PRHI Executive Summary

Cause or effect?

"Human error" cited in 40% of region's med errors

"Health care is decades behind other industries in terms of creating safer systems…Until World War II, aviation accidents were viewed primarily as individually caused, and safety meant motivating people to 'be safe.' During the war, generals…came to realize that planning for safety was as important to the success of a mission as combat planning."

–To Err is Human: Building a Safer Health System, 1999 Institute of Medicine Report

A lauded feature of the MedMARx reporting system is its capability to assist in real-time root cause analysis— a quick, simple analysis of what went wrong, rendered as close as possible to the time the problem occurred.

However, the general categories on the MedMARx menu allow "performance (human) deficit" to be selected as a root cause—an option selected fully 40% of the time in our region.

But indicating that an error occurred because somebody made a mistake is not only demoralizing: it actually raises more questions than it answers. It points to the need to use the more detailed features of MedMARx to seek the *real* root cause of each problem.

Pilot Error?

The aviation industry used to select "pilot error" as a routine "cause" of aviation accidents. But over the past four decades, the experts have reconsidered. Because pilots are usually among the victims when mistakes become manifest, it became increasingly difficult to conclude investigations with a verdict of carelessness. Eventually, investigators started asking *why* pilots made errors. Only when they crossed that threshold did they begin to make real progress in understanding and addressing the human factors relating to accidents.

Understanding the ABCs

Captain Robert Sumwalt, a nationally recognized expert in human factors analysis and non-punitive

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MAY 2003

Inside this issue:

The First Wave

Hospitals commit to 2003 targets

PRHI's overall goal remains zero nosocomial infections, zero medication errors and the world's best outcomes in five clinical areas. On the way to the goal, PRHI is challenging partners this year to:

- Eliminate CLABs in ICU's; reduce CLABs outside ICUs, MRSA, others by 50%.
- Report all errors and eliminate 50% of them.
- Reduce in-hospital mortality following CABG surgery by 50%.
- Share every major event or learning regionally as soon as possible.

Considering how to "get there from here" stretches each hospital's idea about what is possible to achieve. As more and more leaders ask the question, "Why can't we?" they may discover and unleash new and creative ways to address these regional goals in their individual way.

Several hospitals responded to the goal-setting request by the April 15 deadline. Some, electing to make a system wide response, have informed PRHI that they will release their goals in June. Other hospitals discovered they needed more time to have the necessary conversations.

Turn to Page 3 for a synopsis from the early responders. Look for more commitment statements in future editions of the *PRHI Executive Summary* as they become available.

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Human error: an effect, not a cause — from page 1

A* = *ACKNOWLEDGE THAT HUMANS ERR

B* = *BUILD BARRIERS TO DEFEND AGAINST HUMAN ERROR

C* = *COMMUNICATE

S* = *USE STANDARD OPERATING PROCEDURES; ASK IF IT'S A SENSIBLE THING TO DO

—CAPT. ROBERT SUMWALT, US AIRWAYS AVIATION HUMAN FACTORS AND REPORTING EXPERT

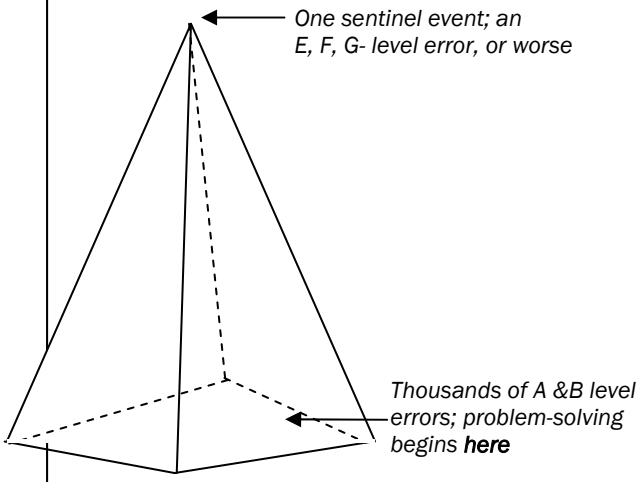
reporting systems, helped to create a simplified system for understanding the "whys" of human error. In use at major airlines, this system is called "The ABCs of Error."

