Profile

VA National Center for Patient Safety
2006

Department of Veterans Affairs

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Serving Our Veterans by Focusing on Patient Safety

Thank you for taking time to learn more about patient safety! It's a critical problem in healthcare. Safety is the foundation upon which quality is built.

In the United States, estimates of the lives lost due to factors related to patient safety exceed that of lives lost due to motor vehicle accidents, breast cancer, or AIDS, as the landmark 1999 Institute of Medicine study, *To Err is Human*, showed.

We're proud that VA began addressing the problem well before the IOM report was published. We have aggressively developed and deployed systems that are used throughout VA. Our innovations have been adopted as a benchmark by healthcare organizations throughout the world.

It's important to remember that patient safety isn't a destination, it's a never-ending journey.

For VA, the first step in that journey was recognizing that "errors" weren't the crux of the problem. Reducing or eliminating harm to patients is the real goal of patient safety. Patient safety efforts that focus exclusively on eliminating errors will fail. We'll never eliminate all human errors. But we can develop systems that drastically reduce or eliminate the potential for individual errors to cause harm to patients.

We can and must investigate how well patient care systems function. In the past, we focused almost exclusively on the "who," rather than on the "how" or "why." Known as the "name and blame" culture, too little attention was paid to improving poorly functioning care systems. Regardless of the caregiver involved, a poorly designed process can repeatedly generate an unfortunate sequence of events and result in a patient being harmed.

Traditionally, we in healthcare primarily relied on caregivers to be perfect and equipment to never fail in order to provide safe care. This approach guaranteed that safety would not be what it could be, as no individual is perfect 100 percent of the time. For too long, we were afraid to admit it. We've abandoned this failed approach at VA and we are very proud of it.

By taking a systems approach to problem solving, we are fostering a new medical culture at VA. We call it a culture of safety. We look for ways to break that link in the chain of events that can cause a recurring problem: those underlying systems-based problems that went ignored or unaddressed.

We focus on building care systems that are "fault-tolerant," reducing or eliminating the possibility that harm can come to a patient. Such systems are designed to succeed even if individual components fail. For years, the fault tolerance principle has been used by the aviation industry and other high-reliability organizations — and high-reliability industries' safety records far surpass those of healthcare.

We don't focus solely on individual experience, which weighed far too heavily on how problems were viewed in the past. While the old expression goes, "experience is the best teacher," it can also be the most expensive. In the case of medicine, we've seen too many patients pay the heavy and sometimes devastating tuition for our learning.

We're proud that our program has taken hold. For instance, when we instituted a non-punitive approach to patient safety, we saw a *30-fold* increase in event reporting and a *1,000-fold* increase in the conduct of root cause analyses on events that were close calls, reflecting the level of commitment to the program by VA staff and leaders.

I encourage you to learn more about patient safety. I hope that what we present in this publication provides you with new ideas and a new perspective on that fundamental tenet of medicine: First, do no harm.
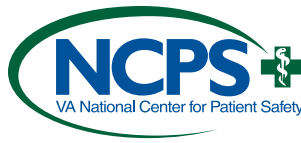
Our Mission: Prevent Harm To Our Patients

We are part of the Veterans Health Administration, the nation's largest integrated healthcare system.

We know that patient safety begins at the bedside.

That is why supporting our VA caregivers is a primary focus . . .

- We offer caregivers a systems approach to solving patient safety problems, focused on prevention, not punishment.
- We work to empower caregivers to speak up if something is perceived to be unsafe, regardless of their position in the hierarchy.
- We encourage an active commitment to safety by leadership.
- We provide training to caregivers to conduct rigorous root cause analyses so that reoccurrence of adverse events or close calls can be prevented.
- We promote proactive risk assessments, focused on effective actions and measurable results.
- We offer caregivers confidential, non-punitive reporting systems to electronically document patient safety information.
- We support the standardization of practices associated with care delivery, equipment and space design.
- We continually reaffirm the belief at all levels of the organization that improving patient safety is not just the foundation of high quality clinical care, but a moral and ethical imperative.

. . . because we want to prevent harm to our patients and give them the best care possible.

Magnitude of the Problem

A "snap shot"

2005

Penn. Health Care Cost Containment Council

Thorough analysis of hospital data from 2004 by the State of Pennsylvania indicated that more than 1,500 patients died from hospital-acquired infections. If Pennsylvania is typical, this would amount to more than 35,000 deaths nationwide. The national financial costs to Medicare alone were estimated at $20 billion.

2004

HealthGrades

A HealthGrades study estimated that up to 195,000 in-patient deaths occur per year nationwide due to patient safety events; this adds an estimated $19 billion in extra costs per year**.**

VA's Culture of Safety

Taking a systems approach to problem solving

Prior to the 1999 publication of the Institute of Medicine's landmark report, *To Err is Human*, virtually all healthcare organizations engaged solely in investigations of events that caused harm to patients. Few of these investigations, however, involved a systems-based approach to problem solving.

The focus was on individuals and mistakes, rather than on the cluster of events that had combined in an unfortunate sequence to cause an incident to occur. Based on the "name and blame" culture of the past, the emphasis of such investigations was not on prevention, but on punishment.

We've based VA's Culture of Safety on a systems approach to problem solving — focused on prevention, not punishment. We use methods and apply ideas from high reliability organizations, such as aviation and nuclear power, to target and eliminate system vulnerabilities.

Reducing or eliminating harm to patients is the real key to patient safety. Efforts focused exclusively on eliminating errors will fail. It's an ill-advised pursuit that results in repeat problems occurring to different individuals who continue to work in the same unchanged, poorly functioning care systems.

One of the most important ways that we address systems issues is to learn from close calls, sometimes called "near misses," which occur at a much higher frequency than actual adverse events.

Learning from close calls not only results in safer systems, but it also focuses everyone's efforts on continually identifying potential problems and fixing them prior to any patient being harmed.

Root Cause Analysis

Improving and redesigning systems

Conducting an RCA is a critical aspect in the process of improving patient safety. Our multidisciplinary RCA teams investigate matters ranging from adverse medication events to suicides to wrong site surgeries.

The goal of an RCA is to find out what happened, why it happened, and to determine what can be done to prevent it from happening again. The teams investigate adverse events as well as close calls.

RCAs focus on improving and redesigning systems and processes — rather than exclusively focusing on individual performance, which is seldom the sole reason for an adverse event or close call. A previously unrecognized chain of events most often leads to a recurring safety problem, regardless of the personnel involved.

People on the frontline of healthcare are usually in the best position to identify issues and solutions. That's why RCA teams at VA facilities include a cross section of VA employees.

To be truly effective, the RCA process must also involve support by facility leadership. This includes activities such as chartering an RCA team, participating directly on a team, or participating in determining a corrective action plan.

Findings can be shared nationally by NCPS if there is a clear benefit for multiple VA facilities. Since the RCA process is focused on systems improvement, all potentially identifying information is removed prior to dissemination.

Magnitude of the Problem
a "snap shot"

2001

Agency for Healthcare Research and Quality

The agency found that more than 770,000 people are injured or die each year in hospitals from adverse drug events, which may cost up to $5.6 million each year per hospital depending on hospital size.

1999

Institute of Medicine

The 1999 IOM report indicated that at least 44,000-to-98,000 inpatient deaths occur per year nationwide due to patient safety events; adding $17-to-$29 billion in extra costs per year.

