush up on the basics. We also celebrated our 20th year anniversary with an oyster roast and karaoke. I believe the highlight of the evening was a visit by a strange woman in a blue dress.

I'd like to welcome our new board members for 2001. They are Lisa Byrd, Thom Eure, and Mark Hudson. We look forward to these three serving on the board for next year.

"It truly has been a pleasure serving you this year. I've enjoyed being your chapter president and look forward to helping in the transition to Richard Thompson as your new leader for 2001. I encourage each of you to consider taking an active role in a committee as you will find that it can be very self rewarding and you will receive two-fold what you give! Have a safe and happy holiday."

CHUCK MANTOOTH

Risk managers enjoy obscurity, but struggle to persuade managers to take action

BY BRUCE GOLDMAN

Imagine having a job where your success is measured by how anonymous you remain.

Nobody knows a successful risk manager's name — and few know what somebody with that job title does for a living. The resume looks like this: Planes that didn't crash; the breweries whose vats didn't spill their contents all over the floor when The Big One hit; patients who lived to count their surgery stitches.

Simply put, risk management is the art of figuring out the scenarios and the chances of accidents — some of which may not have happened yet but could — then figuring out how you can prevent them, said Elisabeth Paté-Cornell, chair of Stanford's Department of Management Science and Engineering, during a workshop held at Stanford on April 26. "If we're doing our job well," she said, "nobody hears about it."

Titled "Engineering Risk Analysis and Management," the workshop was organized by Paté-Cornell and sponsored by the Alliance for Innovative Manufacturing at Stanford (AIMS). AIMS is a campus-based joint venture of Stanford's business and engineering schools and several corporate partners. Its mission is to encourage advances in manufacturing and to disseminate these advances throughout industry and academia. It's difficult enough to identify, much less to quantify, risks involving complex engineered systems, for which there is often little experience from which to mine data. And even when you've done it, "convincing

Continued on page 7

System changes to improve patient safety

Thomas W. Nolan, statistician.

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The automated teller machine that dispenses cash and other banking transactions has become ubiquitous in many parts of the world. Most machines follow one of two sequences to complete a transaction. Some dispense the money first and then return the card. Others reverse these two steps. Since the aim of the transaction is to obtain the money, common sense and research in human factors predict that the person using the machine is more likely to forget the card if it is returned after the money is dispensed. The order is designed into the system and produces a predictable risk of error.

Researchers have documented the extent of errors and their effect on patient safety. Like the card forgotten at the automated teller machine, many of the adverse events resulted from an error made by a person who was capable of performing the task safely, had done so many times in the past, and faced significant personal consequences for the error. Although we cannot change the aspects of human cognition that cause us to err, we can design systems that reduce error and make them safer for patients. My aim here is to outline an approach to designing safe systems of care based on the work of human factors experts and reliability engineers.

Summary points

Many errors are attributable to characteristics of human cognition, and their risk is predictable.

Systems can be designed to help prevent errors, to make them detectable so they can be intercepted, and to provide means of mitigation if they are not intercepted.

Tactics to reduce errors and mitigate their adverse effects include: reducing complexity, optimizing information processing, using automation and constraints, and mitigating unwanted effects of change.

Strategies for the design of safe systems of care

Designers of systems of care can make them safer by attending to three tasks: designing the system to prevent errors; designing procedures to make errors visible when they do occur so that they may be intercepted; and designing procedures for mitigating the adverse effects of errors when they are not detected and intercepted.

Preventing errors

In complex systems such as those that deliver health care many factors influence the rate of errors. Vincent et al have suggested a nested hierarchy of factors that determine the safety of a healthcare system. The factors relate to: institutional context, organization and management, work environment, care team, individual team member, task, and patient. The proximal causes of error and adverse events are usually associated with some combination of the care team, one of its members, the task performed, and the patient. Cook and Woods have called this part of Vincent's hierarchy the "sharp end" of the healthcare system. To prevent errors these factors must be considered in the design of the care system. However, the less obvious factors institutional context, organization and management, and work environment, the "blunt end" of the system must also be addressed.