A = **Acknowledge** that no matter how conscientious or well intentioned, all human beings make mistakes. Exhorting people to be more careful will not eliminate error. Acknowledging error as human behavior creates the foundation for a safe environment in which to report errors.

B = **Barriers**—the good kind, the layers of defense against error built into the systems surrounding people. In aviation, if one pilot misses an item on the checklist, the second pilot calls it out immediately. If both of those steps are missed, the aircraft has warnings and redundant systems to prevent a latent error from becoming a disaster. A medical analogy might be to have more than one co-worker check before high-alert medications are administered to a patient.

C = Complete **all communications**. One-sided communications lead to misunderstanding and error. In aviation, binary communications are the rule. For example, when an air traffic controller gives even a routine instruction, the pilot repeats it back verbatim, ensuring both parties that the instruction has been understood. Communicating this way promotes the team process. When binary communication is embedded in the system, communications themselves become part of standard procedure.

S = **Standard operating procedures**. People are twice as likely to commit consequential errors when they "wing it," doing a procedure in a nonstandard way. There's a second "S": Is what we are doing, in the context of how we're doing it, **sensible**? If something seems amiss to anyone on the team, that hunch is honored by the entire team. "Hey, wait a minute," is never dismissed.



MedMARx Index for Categorizing Medication Errors

- **I** Error occurred that may have contributed to or resulted in patient's death
- **H** Error required intervention necessary to sustain life
- **G** Error contributed to or resulted in permanent harm
- **F** Error may have resulted in temporary harm, required initial or prolonged hospitalization
- **E** Error may have resulted in temporary harm or required intervention
- **D** Error reached patient, required monitoring or intervention to preclude harm
- **C** Error reached the patient, did not cause harm
- **B** Error occurred, did not reach the patient
- **A** Circumstances or events could cause error

Obvious vs. Latent Errors

Aviation accident investigators know that by the time disaster strikes, numerous latent errors have already occurred, laying the groundwork. In terms of medication errors, thousands of A and B errors eventually result in E, F and G errors, or worse.

Only by methodically tackling latent errors, one at a time, can accident rates truly decline. But finding latent errors requires vigorous reporting of even seemingly inconsequential problems. A safe environment for detailed error-reporting will surface problems, making them eligible to be solved.

Hospitals commit to 2003 goals — from page 1

Responses received by April 15

The Children's Institute
John A. Wilson, President and CEO
- Zero medication errors
- Zero nosocomial infections

Pittsburgh Mercy Health System
Gregg G. Zoller, President and CEO

✧ **Mercy Hospital**
- Zero CLABs in ICUs
- Further decrease insulin errors by 15% (decreased by 51% in 2002)
- Reduce transcription med errors by 25%
- Reduce omission errors by 25%
- Reduce pharmacy dispensing errors 10%

✧ **Mercy Providence**
- Maintain zero CLAB rate in ICU
- Reduce category A&B errors related to addressograph and fax by 25%
- Reduce medication administration errors 10%

Monongahela Valley Hospital
Anthony Lombardi, President and CEO
- Reduce Rx ordering errors by two thirds
- Reduce two kinds of surgical site infections by 50%
- Participate in Leadership Case Study

Children's Hospital of Pittsburgh
Eugene S. Wiener, MD, Medical Director
- Reduce CLABs hospital-wide by 10%
- Reduce medication errors by 30% following phase one introduction of Computerized Physician Order Entry (CPOE) system.