Healthcare Failure Mode Effect Analysis℠
Proactively assessing patient care systems

The HFMEA℠ process was designed by NCPS and has a wide range of applications, from developing backup medication delivery systems, to improving the way laboratory specimens are drawn.

An interdisciplinary team uses a five-step approach to proactively evaluate a healthcare process.

Based on methods from other industries, but specifically designed for use by healthcare professionals, it offers users analytical tools such as flow diagramming, decision trees, and prioritized scoring systems that enable the user to proactively identify vulnerabilities and deal with them effectively.

HFMEA℠ streamlines the hazard analysis steps found in a traditional Failure Mode and Effect Analysis procedure, an analytical process often used by engineers to identify potential failures of individual components and subsystems.

In essence, it's a systematic, engineering-based approach used to identify system vulnerabilities and to correct problems *before they occur.*

To learn more about the process, click to:

www.patientsafety.gov/SafetyTopics.html#HFMEA

Confidential Reporting Systems
You can't fix what you don't know about

We offer caregivers two systems that can be used to report adverse events and close calls.

We have developed an internal, confidential, non-punitive system: the Patient Safety Information System, nicknamed "SPOT." This reporting and analysis system allows users to electronically document patient safety information from across VA so that lessons learned can benefit the entire system.

The systems approach to problem solving requires a willingness to report problems or potential problems so that solutions can be developed and implemented. A willingness and an avenue to report problems and potential problems is essential to safe care because *you can't fix what you don't know about.*

In particular, reporting close calls is important. They provide an exceptional opportunity for learning and afford the chance to develop preventive strategies and actions before a patient is harmed. That's because they have been shown to be anywhere from *3-to-300 times* more common than actual adverse events. Because of the importance of close calls, we give them the same level of scrutiny as adverse events that result in actual harm.

Using tools developed by NCPS, multidisciplinary teams from VA facilities conduct root cause analyses of many of the events recorded in SPOT. Corrective actions are then implemented locally and, in some cases, VA-wide.

We also contracted with NASA to administrate an external reporting system, the voluntary Patient Safety Reporting System. PSRS can be used to report adverse events and close calls in VA facilities. This external, non-punitive "learning program" provides VA employees a "safety valve" to confidentially report adverse events or close calls that, for whatever reason, wouldn't be reported elsewhere.

Using the Data We Collect to Find Ways to Reduce Harm to Patients

We do more than just analyze the data we receive on our Patient Safety Information System, nicknamed "SPOT."

We use the data derived from RCA teams' findings and from safety reports to focus on specific patient safety initiatives.
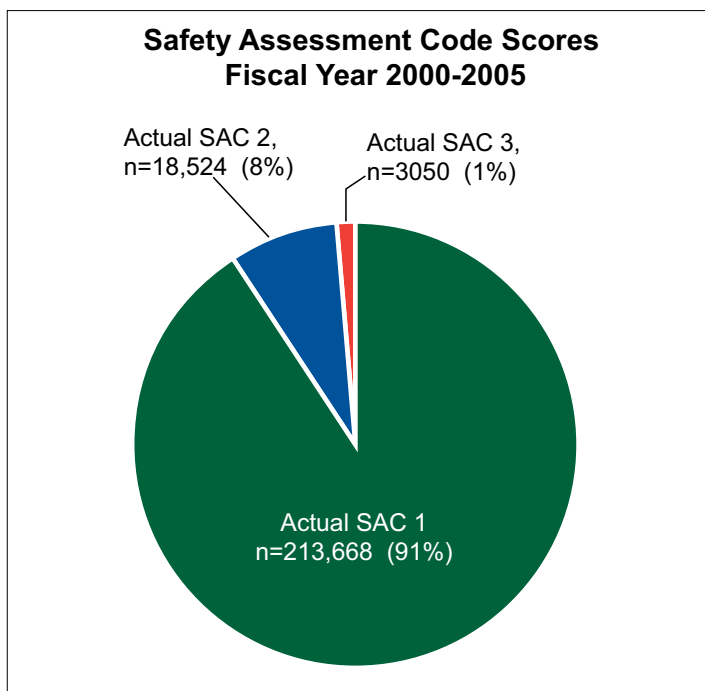
Our goal is to move from studying data concerning a patient safety hazard to taking specific actions to reduce or eliminate harm to patients posed by that problem. This is imperative, as patient safety data, by itself, doesn't help the patient; only the action it stimulates does.

Some of these initiatives are discussed in this publication:

- The Falls Toolkit
- The Ensuring Correct Surgery Directive
- Oxygen adapter and blood glucose monitor improvements
- Wheelchair safety
- Medical Team Training
- Window construction standards
- The Hand Hygiene Initiative
- Patient Safety Curriculum Workshops

A Tool for Assessment
Using Safety Assessment Codes to better understand adverse events and close calls

Safety Assessment Code Scores Fiscal Year 2000-2005

Actual SAC 2, n=18,524 (8%)
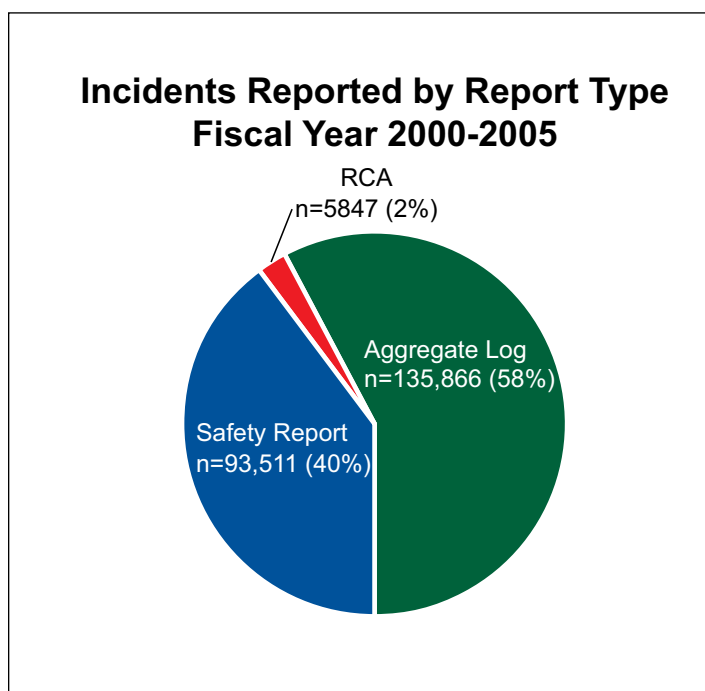
Actual SAC 3, n=3050 (1%)

Actual SAC 1 n=213,668 (91%)

A Safety Assessment Code (SAC) is used as a method to determine whether any further definitive action is required concerning a particular incident.

The scores are based on the severity of the incident and its probability of occurrence; the combination determining the actual risk of harm to a patient. A SAC score of 3 indicates a category of events with the highest risk of harm to a patient; a score of 1, the lowest.

The SAC scores for the severity categories are the extent of the injury, the length of stay, and the level of care required for remedy; for probability, whether the event could reoccur frequently, occasionally, or its reoccurrence is more likely to be uncommon or remote.

You Can't Fix What You Don't Know About
Learning from safety reports, RCAs and aggregated reviews

Incidents Reported by Report Type Fiscal Year 2000-2005

RCA n=5847 (2%)

Aggregate Log n=135,866 (58%)

Safety Report n=93,511 (40%)

We receive thousands of reports annually, allowing us to study numerous patient safety issues.