Making errors visible

Although errors cannot be reduced to zero, the aim of the system should be to reduce to zero the instances in which an error harms a patient. A safe system has procedures and attributes that make errors visible to those working in the system so that they can be corrected before causing harm.

Inspection or "double checking," such as the inspection of physician medication orders (prescriptions) by the pharmacist and the checking of a nurse's dose calculations by another nurse or by a computer, are examples of making errors visible. If patients are educated about the course of their treatment and their medications in the context of a trusting relationship, patients can also be effective at identifying errors. They should be encouraged to ask questions and to speak up when unusual circumstances arise.

Mitigating the effects of errors

Not all errors will be intercepted before reaching the patient. When errors go undetected, processes are needed that quickly reverse or halt the harm caused to the patient by the error. For example, antidotes for high hazard drugs, when they exist, should be readily available at the point of administration. Lessons learned from other more frequently

used emergency procedures, such as resuscitation of a patient in cardiac arrest, will be helpful to develop these procedures.

Tactics for reducing errors and adverse events

Many tactics are available to make system changes to reduce errors and adverse events; they fall into five categories:

ANETTE HAUG

Design of the system ensures that he won't forget to take his card.

- **Reduce complexity**
- **Optimize information processing**
- **Automate wisely**
- **Use constraints**
- **Mitigate the unwanted side effects of change**

These tactics can be deployed to support any of the three strategic components of error prevention, detection, and mitigation.

Reduce complexity

Complexity causes errors. Researchers who have studied this relationship have developed operational definitions of complexity of a task using measures that include: steps in the task, number of choices, duration of execution, information content, and patterns of intervening, distracting tasks. These measures provide a convenient list of factors to consider when simplifying individual tasks or multitask processes.

Some medical treatment, diagnostic processes, or individual cases are inherently complex given the current state of scientific knowledge. However, many sources of complexity are readily removed. Leape provides some examples of a complexity inducing proliferation of choices resulting from personal preference. These include non-therapeutic differences in drug doses and times of administration, different locations for resuscitation equipment on different units, and different methods for the same surgical dressings. Complexity is also reduced by eliminating delays, missing information, and other defects in operations.

Optimize information processing

Human interaction and the associated processing of information are at the heart of health care. The aim of the optimization should be to increase understanding, to reduce reliance on memory, and to preserve short term memory for essential tasks for which it is needed.

Use of checklists, protocols, and other reminders for patient and clinician interactions is a basic requirement of a safe system. These aids have the additional benefit of preserving the limited capacity of short term memory for problem solving and decision making. Norman suggests "putting information in the world" as a design principle for improving information processing. Examples of tools to help adhere to this principle include color coding, size or shape differentiation, and the elimination of names (as in drugs) that sound alike.

Automate wisely

Types of automation include those that support tasks, for example, medication order entry; those that perform tasks, such as robotic packaging of medications in the pharmacy and automatic set up of radiation therapy equipment; and those that collect and present information such as disease registries and computer reminder systems.

Automation affects the performance of a system in ways that are often more complex than anticipated and often introduces new types of errors. For example, automated drug infusion devices allow the concentrations of drugs in the patient's blood to remain relatively constant, but errors in setting up the devices can cause overdoses and underdoses.

Principles for the wise application of automation include:

- Keep the aim focused on system improvement rather than automating what is technologically feasible
- Use technology to support not supplant the human operator
- Recognize and reduce during the design and implementation phases new cognitive demands required by the technology, especially those demands that occur at busy or critical times.

Use constraints

A constraint restricts certain actions. When used to restrict actions that result in error, constraints become one of the most reliable forms of error proofing. Constraints are of various types: physical, procedural, and cultural. Physical constraints take advantage of the properties of the physical world for example, it is impossible to insert a three pronged, grounded plug in a two holed electrical outlet. They are often used to prevent error associated

with the set up and use of equipment for example in connecting anaesthetic equipment.