Lifecare Hospitals of Pittsburgh
Clifford Orme, President and CEO
- 100% reporting of medication errors; 50% reduction
- 100% reporting of nosocomial infections; 50% reduction

UPMC Health System
- Will submit specific system-wide goals in June
- Will address process change and measurable outcomes in:
  - ✧ Heart failure
  - ✧ Outpatient diabetes management
  - ✧ Coronary Artery Bypass Grafting
  - ✧ Elimination of nosocomial infections
- Will reduce variability in orders, treatments and processes
- Will focus on care delivery elements as a proxy for outcomes (*i.e., if you do the right things, the outcome will follow*)

> ***I MUST AGREE THAT WITHOUT THE HIGHEST LEVEL OF COMMITMENT OR 'FULL WEIGHT' OF SENIOR LEADERSHIP PLACED UPON AN ORGANIZATION TO ACHIEVE AGGRESSIVE TARGETS, LITTLE WOULD BE ACCOMPLISHED.***
>
> ***—JOHN A. WILSON***
> ***PRESIDENT AND CEO***
> ***THE CHILDREN'S INSTITUTE***

Hospital partners who send their 2003 commitments to PRHI will be featured in upcoming newsletters:

PRHI fax: 412-535-0295

Some partners have expressed concern about stating their goals publicly. If you have any questions, please contact:

PRHI Director
Ken Segel
412-535-0292, ext. 104

Responses received after April 15

West Penn Allegheny Health System
Charles M. O'Brien, Jr., President and CEO
- Progress oversight by System Board of Directors
- *At a minimum*, eliminate CLABs in ICUs
- Support PRHI Cardiac Registry; reduce cardiac mortality following CABG
- Improve med error reporting; reduce errors
- System hospitals to report individual, site-specific goals by May 30, 2003.

The Washington Hospital
William P. Pearson, MD
Vice President of Medical Affairs
- Continue work in PRHI areas
- Inaugurated real-time (less than 24 hour) medication error reporting system, including failure mode analysis and plan for prevention
- Will share methodology for preventing transcription errors, obviating need for CPOE system

Butler Health System
Joseph A. Stewart, President and CEO
- Work on specified IHI patient safety projects

St. Clair Hospital
Benjamin E. Snead, President and CEO
- Reduce CLAB rates
- Reduce errors with eight high-risk medications by 15%

Fixing a system problem

Need a wheelchair? No problem at VA

Vickie Pisowicz
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What if you could work in a hospital where, every time a patient needed transport, a clean wheelchair of the correct size and configuration was immediately available?

"I'd pass out from disbelief . . . and delight," said one nurse. "Never happen," said another.

"The issue of wheelchair availability is greeted with emotion at every facility," says Peter Perreiah, PRHI Team Leader at the Veteran's Administration Pittsburgh Healthcare System (VAPHS) Learning Line on the 4 West unit. "Wheelchairs are a big system problem."

The VAPHS Learning Line on 4 West has been methodically solving the wheelchair problem for over a year now. Why so long? As with most problems that appear to be small, this issue revealed a larger system problem. From 4 West, observations and problem-solving quickly extended to all three VA locations: the acute care hospital on University Drive; the H.J. Heinz long-term care facility; and the Highland Drive psychiatric facility.

The guiding principle is the ideal: *Why can't we provide clean wheelchairs where and when they are needed, in the appropriate size and configuration to meet individual patient needs?*

The wheelchair problem has three components: 1) **supply**, having enough wheelchairs when and where needed; 2) **fit**, having a wheelchair of proper size and configuration; and 3) **cleanliness**, ensuring that the wheelchairs are in a condition unlikely to transfer contaminants.

This month, *PRHI Executive Summary* describes how the VA system addressed volume and fit. Next month's edition will describe how the team found a way to provide reliable cleaning for all wheelchairs.

Problem: not just any wheelchair

A correct wheelchair is more than a matter of comfort: it can affect patient health and safety. Getting patients out of bed and maintaining their physical activity using wheelchairs can play a vital role in reducing the risk of respiratory and urinary tract infections, as well as improving their mental outlook.

Understanding individual patient needs is the first step in improving physical activity. Larger patients require wider wheelchairs. Diabetic patients often need wheelchairs with leg rests to protect their vulnerable feet. Patients undergoing hip replacement need wheelchairs with reclining backs to avoid postoperative dislocation, while cancer patients may require smaller wheelchairs.