We review safety reports, RCA reports, and reports known as "aggregated reviews" that are entered into our patient safety database. Aggregated reviews, completed quarterly by RCA teams, are used to report four types of close calls, with a potential SAC score of 3, and adverse events. The four types are falls, adverse drug events, missing patients, and parasuicidal behaviors.

Aggregated reviews serve two important purposes: first, they provide a way to show trends not noticeable in individual case analysis; second, they make wise use of an RCA team's time.
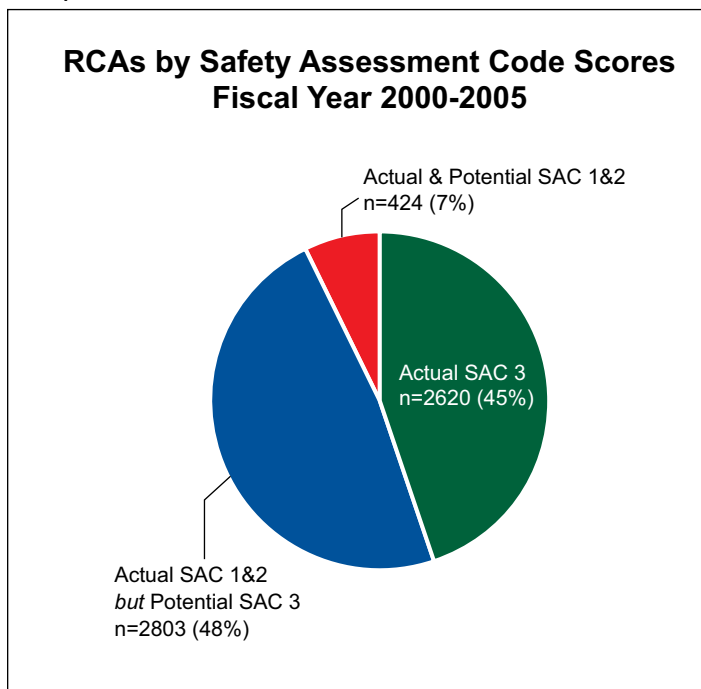
Patient Safety . . .

Is a full time job

Must have top leadership and middle management commitment

Should focus on systems issues, not individual actions

Is based on a change in culture

Improves human performance by improving care systems

Requires systemic investigation of adverse events and close calls

Doesn't concentrate on "who," but on "what" and "why"

Doesn't focus on a particular caregiver's performance

Shouldn't be a collateral responsibility

Isn't a "flavor of the month"

Doesn't address intentionally unsafe acts

Doesn't ask, "Whose fault is this?"

Taking the Systems Approach
*RCAs are conducted on actual and potential adverse events*

RCAs by Safety Assessment Code Scores Fiscal Year 2000-2005

Actual & Potential SAC 1&2 n=424 (7%)

Actual SAC 3 n=2620 (45%)

Actual SAC 1&2 *but* Potential SAC 3 n=2803 (48%)

As the chart above shows, RCAs are performed not only on actual adverse events with a SAC score of 3, but on many events with a potential SAC score of 3 or lower.

Such potential events are commonly known as close calls. These events, even though they have a lower SAC score, can reveal vulnerabilities that may cause harm to a patient in the future. Through studying these events, which occur much more frequently than actual adverse events, VA facilities work to develop better and better care systems.

Actions taken have included physical plant and engineering changes, standardization of processes, and recommendations on modifications to medical devices or systems.

Clinician-Based Cognitive Aids
We offer caregivers a number of patient safety tools
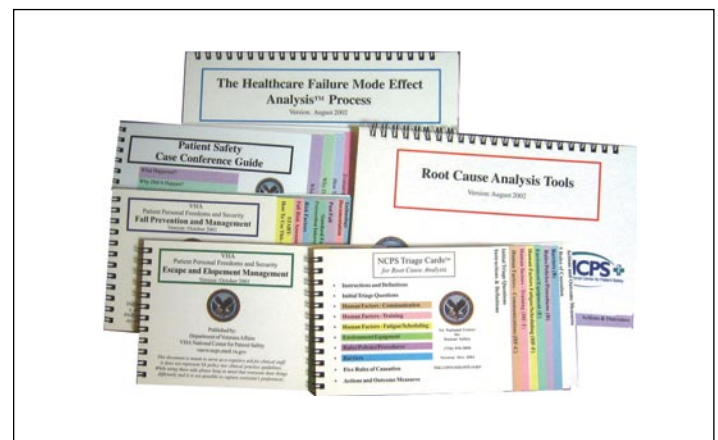
We've produced a number of cognitive aids to further reduce the risk of causing inadvertent harm to patients.

For instance, we offer two cognitive aids to facilitate root cause analysis investigations. One of these "flip books" discusses such things as flow diagraming and cause and effect diagraming. The other provides a series of questions to determine whether or not the proposed actions following an investigation have actually prevented or minimized additional adverse events or close calls.

To view them: www.patientsafety.gov/pubs.html#cogaids

In addition to the material noted above, a wealth of information is available on our Web site that can be used to develop a patient safety program, such as our Patient Safety Handbook.

Leadership Commitment...

Is a *critical* component of a patient safety program's success

Leaders must act to nurture and develop a culture of safety, based on prevention, not punishment

They should lead by example, not email

They must recognize that from a safety perspective, the question, "whose fault is this," is misguided

They must also stop dwelling on this question and not accept this approach in others

Implementing New Ideas

Retained Surgical Items

We collaborated with the VA Office of Patient Care Services to draft a new directive, *Prevention of Retained Surgical Items*. The directive was pilot-tested at six VA facilities. It focuses on wound exploration, counting items, and radiography, as well as the basic decision-making processes to follow when a count is wrong. To read it, click to: *http://www1.va.gov/vhapublications/ ViewPublication.asp?pub_ID=1425*

Patient Safety Design Challenge

VHA patient safety managers can choose to participate in this voluntary challenge. They will have an opportunity to create a positive impact on design standards VA-wide. We offer two categories: (1) architecture and design of medical care and treatment spaces, and (2) equipment layout, design and procurement (such as code or medication carts).

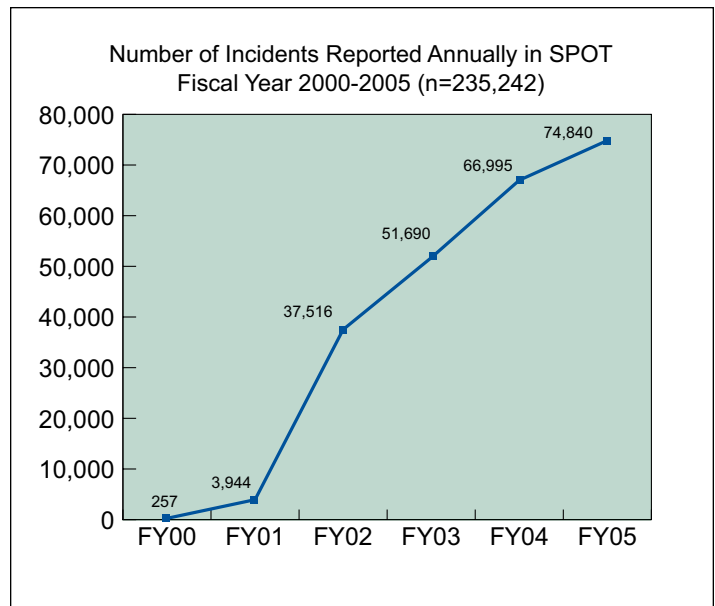### Emergency Airway Management

NCPS, in collaboration with VA Patient Care Services and field clinical representatives, recently addressed improving emergency airway management outside the OR. National policy now requires airway management techniques that address equipment *and* practitioner requirements in airway management skills. The new directive is aimed at confirming caregivers are trained and qualified and can use the appropriate modalities to respond to the needs of a patient. To read it, click to: *http://www1.va.gov/vhapubli- cations/ViewPublication.asp?pub_ID=1292*