Procedural constraints increase the difficulty of performing an action that results in error. Removing concentrated electrolytes from patient care units in a hospital is an example of a procedural constraint. Other examples of procedural constraints include order forms that list only limited sets of actions, standardizing the prostheses used in joint replacement surgery, and computer medication order systems that prevent abnormally high doses from being ordered.

Any society has strong cultural conventions that define acceptable behavior. These cultural constraints can be quite strong—try entering a crowded elevator in the United States and face towards the rear rather than toward the door. Many industrial safety programmers rely on cultural constraints by defining unsafe acts and rigidly censuring those who perform them. In a culture of safety, using non-standard abbreviations in prescriptions and scheduling nurses to work back to back shifts would be considered unacceptable. Regardless of whether physical and procedural constraints can be designed into the system, in a labor intensive industry such as health care cultural constraints will be an essential part of an advanced safety initiative.

Table 1. Nominal human error rates of selected activities (adapted from: Park K. Human error. In: Salvendy G, ed. Handbook of human factors and ergonomics. New York: Wiley, 1997:150-173.)

Activity*	Probability of human error (No. of errors/No. of opportunities for the error)
General error of commission for example, misreading a label	0.003
General error of omission in the absence of reminders	0.01
General error of omission when items are embedded in a procedure for example, cash card is returned from cash machine before money is dispensed	0.003
Simple arithmetic errors with self checking but without repeating the calculation on another sheet of paper	0.03
Monitor or inspector fails to recognize an error	0.1
Staff on different shifts fail to check hardware condition unless required by checklist or written directive	0.1
General error rate given very high stress levels where dangerous activities are occurring rapidly	0.25

* Unless otherwise indicated, assumes the activities are performed under no undue time pressures or stress.

Mitigate the unwanted side effects of change

Advances aimed at improving care, such as new medical procedures, surgical techniques, or monitoring equipment, often introduce unwanted side effects. Clinicians must go through a learning curve and alter their familiar routines. During this period chances for error and harm are increased. Precautions can be taken to mitigate the unwanted effects of change:

- Use a formal process to predict opportunities for error and harm before making the change and eliminate them if possible or mitigate their effect with standardized contingency plans and training
- Test the changes on a small scale with minimum risk and devote resources to redesign the procedure as problems are identified
- Monitor the clinical outcomes, errors, and adverse events over time during testing and implementation.

Setting aims

System change requires will. The will for change can be articulated by setting aims that specify the level of system performance with respect to errors and adverse events. Because of the gravity of an adverse event, improvements should be thought of in terms of decreasing orders of magnitude of errors, 1 per 100, 1 per 1000, 1 per 10,000.

Error rates in any system must ultimately be determined empirically. However, some first approximations of current system performance and potential performance can be developed using nominal error rates developed by specialists in human factors supplemented by internal data at check points or from research studies. Table 1 contains examples of these error rates.

The error rates in table 1 are for a single task. Most processes in health care contain many steps and tasks. The error rate for a process increases as the steps in the process, and therefore its complexity, increase. Table 2 contains the error rates for a process given the number of steps in the process and the error rate at each step.

Continued on page 9

CHAPTER NEWS:

Elections

Following are the election results announced at the Business Meeting on 10/5/00. Congratulations to our new board members for 2001!

Members at large -2 year terms
Lisa Byrd
Thom Eure
Jean Rhodes

Member at Large -1 year term
Mark Hudson

Nominating Committee
Kathy McKeown
Margaret Rose

An Electronic Reminder:
Future issues of the newsletter will be e-mailed to all chapter members. Please check the directory to see if we have your correct e-mail address on file. If a correction is needed, please send your changes to Rina Borg, Executive Assistant at: BorgO1 @ACPUB.Duke.EDU.

Congratulations to the following members who have completed the designation of Certified Professional in Healthcare Risk Management (CPHRM):

Lisa Byrd
Bobbie Hendrix
Gwen Stokes
Joyce Benton
Vicki Haddock
Sarah Bailey

More Congratulations!