Problem: wheelchairs often unavailable when & where needed

Solution: A new system for tracking, storing and cleaning wheelchairs in all three facilities, means staff can always have a wheelchair when and where needed. Here, wheelchairs are stored at a main entrance.

At the H.J. Heinz long-term care facility, patients require wheelchairs in which they can sit comfortably for several hours, wheelchairs with substantial padding and high backs, again in various sizes. Quick-release seat belts prevent patients from falling out of wheelchairs, and anti-tipping devices prevent the chairs from tumbling over backward. Altogether, the VA system requires wheelchairs of about a dozen different configurations.

**The VAPHS Learning Line is run in conjunction with the Centers for Disease Control and Prevention (CDC)*

Problem: supply and demand

On an average day, the post-surgical 4 West unit serves about 25 patients. Yet on average, those patients will need transportation to more than 40 appointments—from physical therapy to imaging to hemodialysis. At most hospitals, wheelchairs are shared equipment, and that sharing can create long waits or searching. Too often, patients were late to appointments across the hospital, creating delays in other departments. Across the entire hospital, wheelchair delays accounted for many lost hours.

Problem: hiding and hoarding

At hospitals everywhere, "hiding and hoarding" are common behavior. When the system does not supply what is needed when it's needed, people learn to distrust the system. In a heroic attempt to provide the patients wheelchairs on demand, staff sometimes stash wheelchairs in closets, bathrooms or empty rooms, where they can't be seen and used by others. The problem is, even if there are technically enough wheelchairs in a hospital, hoarding can *create* a wheelchair shortage.

Observation: inventory

One example typified the problem at the acute-care hospital: of five reclining wheelchairs purchased just months earlier, only one remained. With some sleuthing, the problem-solving team discovered that, when patients had been transferred from the acute care hospital to the long-term care facility, they had been transported in the reclining wheelchairs, which then stayed on the receiving end. As a result, both the long-term care facility and psychiatric hospitals had a plethora of wheelchairs that were generally the wrong kind for their patients. Their problem was finding storage for the unwanted wheelchairs because no system was in place to return wheelchairs to the acute care hospital.

Experimenting with solutions

But how can healthcare workers know which wheelchair belongs where?

After cleaning all of the chairs in the system, the problem-solvers associated unique wheelchair colors with each facility by applying labels on the side panels and stenciling the seat backs. In this way whenever a stray wheelchair was spotted on a unit, healthcare workers would immediately know if it needed to be returned to its home facility.

The problem-solving team next identified convenient public places for wheelchairs to be placed between uses. At the acute-care hospital, the group studied the hospital layout, identifying traffic patterns, congregating areas and so on. They worked with people in every unit, from inpatient nursing to nuclear medicine, to define the best places to locate wheelchairs. Together they designated 30 convenient Wheelchair Courtesy Points throughout the hospital. The most significant stores are near the main entrance, in large elevator lobby and in a recreation room. Escorts now return wheelchairs to the forward staging areas in a predictable pattern.

> ***WHEELCHAIR AVAILABILITY IS GREETED WITH EMOTION AT EVERY FACILITY. IT'S A BIG SYSTEM PROBLEM.***
>
> **—PETER PERREIAH**
> **PRHI TEAM LEADER, VAPHS**

At all facilities, wheelchairs from transferred patients are cleaned and collected at transfer points near the loading docks. Twice a week, a truck that brings supplies also returns wheelchairs to their home facilities.

At the long-term care facility, physical therapists assess patients' wheelchair needs within 24 hours of arrival and issue appropriately configured chairs to meet their individual needs. When a patient is discharged, housekeeping staff clean the wheelchair, mechanics checks it and return it to Physical Therapy for re-issue.

The VA did make a one-time substantial investment in new wheelchairs to have sufficient number and variety of wheelchairs to meet the needs of long-term patients. However, the data show that the recirculation system and Wheelchair Courtesy Points are working. More patients are on time for their appointments, and less-quantifiable outcomes, such as patient comfort and worker satisfaction, also appear to have improved. Finally, the clear VA identification on the wheelchairs has already paid off: dozens of chairs have been returned to the hospital that would have been lost from the VA system in the past.