Patient Safety Assessment Tool

Our Patient Safety Assessment Tool allows patient safety managers to complete a detailed assessment of the status of their facility's program. The questions relate directly to the Joint Commission on Accreditation of Healthcare Organizations' requirements. Learn more: *www.patientsafety.gov/SafetyTopics.html#PSAT*

Gaining Clinicians' Trust
Confidential reporting systems make a key difference

Number of Incidents Reported Annually in SPOT Fiscal Year 2000-2005 (n=235,242)

FY	Incidents
FY00	257
FY01	3,944
FY02	37,516
FY03	51,690
FY04	66,995
FY05	74,840

SPOT and an innovative RCA system have made a big difference in our transformation from the "name and blame" culture of the past to a culture of safety, based on prevention, not punishment.

Because people feel comfortable about making reports — and know reports can result in actions to improve patient safety — we are able to learn more and more about how to improve our care systems.

Leadership's Actions are Scrutinized

You can't create a culture of safety solely by issuing policies and directives

A shared vision must be created, clearly communicated to the entire work force, and result in real action and change

Trust can be undone with a return to the name, blame and shame culture of the past

Sharing Information about Important Patient Safety Issues

We have published numerous safety alerts and advisories on specific issues that might cause harm to our patients. To view the alerts, click to: www.patientsafety.gov/alerts.html

We also publish a bimonthly newsletter, TIPS, that offers VA and non-VA readers thoughtful presentations on a wide range of patient safety issues. View all issues at: www. patientsafety.gov/TIPS/tips.html

Medical Team Training (MTT)

Ineffective communication among clinicians is a leading source of adverse events in healthcare. One of the Institute of Medicine's recommendations for a safer healthcare system is more effective teamwork between providers.

When staff members reviewed 5,511 root cause analysis reports, 78 percent of the cases identified communication failure as a root cause contributing factor in the reported adverse event or close call.

Our program was developed in 2003-2004 to improve patient care outcomes through more effective communication and teamwork among providers. By late 2006, we had facilitated MTT Learning Sessions for more than 2,500 staff members at 38 VA facilities, including 32 operating rooms and eight intensive care units.

The Houston VA medical center became an active participant in the MTT program with their Learning Session in September 2004. By implementing briefings and debriefings in the operating room, the Houston group reported a statistically significant improvement in survey communication scores for surgeons and anesthesiologists.

They also increased the number of patients receiving timely intra-operative antibiotics from 84-to-95 percent, as well as increasing the number of patients receiving effective DVT prophylaxis from 92-to-100 percent. Preoperative briefings in Houston prevented 3.3 percent of patients from undergoing unsafe surgical procedures due to critical information learned from pre-operative briefings.

VA facility staff members interested in our MTT program can find detailed information and access an application by clicking to our Web site:

vaww.ncps.med.va.gov/Education/MTT/index.html

VA Medical Center RCA Costs
A modest investment, considering the expenses associated with adverse events

On average, the performance of each individual RCA costs about $1,560; each aggregated RCA about $1,000 in labor time.

This excludes any costs associated with the corrective actions that were recommended and implemented.

VA Medical Center New Orleans
Hand Hygiene Initiative

An investment of about $1,000 in hand hygiene products saved approximately $60,000 in avoided costs for infection-related care.

This is based upon one year of analysis of avoided methicillin-resistant *Staphylococcus aureus* infections and resultant hospitalization and expenses: the estimate includes 10 avoided infections at $6,000 per infection.

Business Case for Patient Safety
Financial aspects are an important consideration

NCPS is helping patient safety managers (PSMs) make a business case for patient safety. We're doing this by developing benefit cost and cost effectiveness measures for patient safety initiatives, as well as teaching PSMs how to perform these and other calculations.

Benefit cost analysis compares the amount of savings gained through an investment in patient safety and is reflected as a ratio: the numerator is the benefit or avoided cost; the denominator the expense associated with the intervention. A ratio greater than one indicates a net positive return from the investment. For example, suppose an investment in hand alcohol gel costs $2,000; further, that this investment resulted in a decrease in nosocomial infections which would have cost $10,000 in extra hospital admissions. The benefit cost ratio would be five — 10,000 divided by 2,000.

Cost effectiveness measures the cost per avoided adverse event: the numerator is the expense of the intervention; the denominator the anticipated number of avoided adverse events. For instance, if there were a falls intervention program that cost $40,000 to implement per year and four fractured hips were avoided during that time period, the cost effectiveness measure would be $10,000 per avoided hip fracture.

The financial aspects of patient safety programs are becoming increasingly important because this critical element of healthcare is receiving an increased investment of resources.

For more information, VA employees can click to:

vaww.ncps.med.va.gov/initiatives.html#business

If a VA facility's budget was $100 . . .

...the cost of that VA facility's patient safety program would be less than *one thin dime*.

Benefit cost analysis compares the amount of savings gained through an investment in patient safety and is reflected as a ratio...

$$\frac{\text{Benefit or Avoided Cost}}{\text{Cost of Intervention}}$$

Cost effectiveness measures the cost per avoided adverse event...

$$\frac{\text{Cost of Intervention}}{\text{Anticipated Avoided Events}}$$

VA Medical Center Salt Lake City
Ventilator humidification system

The facility identified a potential risk to intubated patients from a humidification system.

Upon review of available technology and involvement of end-users, a safer device was identified and procured.

In addition, it proved less expensive to operate by approximately $100,000 per year.

VA Medical Center Mountain Home
Falls prevention program

A $25,000 investment saved $115,000 through avoided costs for care for injuries due to falls.

Components of the comprehensive falls program included: hip protectors, bed alarms, floor pads, and effective screening and review of medications.

Human Factors Engineering
Looking for an intuitive answer

One of the key elements we use to improve patient safety has been our consistent focus on human factors engineering (HFE) principles when developing our initiatives or reviewing the functionality of medical processes and/or equipment.

HFE applies what is known about human capabilities and limitations to the design of products or processes, a particularly significant issue when involving the design of sophisticated medical equipment.

An important factor when conducting an HFE review of a device or process is to determine its usability. The usability of a product or process is directly related to the sequence of actions carried out when trying to use it.

One way to think of the usability of a machine or system is to think of this sequence of actions as a dialogue between the user and the tool — and the more intuitive the dialogue, the better.

If a device or process has a high level of usability, it can reduce the likelihood of causing harm to a patient. A high level of usability can also decrease related stress or fatigue.

Product liability and training requirements can also be lowered by applying HFE principles so that the desired course of action is the most intuitive and easiest to pursue.

Counterintuitive designs can create serious problems with medical technology. The more complex and counter-intuitive the sequence of actions required to run medical devices, the more likely an error will occur during use, which can cause the patient to suffer inadvertent harm.

For more information, click to:

www.patientsafety.gov/resources.html#HF

Ensuring Correct Surgery
The right patient, the right procedure

Incorrect surgical procedures or incorrect diagnostic and therapeutic invasive procedures are relatively uncommon adverse medical events, but often devastating when they occur.