At our 2000 Fall Meeting, Margaret Broadhurst, Chair of the Professional Development Committee, presented the **Professional Development Recognition Award** to **Cindy Weaver** who received the **Workhorse Award** for her generous support and contributions to the Chapter.

Gwen Stokes, of the Professional Development Committee presented the **Professional Recognition Award** to **Margaret Broadhurst** for her devotion to her professional development.

With Great Appreciation to our Sponsors of the Fall 2000 Program:

Platinum ($500+); AON Group, Marsh USA, The Medical Protective, The PHICO Group, The St Paul Insurance Company, The Virginia Insurance Reciprocal, Healthcare Insurance Services Southeast, McNeary Healthcare Services, Willis Corroon.

Gold ($301-$499): Cameron Harris & Co., Caronia Corp., Zurich American Insurance Company

Silver ($101-$300): PMA Group

FAQs:

Recently the board was asked why the nominating committee only identified one candidate for officer positions. That is a good question.

Our Chapter recognized the challenge of getting potential candidates for board officer positions and the disappointment of candidates not selected. Candidates were becoming discouraged and not agreeing to stand for election once they were screened, identified as a qualified candidate, placed on a multiple candidate ballot and then not elected. The board determined that the selection process undertaken by the nominating committee was assuring capable and willing members for officer positions. So, to assure that good leaders were not unnecessarily frustrated, the board decided to direct the nominating committee to submit only one name for each officer position. This is intended to conserve our leadership talent.

Thanks for the question.
Cynthia De Fusco
Nominating Committee Chair, 2000

Thank you fellow members

Thank you for the humbling but great honor you bestowed upon me.

It came at a time of low self-esteem.

– Margaret Broadhurst

Insurance on the Internet A new Frontier

By Stephen P. Chamblee

When I first started in the insurance industry, the marriage of insurance with technology was a rocky one. It seemed like the only technology used in most insurance offices were phones, copiers, typewriters and the amber glowing screens of “dummy” terminals. Time passed and the insurance industry soon entered a second phase of technology adoption, as a result, the stacks of paper were moved aside in order to make room for desktops, laptops, and a promise of a paperless office. However, this new forest saving technology has yet to deliver on the promise of less paper, as a matter of fact, this new technology generated more paper and work as a result of e-mail, financial report and coding print outs. A new phase in Insurance technology adoption is around the corner, in fact, a new economy is forming that promises to revolutionize how all business will be transacted, whether it is financially or non-financially related.

E-commerce and in particular, insurance related e-commerce is the shot in the arm that the insurance industry has needed. The fulfillment of the promised paperless work environment and elimination of redundant data entry is around the corner. The next phase in insurance technology adoption is made up of brokers, carriers and insured being linked together electronically. These electronic links will reduce paper, reduce costs, reduce error and consolidate the distribution channel and improve customer service with a significant reduction in the cost of transacting business.

There are many players in the insurance industry investing heavily in e-commerce and the promised efficiencies that it brings. For example, Allstate has announced that it would spend up to 1 billion in the next two years to develop an online direct sales channel. Farmers Insurance is in the process of implementing a multi-million dollar system to revamp its claims processing and provide its agents web-enabled real-time access to policyholder information. AIG launched AIGDIRECT.CQM and Berkshire Hathaway began selling individual annuities online. Zurich Small Business currently uses the Internet for online applications, rating and policy processing. Last month, Lloyd’s managing agent SVB launched Fusion Underwriting Services, a service that uses secure web technology to link brokers with underwriters and enables policies to be purchased electronically 24 hours a day. Many analysts believe that the true growth in Insurance E-commerce will not be from Carrier internal development, but from third party vendors that have the ability to maintain industry neutrality. The insurance industry is on the cusps of revolutionary operational change and Wall Street is beginning to notice.

Analysts are predicting 2000 as the year of business to business (B2B) Internet developments. Much of this expected development is based upon the realization that businesses will be driven to B2B e-commerce by the expectations of their business customers and partners. It’s a simple game of keeping up with the competition or being knocked out of the game altogether. GE plans to have all 12 of its business units purchasing materials via the Internet by the end of the year. What does all this mean for insurance companies? It means that the insurance industry must offer online transactions services between insured, brokers, reinsurers and commercial insurers by participating in B2B online exchanges, simply because that is the way the clients, potential clients and competitors will be doing business.