Next month: wheelchair hygiene

Excellence as a habit

Study takes on "real" dimension at UPMC Northwest

> ***THIS IS NOT AN OVERNIGHT THING. IF IT WERE EASY, IT WOULD JUST TAKE A MEMO.***
>
> ***—PAUL O'NEILL***

On March 20, employees at UPMC Northwest in Franklin were "in class," studying the Harvard Case Study on Alcoa. The study explores how Alcoa became the safest workplace in the United States, reducing its lost work-day rate from 6 to 0.15 per 200,000 hours worked. (Currently, American hospitals share an abysmal rate of 3.3.)

Adding his personal observations to the study was Paul O'Neill, former Alcoa CEO and Treasury Secretary, and Chairman of PRHI's Leadership Obligation Group. Mr. O'Neill described the way the Alcoa findings could be applied to health care for patients *and* workers.

What kind of leadership does it take?

Making a quantum leap in safety requires leadership from top to bottom. It involves attention to detail in an inverted hierarchy: leaders aren't ensconced in offices, but are usually out among the workers, helping them solve problems.

When every simple mistake is viewed as waste, it's easy to see how healthcare costs quickly multiply. If the incredible talent of every nurse were unleashed 100% of the time, for example, instead of squandered in "hunting and gathering," an enormous amount of waste would fall out of the system. More important, patients would receive more and better care.

At UPMC Northwest, L-R: (L-R) UPMC Northwest board chairman **Ned Cowart**, PRHI LOG chair **Paul O'Neill**, UPMC Northwest board members **Keith Pemrick** and **James Knarr**, UPMC Northwest chief executive officer **Neil Todhunter**, and PRHI director **Ken Segel**.

Photo by Christian Porter, courtesy UPMC Northwest

Disarming the excuses

Often, the first reaction from leadership is a long string of reasons why improvement cannot be achieved. Chief among them are: "Our patients are sicker;" "We're different;" "We already have programs in place;" "We are working as hard as we can;" and "Our results are as good as anyone else's."

Once leaders realize where their real baseline is, and how much improvement is possible, they can be persuaded to find ways to make quantum leaps. When the change comes, starting from the very top of the organization, and when people are permitted to develop solutions in their own areas, they become excited and "own" and accelerate change. Every success must be celebrated.

"Free lessons"

The sole difference between a near miss and a disaster is luck, so information about near misses is incredibly valuable. Airline accident investigators refer to near misses as "free lessons," and we can learn from every one of them.

Most system improvements do not necessarily require capital investment or the latest high tech innovation. Some of the best solutions are simple and don't cost money. The most earth-shattering change is in thought processes.

Changing systems in a dramatic way means imparting on every worker the freedom to think of ways to do it better; to be treated with dignity and respect; to have their work be a meaningful contribution to their lives; and to have their hard work noticed.

Regional data point the way

One major advantage of the PRHI consortium is the ability to have enough data to learn together from common root causes and solutions.

"Medical care institutions and providers must never ever seek to win competition by holding back information that could help one another's patients," Mr. O'Neill told the UPMC Northwest workers.

"This is not an overnight thing," he added . "If it were easy, it would just take a memo."

EMR: Setting the stage

Heritage Valley won't wait for high tech to eliminate abbreviations

Heritage Valley Hospital will institute an electronic medical record (EMR) system in 2005. The new system will not accept abbreviations in prescriptions.

But Heritage Valley isn't waiting until 2005 to phase out abbreviations.

Last year, Dr. Russell Jenkins of the Institute for Safe Medication Practices (ISMP) addressed the Sewickley Valley Hospital and the Medical Center, Beaver medical staff, and described instances across the country where confusion over abbreviations in a prescription caused life-threatening complications for patients. Specifically, ISMP has identified 39 abbreviations that pose a high risk of error.

Which abbreviations are "dangerous?"