To prevent or avoid such adverse medical events, we developed a straightforward, five-step process to identify the correct patient, mark the correct surgical site, and ensure the correct procedure is performed.

Instituted in 2002 for surgical procedures inside the operating room, the Ensuring Correct Surgery Directive was modified in 2004 to also address invasive procedures outside the operating room.

The original version contributed to the development of JCAHO's Universal Protocol for Correct Site Surgery, which took effect July 2004.

Analyses prior to launching the initial five-step process revealed the problem of incorrect surgery to be far more complex than previously thought.

It wasn't just a series of left-right mix-ups; we found that 36 percent of all incorrect surgeries were surgical procedures conducted on the wrong patient. That's why patient identification is a major part of our five-step process.

For more information, click to:

www.patientsafety.gov/SafetyTopics.html#ECS

We are a National Team

Our multi-disciplinary team is located in Washington, D.C., Ann Arbor, Mich., and White River Junction, Vt. We offer expertise on an array of patient safety and related healthcare issues.

Patient safety managers in all 154 VA hospitals actively participate in the program, as well as do patient safety officers in all 21 network headquarters.

World-Class Training
Focusing on events, not individual providers

We have developed an inclusive patient safety training program offered to VA employees nationwide in an effort to enhance safe healthcare delivery to veterans.

We have trained more than 1,000 VA professionals on a wide range of patient safety topics.
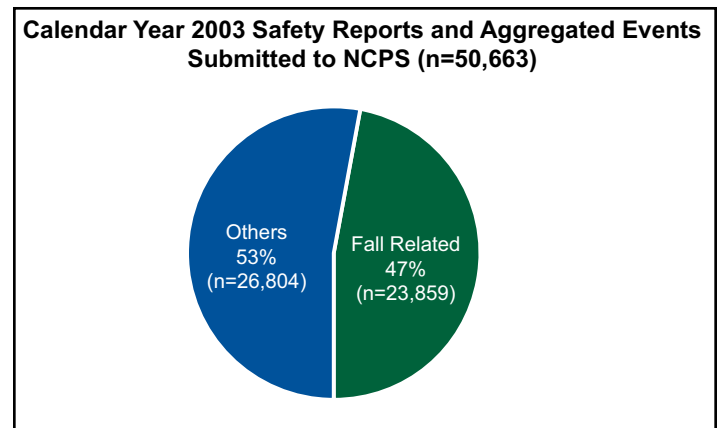
We are proud that non-VA professionals from around the nation and the world have also chosen to attend our training programs. Attendees have ranged from caregivers at the Department of Defense, to those from the American College of Surgeons, to those from Denmark, Australia and Japan — to name a few. In all, professionals from ten foreign countries and from nearly 190 healthcare institutions or agencies from our nation have attended.

Regardless of the issue, the training focuses exclusively on practical ways to develop a systems approach to problem solving, thereby preventing harm to patients.

The one-to-three day programs include topics such as: hands-on training concerning the use of our Patient Safety Information System (a database nicknamed "SPOT"); developing and implementing an RCA team; and conducting a Healthcare Failure Mode Effect Analysis℠.

Falls Toolkit
A detailed, multifaceted approach to falls prevention

Calendar Year 2003 Safety Reports and Aggregated Events Submitted to NCPS (n=50,663)

Others 53% (n=26,804)

Fall Related 47% (n=23,859)

Falls are the number one cause of reported adverse events at VA facilities, and a serious issue for hospitals worldwide. Preventing falls is important to providing older veterans quality care because falls are the leading cause of injury-related death for those 65 years of age or older.

Of the approximately 44,000 VA nursing home patients, at least 20,000 of them are expected to fall every year. Of those that fall, from 3-to-5 percent suffer a fracture, the majority being hip fractures. Between 20-to-33 percent of those who have fractured a hip will die approximately one year after.

This is one of the many reasons we continue to focus on falls reduction. For instance, during a VA falls data collection project, a 25 percent reduction in major injury rates from falls was observed in acute care and behavioral health units (2004-05).

Our Falls Toolkit offers another systematic approach to falls prevention. Its multimedia offerings provide comprehensive and practical resources for the prevention of falls and fall-related injuries. Click to our Web site to learn more: www.patientsafety.gov/SafetyTopics/fallstoolkit/index.html

We are a National Team

Patient safety managers are a key part of our program at VA's 154 hospitals.

They work directly with frontline caregivers and help us develop and implement patient safety systems and promote the culture of safety.

Patient safety officers are located at 21 VISNs, providing support and guidance to patient safety managers within their regions.

Biomedical Engineering
Reviewing medical device safety

Biomedical engineers apply the fundamentals of mathematics, physics, chemistry, biology, and engineering to solve medically relevant problems. Examples of biomedical engineering activities include medical device design, specification, fabrication, and testing.

They often work side-by-side with clinical engineers — professionals who support and advance patient care by applying engineering and managerial skills to healthcare technology.

NCPS uses biomedical and clinical engineering principles and techniques to support the safe use of medical devices at VA facilities.

Contributions from these engineers are critical to two aspects of this effort. First, in a *prospective* risk assessment, engineers provide consultations to members of the VA clinical staff — such as doctors, nurses, therapists, and technicians — during the process of procuring and acquiring a medical device.

Secondly, engineers contribute by investigating, defining, and solving problems and improving processes associated with devices as part of *retrospective* risk assessment initiatives.

One of these assessments, a prospective review of a deep brain stimulator, was conducted prior to its use at VA facilities. These devices help prevent people with Parkinson's disease from shaking.

From this review, engineers determined that patients with such implants should be identified in the VA's Computerized Patient Records System to insure that contraindicated modalities are not allowed to be used on them. A "contraindicated modality" is a medical term for a procedure, like ultrasound, which can cause an implant to heat, resulting in brain damage.

The Patient Safety Improvement Corps
Training non-VA professionals nationwide

In 2003, we partnered with the Department of Health and Human Services' Agency for Healthcare Research and Quality (AHRQ) to launch a national "Patient Safety Improvement Corps."

We were asked by AHRQ to develop and conduct a comprehensive training program for state health officials and their selected hospital partners, based on the patient safety training we offer VA professionals.

Our goal is to provide attendees with the skills required to analyze adverse medical events and close calls, as well as to identify the root causes of these events. We also want them to learn how to prepare and implement meaningful corrective actions based on their findings.

Attendees have been trained to conduct proactive risk assessments and develop and implement corresponding mitigation initiatives.

They also learn how to assess the effectiveness of interventions to better ensure the sustainability of effective interventions that improve patient safety.

During 2003 and 2004, representatives from 15 states participated; health officials and hospital representatives from 20 more states and the District of Columbia attended during 2004 and 2005; the remainder were trained this year.

Results
Taking the measure of a patient safety program

After instituting a non-punitive approach to patient safety, the level of commitment to the program by VA leaders and staff was gratifying.

We saw a *30-fold* increase in event reporting and a *1,000-fold* increase in the conduct of root cause analyses on events that were virtually all close calls.

We noted an increased ability to recognize solutions to problems.

Previously, 50 percent of problems that had undergone an RCA had been thought unpreventible.

To date, using new approaches and new tools, most problems are considered preventable.

Action plans have been assigned in all but *one percent* of the cases studied.

Hand Hygiene
"Infection: Don't Pass It On."

Healthcare-associated infections account for 50 percent of all major hospital complications and have occurred in approximately 1-in-20 patients admitted to U.S. hospitals, according to Priority Areas for National Action, Institute of Medicine 2003, which selected hospital-acquired (nosocomial) infections as one of 20 priority healthcare quality improvements.