However, current electronic transmission capabilities at individual insurance companies are typically limited to phone, fax, and e-mail. The bottom line is that insurance is data intensive and our current model of operations and data flow is notoriously inefficient. Most insurance functions involve moving data to and from various divisions within a company and outside the company to brokers or insureds and resinsurers. Customer data is received from the agent, moved to underwriting, then shifted to billing department, shuffled to the central database only to be moved again to the reinsurer and claims department. Currently this data process involves multiple incompatible systems and the data being moved within a single company dictates several manual duplicated entries. In an insurance industry study, it was found that on average the named insured was entered and re-entered 12-15 times from quote to policy issuance. The redundancy within most carriers result in high expense, high error, and inefficient production.

In the near future the front offices of Insurance Carriers will be electronically linked to the back offices of agents and brokers. The internet will no longer be an operational expense or a new channel for corporate advertising and investor information, but will become a means to aggregate buyers and sellers into a seamless standardized operating environment; to put it simply, an “exchange.”

There are several insurance exchange models being developed and implemented, only time will tell which will eventually win out. The most promising B2B exchange model is labeled as Transaction Processor I Application Service Providers. Application Service Providers (ASPs) are staking their claims as cost-effective facilitators who will streamline sales, administration and operations. The

transaction processor is a web site that "aggregates content and services for a particular industry and makes it available to that industry's members. Its purpose is to inform, provide application-based services and create efficient vertical markets for its members." In other words, the transaction processor will offer all essential applications, billing, policy issuance; rating, coding and direct linked new business submissions via a web based Internet site with centralized data storage. The insurance exchange will improve efficiency and eliminate many common errors as a result of utilizing standardized common data amongst all members of the insurance community.

The leader in the Exchange Services arena is ChannelPoint. The Following is an excerpt from ChannelPoint's web site. (www.chanelpoint.com)

ChannelPoint's Internet exchange services and technology platform deliver breakthrough value by giving insurance and financial services suppliers the ability to conduct business electronically with distribution partners and customers. Together, the services and platform can quickly transform any insurance organization into a 'dot-com' company by enabling the creation of configurable, web-based marketplaces that support the online shopping, selling and end-to-end purchasing of insurance, benefits and select financial services products. These web-based marketplaces can be configured as private, semi-private or open trading groups that maintain corporate identity, product design and image while reducing insurance distribution costs, increasing business opportunities and providing world-class service.

Forward-thinking insurance organizations are beginning to leverage technological forces in order to grow their businesses. The stakes are high: leading business analysts estimate that more than 450 billion is spent annually on paper based insurance distribution costs alone. Insurance carriers, brokerages and financial institutions adopting a "first mover" position in e-commerce are gaining a distinct competitive advantage in this complex, dynamic industry. With the use of exchanges and transaction groups, the insurance carriers can reduce paper, reduce costs and reduce the costs associated with distribution.

Analysts predict that by 2003, over 35% of insurance transactions will be completed via insurance exchanges. The additional benefit of adopting B2B e-commerce is anticipated to generate cost savings of anywhere from 15% to 65%. These cost savings, combined with convenient and customized service, will encourage consumers and partners to buy policies electronically. Companies that choose to offer online policies and utilize e-commerce will undercut traditionally priced products and threaten competitor insurers profitability.

"Zurich Financial Services is building e-commerce hubs in the USA, U.K. and Switzerland with ChannelPoint technology. These hubs will let Zurich's business units, brokers and customers access quotes, review proposals and insurance plan information online, as well as enable the purchase of insurance policies and products via web storefronts." However, our competitors that fail to promote an e-business strategy are at serious risk of being excluded from the fastest growing segment of the marketplace and excluded from the delivery of the paperless office and excluded from the new frontier of the insurance industry.