Apothecary symbols	ZnSO4	U or u
AU	Stemmed names	IU
D/C	"Nitro" drip	cc
Drug names	"Norflox"	x3d
ARA°A	m g	BT
AZT	o.d. or OD	ss
CPZ	TIW or tiw	> and <
DPT	per os	/ (slash mark)
HCl	q.d. or QD	Name letters and dose numbers run together (e.g., Inderal40 mg)
HCT	qn	
HCTZ	qhs	Zero after decimal point (1.0)
MgSO4	q6PM, etc.	No zero before decimal dose (.5 mg)
MSO4	q.o.d. or QOD	
MTX	sub q	
TAC	SC	

Find the complete list of dangerous abbreviations, with explanations and alternative notations at the website of the Institute for Safe Medication Practices (ISMP): ***http://www.ismp.org/msaarticles/dangerous%20abbrev.doc.htm***

Involving the whole team

Heritage Valley's Medical Director, Dr. Dan Brooks, and Pharmacy Manager, Bernard Stoehr, began to assemble a multidisciplinary team to talk about problem abbreviations at their hospital. Through discussions with physicians and pharmacists on the Pharmacy and Therapeutics, Clinical Care, and Executive Committees, along with unit managers from each nursing area, consensus emerged. Initially, ISMP's 39 dangerous abbreviations would be eliminated—on the way toward eliminating *all* dangerous abbreviations.

By starting now to focus on eliminating abbreviations, 1) safety for patients will improve immediately, and 2) implementing the EMR system in 2005 will be much easier.

Making the change

Work began on tools to make the transition easier, such as pre-printed order sets for insulin, using "units" instead of the often confused abbreviation "u." Follow-up observations showed compliance near 100%.

Implementation included comprehensive education for everyone in the prescription chain. Letters went out to over 500 physicians system wide. In addition, posters were placed at the hospital entry points to serve as reminders of the change.

Baseline data were collected, so that future compliance could be measured. Already certain abbreviations are showing big reductions, such as "MSO_4" for "morphine sulfate," "$MgSO_4$" for "magnesium sulfate," and use of "µg" instead of the written "microgram." In addition to abbreviations the baseline data also captured problematic prescribing habits such as the use of trailing zeros, like "0.1<u>0</u>," or the omission of leading zeros, like "_.1".

Physicians are beginning to heed the change. If a physician creates an order with a dangerous abbreviation, the protocol now calls for stopping the process, clarifying the order, and if necessary, issuing a personalized reminder letter.

"Everyone wants a process that will allow them to do their job safely and more effectively," says Dr. Brooks. "When it comes to eliminating abbreviations, it takes a team approach to get this job done."

PRHI goal area

PRHI's Medication Safety Administration Regional Working Groups, comprising pharmacists, pharmacy techs and other clinicians from hospitals across the region, are targeting the elimination of dangerous abbreviations this year. The groups are also addressing problems associated with fentanyl patches and PCA pumps.

For more information about PRHI's Medication Safety Administration Regional Working Groups, please contact Stacie Amorose at 412-535-0292, ext. 106.

Calendar, June 2003

Monday, June 2 — 5-7pm
Depression & Diabetes Work Groups, Centre City Tower, 5th Fl. Montour Room

Tuesday, June 3
Infection Control Advisory Committee, PRHI Offices — 8-10 am
PRHI Co-Chairs Meeting, PRHI Offices — 11:30 am-1 pm

Tuesday, June 10
Medication Administration Advisory Committee, PRHI Offices — 3-5 pm
Perfecting Patient Care (PPC) Information Session – PRHI Offices — 6-9pm

Wednesday, June 18
Hospital Learning Line visit – West Penn Hospital — 8am-noon
Board of Directors Meeting, JHF Offices, 23rd floor — 4 pm

Thursday, June 19
Buying Healthcare Value Committee, JHF Offices, 23rd floor — 2:30-4 pm
Clinical Advisory Committee – (location TBA) — 6-8:30 pm

For further information call Helen Adamasko, 412-535-0292, ext. 100

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