NCPS has joined with other VA activities to promote a system-wide focus on hand hygiene through the "Infection: Don't Pass It On" campaign, developed by the VA's Office of Public Health and Environmental Hazards.

Since the Centers for Disease Control and Prevention (CDC) have identified healthcare workers' hands as one of the major sources for these infections, a major focus of this effort has been to make it easier for caregivers to obtain and use alcohol-based hand-rubs.

The hand-rubs have been shown to be extremely effective in killing microorganisms — often better than antibacterial soaps — while also being associated with a low incidence of dermatitis in healthcare workers.

One reason for low compliance in the past was the inconvenience of repeatedly using soap and water. Alcohol-based hand-rubs are easier to use and are generally more effective: when this type of hand-rub is used as directed, neither water nor hand-drying with towels is required.

In addition to being more convenient, these hand-rubs cause less chapping of the hands than traditional soap and water.

To learn more, click to:

www.patientsafety.gov/SafetyTopics/HandHygiene/index.html

Hand Hygiene
A different approach can make a big difference

Hand Hygiene Compliance Based On Observation Data in Intensive Care Units at 3 Veterans' Facilities

Legend:
- Baseline % Compliance
- Final % Compliance

Categories: RNs, MDs, Others, Overall (each with BEFORE and AFTER bars)

Y-axis: Percentage of Compliance (0 to 100)
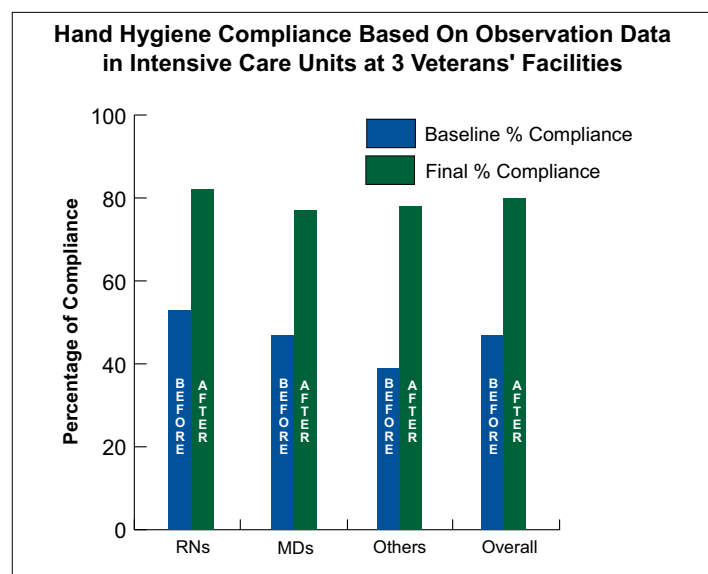
Compliance significantly jumped when healthcare workers in the ICUs had ready access to alcohol-based hand-rubs.

Results
Taking the measure of a patient safety program

The VA healthcare system was noted as "a bright star" within the healthcare profession for its dedication to patient safety, according to an editorial that appeared in May 2005 in the prestigious *Journal of the American Medical Association.*
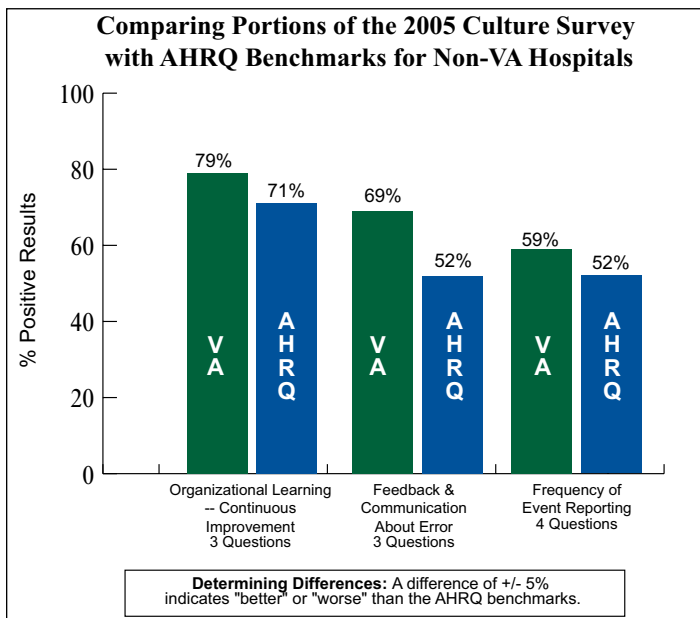
According to the editorial, VA's healthcare system "quickly emerged as a bright star in the constellation of safety practice, with system-wide implementation of safe practices . . ."

Teams from VA hospitals, VA nursing homes, and one private facility were part of an eight-month quality improvement project. The teams tracked fall and injury rates and reported on interventions implemented; thirty-one of them reported data.

Though the overall fall rate decreased only slightly, the overall *major injury* rate dropped 62 percent, from 2.14 major injuries per 100 falls at baseline to 0.82 major injuries per 100 falls by the project's end.

This represents an average reduction to patients of 40.9 major injuries per month and a direct cost savings of up to $765,934 per month.

The 2005 Patient Safety Survey

Comparing Portions of the 2005 Culture Survey with AHRQ Benchmarks for Non-VA Hospitals

% Positive Results

- Organizational Learning -- Continuous Improvement 3 Questions: VA 79%, AHRQ 71%
- Feedback & Communication About Error 3 Questions: VA 69%, AHRQ 52%
- Frequency of Event Reporting 4 Questions: VA 59%, AHRQ 52%

Determining Differences: A difference of +/- 5% indicates "better" or "worse" than the AHRQ benchmarks.

We have now conducted two patient safety culture surveys nationally across VA hospitals. In 2000, a total of 6,161 employees responded; the second was performed in 2005 with 45,250 respondents — a more than seven-fold increase in participation.

Our second study was designed with five composite measures in common with an Agency for Healthcare Research and Quality (AHRQ) survey, so that comparisons could be made between VA and private sector hospitals. In three of these measures, noted above, VA scored "better" than the AHRQ benchmarks. In the two other areas, no significant difference was found. These areas included teamwork within hospital units and teamwork across hospital units. VA facilities around the nation are studying ways to improve these areas.

Patient Safety Curriculum Workshops

The workshops are aimed at developing faculty leadership at all VA facilities where medical residents train. Teachers of medical students and nurses have also participated in these faculty development workshops.

It is particularly significant to healthcare in the United States that we conduct this effort at VA: Each year, more than 80,000 health professionals are trained in VA medical centers. Nationally, more than half of the physicians practicing today had some of their professional education while in the VA healthcare system.

Beginning in 2002, NCPS worked with several physicians and patient safety personnel from VA medical centers and affiliated universities on the development and testing of a patient safety curriculum for residents. From that, NCPS created faculty development workshops. We have had 430 attendees from more than 60 VA hospitals and 40 university affiliates. The attendees have included professionals from 42 states and six foreign countries.

Most of those attending our workshops are physicians: faculty from VA facilities that have university affiliates. However, we have had a number attendees from non-VA residency programs who also teach patient safety.

We are pleased that a wide range of medical professionals have become natural allies in spreading the important principle of developing a patient safety curriculum for residents, including leaders of professional societies and the Accreditation Council for Graduate Medical Education.