HELPFUL WEBSITES:

www.chanelpoint.com
www.veritalnet.com

Risk managers enjoy obscurity... Continued from page 1

top management to invest in low-likelihood events with high consequences is not an easy task," said Ted Marston, chief nuclear officer for the Electric Power Research Institute in Palo Alto. But assessing and managing risk can pay off noted Marston, who has logged 25 years of international experience. He recalled the example of a major American brewer that, by seismically retrofitting its Los Angeles brewery in the mid-1980s at a cost of $10 million, avoided a potential earthquake-damage loss of between $750 million and $1 billion.

Nor is it easy to focus executive attention on addressing myriad tiny, repetitive problems that can add up to potential catastrophes, said Jimmy Benjamin, a manager in electronics giant Hewlett-Packard's hardware services division. Benjamin recounted a lesson learned from his involvement in a risk study commissioned by a major airline.

"Some problems are chronic," Benjamin said. "You think you've fixed it, but it's still there. For example, say you're an airline mechanic. You keep replacing that part, but it keeps wearing out. Meanwhile, your manager grades you on your ability to turn a plane around in 20 minutes, rather than considering the cost to the company of not fixing it right. So what will you do? You'll fix it quick, the way you know will get it in the air fast, rather than inspect the maintenance log and ask: 'Hey, has anyone noticed that this widget's broken 20 times in the last 35 flights?'" The solution, Benjamin said, lies in restructuring the maintenance process to provide incentives to pay attention to chronic problems. By implementing that restructuring, the airline will probably save billions of dollars.

Continued on the next page

Paté-Cornell related a case study on improving safety among anesthesia patients. The particular concern was how to minimize risk to patients from anesthesiologist abusing drugs or alcohol. “While they should know better, young anesthesiologist seem to have drug use and addiction rates on the same order as that of the general population,” she said — probably because they have easy access to drugs. “And older anesthesiologists may well have a higher alcoholism rate” — perhaps due to the pressures under which they’ve worked for decades.

The risk of anesthesia-related deaths in big hospitals is less than one in 10,000, said Paté-Cornell, but when such deaths do occur, they may be blamed on the malady that brought the patient to the operating table, when in reality they may have been an avoidable consequence of small incidents of neglect, misjudgment or malperformance.

Working with a medical school in Adelaide, Australia, and a large hospital in California, Paté-Cornell developed a model for assessing the role of such events. To identify risky behaviors, conditions and situations, her team talked to numerous experts: anesthesiologists, surgeons and operating-room nurses, who, she said, were close observers of the scene with a wealth of knowledge. Paté-Cornell and her team also talked to lawyers who regaled them with horror stories.

The team identified two general sources of lapses on the part of anesthesiologists. The first was lack of alertness. “An anesthesiologist’s job is like that of a pilot,” said Paté-Cornell. “Once you take off, your job can be very boring, but you’d better be here if something goes wrong — for example, if the tube that brings the oxygen from the machine to the patient’s lungs gets disconnected. An anesthesiologist has to both recognize a problem and fix it, generally within less than two minutes.”

Fatigue really gets in the way of detection and diagnosis and thinking straight, said Paté-Cornell: “If the anesthesiologist has been working twenty-two hours in a row, you don’t want to be the patient that shows up in the 23rd hour.” Paté-Cornell’s group found that 10 percent of the time, fatigue was a problem — one which, Paté-Cornell said, can be solved by placing limits on how long an anesthesiologist is allowed to stay on duty, as the State of New York has done.

The other source of anesthesiologist error was incompetence. Crisis management requires a certain kind of personality, but beyond admission to medical school there’s really not much selection for those traits, said Paté-Cornell. Moreover, anesthesiology crises are sufficiently rare that an anesthesiologists who isn’t in the operating room often enough to encounter problems with any frequency may not remember what he or she learned way back in medical school. Paté-Cornell’s recommendations included crisis training (on simulators like those used to train airline pilots), which quantitative methods indicated could reduce risk by a far from-negligible 16 percent, and more effective supervision and back-up of resident anesthesiologists, which she calculated could lower risk by about 14 percent.