Though firmly grounded in human factors engineering and cognitive science, our endeavor is a work in progress. We look forward to broadening and enriching our efforts, with a single principle in mind: the reduction or prevention of inadvertent harm to patients as a result of their care.

Learn more: *www.patientsafety.gov/PSC/Workshop.html*

Blood Glucose Monitors
Working with the manufacturer to enhance safety

Correct / Incorrect
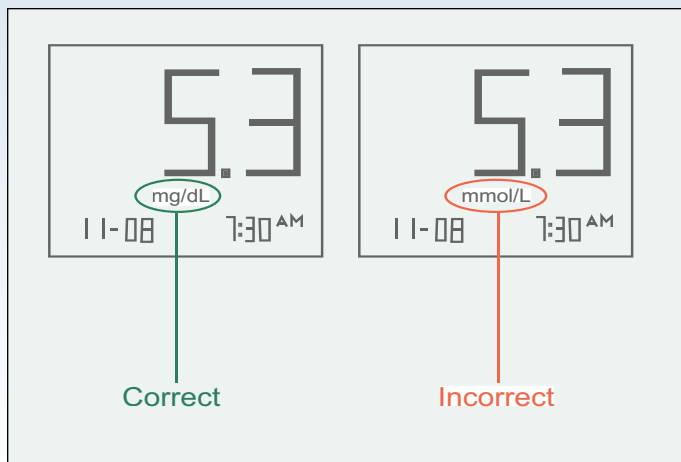
Blood glucose monitors are used by diabetics to measure blood sugar levels. The meters can be set up to display readings in milligrams per deciliter or millimoles per liter — and setting the proper unit of measure is a critical step in the process of care.

In the United States, the meters should be set up to read milligrams per deciliter, unlike in Europe and other parts of the world, where they are set up to read in millimoles per liter.

Due to confusing and nonintuitive design of the controls and displays on some glucose monitors, the units of measure can be unknowingly changed to millimoles per liter during the task of setting the time and date, which happens twice a year (due to Daylight Savings Time changes).

The incorrect setting can result in a high blood glucose level to be displayed as a seemingly low level.

It has also been reported that in rare circumstances, dropping a device can also cause a change in unit of measure displayed.

Using human factors engineering principles, NCPS worked with one manufacturer to change the meter's software so that those sold in the United States are set only on one unit of measure — milligrams per deciliter.

A Wheelchair Success Story
*How an RCA can "pay off"*

Before / After

This action was initially based on close calls at James H. Quillen VA Medical Center, Mountain Home, Tenn., but has since been adopted by many other facilities.

With avoidance of even a single serious injury, this investment is a good business decision.

Prior to purchasing anti-tipping kits, at just $42 per wheelchair, there was nothing to prevent wheelchairs at the facility from tipping backward. The center purchased kits for all of its 160 wheelchairs, for a total investment of $6,700.

No tipping accidents or close calls have occurred since installing the devices.

Compare the cost of these 160 anti-tipping devices with an estimate of the average cost of a hip fracture in the VA — approximately $33,000, when additional care, medication, rehabilitation, surgery, and related factors are added in!
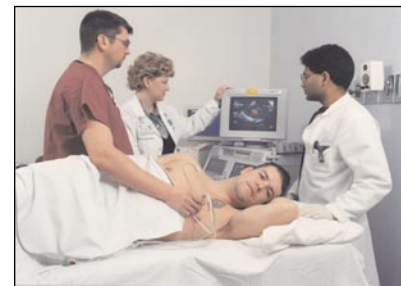
Window Construction Standards
Identifying a vulnerability and making improvements

A team at Alabama's Tuscaloosa VA Medical Center identified a vulnerability, leading to what resulted in a national modification of window construction standards.

The windows in question were designed to withstand external force from wind, but not from internal sources. This could allow a patient to knock a window out of its frame, and thus lead to a patient's fall.

New VA national standards were developed, based upon one facility's work.

Milestones

September 2006
Patient Safety Improvement Corps
- NCPS completed patient safety training for Improvement Corps participants from all fifty states and the District of Columbia, a three-year project.

August 2006
Automated Patient Safety Assessment Tool Launched

April 2006
Prevention of Retained Surgical Items Directive Issued

December 2005
Dr. John Gosbee Received a Cheers Award From the Institute for Safe Medication Practices
- The award honors those who have set a standard of excellence in the prevention of medication errors and adverse drug events

June 2005
Airway Management Initiative Launched
Joint Commission Resources Published "Using Human Factors Engineering to Improve Patient Safety"
- Dr. John Gosbee, editor

May 2005
Second Patient Safety Culture Survey Conducted

April 2005
BETA Test for Automated Patient Safety Assessment Tool Conducted
NCPS Director Received a Patient Safety Award
- Presented by the Centers for Disease Control and Prevention, in partnership with the Institute for Quality in Laboratory Medicine
- Acknowledged for "pioneering" work in patient safety and "contributions to improvements in healthcare"

March 2005
Falls Data Collection Project Launched

February 2005
NCPS Updated the American Heart Association "Emergency Cardiovascular Care Handbook for Code Carts"
Hand Hygiene Directive Issued; Dedicated Web Page Offered

November 2004
NCPS Program Manager Mary E. Burkhardt Selected as a Distinguished Alumnus by Wayne State University's Pharmacy Alumni Association Affiliate Board of Directors
Falls Toolkit Launched
- Multimedia kit aimed at reducing falls among elderly patients

June 2004
Six Sigma/3M Hand Hygiene Project Completed

May 2004
Bar Code Medication Administration Collaborative

April 2004
NCPS Earned Bronze Telly Award for Outstanding Achievement in Video Production, Developing the "Safe Use of Oxygen" Training Video

February 2004
NCPS Conducted Patient Safety Workshops for Senior Leadership

December 2003
VHA Guidelines on Hand Hygiene Requirements Issued

October 2003
NCPS Director Honored with Career Achievement
- The Partnership for Public Service honored the NCPS Director with a Service to America Medal

September 2003
The National Patient Safety Improvement Corps Launched
- NCPS was selected by the Department of Health and Human Services' Agency for Healthcare Research and Quality to formulate, manage and implement a multifaceted training program for state health officials and their selected hospital partners

Medical Team Training Pilot-Tested
- Grounded in two decades of aviation safety and human factors engineering studies, the initiative will be used to evaluate the effectiveness of team training in high-risk environments, such as the OR

April 2003
Patient Safety Curriculum Pilot Begun
- Pilot testing of faculty development workshops for physician teachers began; actively solicited academic affiliate buy-in and partnership.

February 2003
Patient Safety Assessment Tool Launched
- The tool allows patient safety managers to complete a detailed assessment of the status of their facility's program and was pilot tested and evaluated by four networks
- Began training of VA facility directors, patient safety officers, and patient safety managers in its use

January 2003
Ensuring Correct Surgery Directive Implemented
- The directive offers a simple, straight forward five-step procedure to avoid adverse surgical events
- A collection of cognitive aids were created to support providers and patients (e.g., video, brochure, poster, Inter- and Intranet Web sites)

August 2002
U.S. Medicine Honored Director with Frank Brown Berry Prize
- Dr. Bagian was awarded the prize for conceiving and establishing a comprehensive patient safety system that emphasizes prevention of adverse medical events, rather than punishment of providers, through the reporting and analysis of adverse events and close calls

July 2002
Dr. Gosbee Launched Patient Safety Curriculum Initiative
- The initiative continues development of a patient safety curriculum for medical students, residents, and other healthcare professionals derived from six years of work with residents at Michigan State University and nursing students at Western Michigan University
- Physicians and personnel from VA medical centers and affiliated universities volunteered to assist with development of the pilot program.

Redesigning a Medication Delivery System
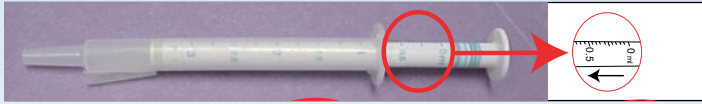
Pipette
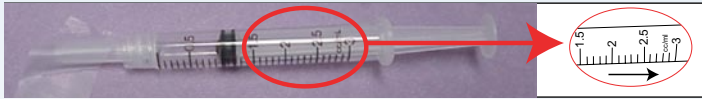
Typical Syringe

Oral pipettes are used to inject medications into a patient's mouth. They have graduated markings on their plungers, unlike a typical syringe that has markings on the barrel.

Because a pipette's markings are opposite to those found on a typical syringe, a provider can inadvertently become involved in a dispensing error when using one. To avoid this problem, NCPS recommended that pills be substituted to administer oral medication rather than use pipettes.

This is another example of how human factors engineering principles can be used to create a safer healthcare delivery system. A problem can occur when objects look similar but function in a way that is counter-intuitive, in this case, to the "typical" way of dispensing a medication via syringe.

Milestones (continued)

June 2002

Patient Safety Information Systems Director Earned a Becton Dickinson Career Achievement Award

- Dr. John Gosbee was presented this award at the Association for the Advancement of Medical Instrumentation conference
- Given to "encourage and support further contributions by healthcare professionals in the improvement of medical devices, instruments, or systems. The intent is to identify, recognize, and encourage outstanding achievement(s) by a promising healthcare professional"

April 2002

Tool Kit for Improving Patient Safety Made Available

- Created in partnership with the American Hospital Association
- The toolkit helps hospitals prioritize and evaluate aspects of care delivery that may be at high-risk for causing patient harm or have been associated with an adverse event or close call

February 2002

NCPS Awarded the John M. Eisenberg Patient Safety Award for System Innovation

- Recognized for "developing and implementing a systems approach to error reduction within the VHA's 163 healthcare facilities"
- Presented for projects or initiatives involving successful system changes or interventions that make the environment of care safer

November 2001

NCPS selected for 2001 Innovations in American Government Award

- One of five winners for this national honor; the only federal program selected from more than 1,200 applicants
- NCPS was cited for preventing and reducing adverse medical events by addressing systemic vulnerabilities

September 2001

VA/Quality Interagency Coordination Task Force (QuIC) Summit on Effective Practices to Improve Patient Safety Convened

- Organized by NCPS to improve patient safety
- Presented information for immediate use by patient safety managers
- Attended by approximately 350 professionals (VA and non-VA)

August 2001

Healthcare Failure Mode and Effect Analysis[SM] Launched

- Included training program and cognitive aids

July 2001

NCPS Director Honored by the American Medical Association

- Dr. Bagian received the AMA's Dr. Nathan Davis Award
- The award, named for the founding father of the AMA, recognizes elected and career officials in federal, state, or municipal service whose outstanding contributions have promoted the art and science of medicine and the betterment of public health

March 2001

Patient Safety Reporting System (PSRS) Pilot-Tested

- First pilot test with Veterans Integrated Service Network (VISN) 22
- Second pilot test follows in December 2001 with VISN 16

January 2001

Roll-Out of New Root Cause Analysis Software (The Patient Safety Information System, nicknamed "SPOT")

- SPOT further automates the VA patient safety reporting analysis process and corrective action measures
- Its features include enhanced analysis capabilities at the facility level; secure electronic submission of RCAs from facilities to NCPS; tools to follow up, track, and document corrective actions and outcome measurements; and tools to develop automated flow charts

August 2000

Comprehensive Adverse Event and Close Call Analysis Program Launched

- In a span of 10 months, NCPS conducted training on safety improvement methods to more than 700 personnel who had been selected to lead patient safety programs at VA facilities

May 2000

VA Contracted with NASA to Create PSRS

- PSRS launched as an external, voluntary, and confidential program
- Developed to complement an internal comprehensive adverse event and close call analysis program
- Acts as a "safety valve" to help ensure that otherwise unknowable vulnerabilities are identified

First Patient Safety Cultural Survey Conducted

April 2000

Roll-Out of Adverse Event and Close Call Analysis Program

- After pilot testing the program with VISNs 8 and 22, NCPS begins roll-out of the program throughout VA medical system
- VA and healthcare professionals from other public and private sector healthcare entities, nationally and internationally, begin attending NCPS-sponsored training on a regular basis

November 1999

Pilot Testing of Adverse Event and Close Call Analysis Program

- First pilot test conducted at VISN 8
- Second pilot test follows in February 2000 at VISN 22

February 1999

NCPS is Established

- Dr. Bagian begins work as the first NCPS Director

Fall 1998

VA National Center for Patient Safety is Announced

Solving a Problem with Color
Helping clinicians make the right choice every time

Color Miscue
Green Adapters

Clear Adapters
No Confusion

Some clinicians inadvertently connected patients to air instead of oxygen — due in part to green adapters being put on air flow meters.

NCPS identified a solution: a clear adapter.

We also prompted manufacturers to produce these products.

The clear adapters are now recommended and available nationwide as a VA safety innovation.

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2006

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NCPS
VA National Center for Patient Safety
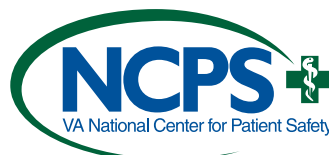
"To care for him who shall have borne the battle and for his widow and his orphan."

Abraham Lincoln,
Second Inaugural Address

The Veterans Healthcare System

NCPS is part of the Veterans Healthcare System, the largest integrated healthcare system in the nation, serving the needs of America's veterans by providing primary care, specialized care, and related medical and social support services.

Our healthcare system supports innovation, empowerment, productivity, and continuous improvement. Working together, we provide a continuum of high quality healthcare in a convenient, responsive, caring manner—and at a reasonable cost.

Healthcare is perhaps the most visible of all VA benefits and services. From 54 hospitals in 1930, VA's healthcare system has grown to 154 hospitals, with at least one in each state, Puerto Rico and the District of Columbia.

Here are some facts about VHA:

- 5.3 million people received care in 2005
- 7.7 million veterans enrolled as of October 2005
- 1,300 sites of care, including: 875 ambulatory and community-based outpatient clinics, 136 nursing homes, 43 residential rehabilitation treatment programs, 206 Veterans Centers and 88 comprehensive home care programs
- Veterans Centers annually serve more than 130,000 and provide more than 1 million visits to veterans and family members
- More than 134,000 volunteers provide approximately 13 million hours of service annually
- Nearly 57.5 million visits to outpatient clinics in 2005; inpatient facilities treated 587,000
- Affiliations with 107 medical schools, 55 dental schools, and more than 1,200 other schools
- Annually, more than 83,000 healthcare professionals are trained at VA facilities
- More than half of all healthcare professionals in the U.S. have received training at VA

NCPS+
VA National Center for Patient Safety
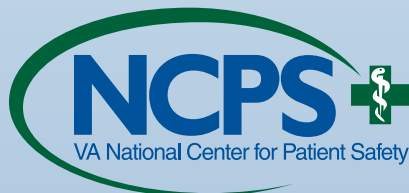
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