The real surprise, Paté-Cornell told the audience, was her finding that even aggressive random testing for alcohol or drug abuse — the issues that had triggered the study in the first place — would reduce risk by an anemic 2 percent and 1 percent, respectively. In comparison, a periodic, formal recertification process, which may detect a performance-hindering deterioration in an anesthesiologist’s health and/or competence, could reduce risk by an impressive 23 to 29 percent.

Lee Merkhofer, vice president of Applied Decision Analysis (a wholly owned subsidiary of Price-Waterhouse-Coopers), captured the counterintuitive essence of Paté-Cornell’s conclusion in a remark he said has been attributed to Albert Einstein: “There is a simple solution to every complex problem. Unfortunately, it is wrong.

Of course, Merkhofer said, the fact that something is complex does not mean it is impossible to quantify. He referred to an exercise he has conducted with clients. “I ask, ‘What’s your estimate of the annual production of eggs in the United States?’” The answers are typically way off. “Then we break people into groups and get them thinking analytically: ‘Well, how many eggs per day per person

Meet Our New Members

Donna Atwater
Risk Manager
FirstHealth/Moore Regional Hospital

Linda Baker
Regional Production Specialist
AIG Healthcare

Sheree Barak
Risk Manager
North Carolina Specialty Hospital

Lillian Guerrier
Risk Management Specialist
UNC Hospitals

Katie Haldeman
Clinical Risk Manager
Presbyterian Hospital

Cynthia Hall
Risk Management Training Manager
Wake Forest University/Baptist Medical Center

Jean Irvin
Risk Manager
FirstHealth of the Carolinas

Beth King
Risk Management Coordinator
Lincoln Medical Center

Connie Lamb
Paralegal
Southeastern Regional Medical

Maryann McGivney
Regional Manager
Zurich US

JP Palus
Account Executive
Asura

Lee Ann Scott
Risk Management Analyst
WakeMed

Brenda Thompson
Risk Manager
Nalle Clinic

Bonnie Wilson
Senior Risk Management Analyst
Cape Fear Valley Health System

Patient safety... Continued from page 4

Table 2. Error rates for processes with multiple steps

	Base error rate of each step			
No of steps	**0.05**	**0.01**	**0.001**	**0.0001**
1	0.05	0.01	0.001	0.0001
5	0.33	0.05	0.005	0.002
25	0.72	0.22	0.02	0.003
50	0.92	0.39	0.05	0.005
100	0.99	0.63	0.1	0.01

Table 2. Error rates for processes with multiple steps

In reality error rates at each step will vary and there may be hundreds of steps. However, in practice a few of the steps will be most hazardous or have error rates that are substantially worse than the rest, so the computation can be done using these steps. Since the commission and omission error rates for simple tasks in a relatively stress free environment are in the parts per thousand, empirically developed rates that are in the parts per hundred indicate that rudimentary application of the system changes described in this paper will produce substantial improvements in safety.

Improvements to a system with empirical error rates in the parts per thousand will necessitate more sophisticated system changes including substantial use of all three types of constraints and substantial levels of automation.

Much is yet to be learned about how to design healthcare systems that are effective and safe. However, a solid foundation of knowledge and methods exist on which to build the healthcare systems that both patients and clinicians deserve. ◆

TIMELINE OF EVENTS FOR 2001-2002

Date	Location	Event
March 5-6, 2001	TBA	ASHRM Module II
April 2-3, 2001	San Antonio, TX	ASHRM Module III
April 4-5, 2001	San Antonio, TX	ASHRM Module IV
April 29-May 4, 2001	Atlanta, GA	RIMS Conference
May 7-8, 2001	Atlanta, GA	ASHRM Module I
May 9-10, 2001	Atlanta, GA	ASHRM Module V
May 8-11, 2001	Wrightsville Beach, NC	NC ASHRM Spring Meeting
October 28-31, 2001	Boston, MA	ASHRM Annual Conference
April 14-19, 2002	New Orleans, LA	RIMS Conference

WWW.NC–ASHRM.ORG

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