# Proceedings of the 2012 CHA Patient Safety Leadership Congress


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Colorado Hospital Association

## Contents



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## Executive Summary

Health care systems across Colorado and the providers they employ understand the importance of and need for patient safety initiatives.

Yet patients are still being harmed by medical errors. Health care costs continue to rise. Pay-for-performance and other government mandates are being issued, many of which are frustrating and difficult to implement.

A 2012 survey of Colorado physicians and hospital executives expressed generally positive attitudes towards patient safety initiatives; however, the survey revealed concerns about implementing such programs.

When it comes to patient safety in Colorado, knowledge is not an issue. What's lacking is proper execution.

Physicians and hospital executives convened on Oct. 17 at the Colorado Hospital Association's 2012 Patient Safety Leadership Congress to discuss ways to execute patient safety strategies in our state. The aim for these strategies is simple: better care, better health and lower costs.

The discussion was led by national patient-safety experts Don Berwick, MD and Vinod K. Sahney, PhD. The speakers used science-based tools to explain the nature of medical errors, and how such errors can be mitigated using specific tools to change the health care delivery system's current culture. What follows is what they shared with gathered attendees.

# The Science and Nature of Patient Safety

**Don Berwick, MD**

*In 1974, while covering the overnight shift at a Boston hospital, Dr. Don Berwick made a mistake.*

*Tasked to do an exchange transfusion on a pediatric patient, Berwick began the procedure of replacing the baby's blood with Rh-negative blood. Something didn't feel right. The syringe felt wrong, but he continued with the transfusion.*

*The baby began to lose color. The heart rate increased to 200+ beats per minute. Berwick, not knowing what was wrong, paged the on-call physician. After 20 minutes, the on-call physician arrived. At the same time, the lab technician was delivering bad news: the baby's hematocrit level was at 92 percent. The baby was in acute renal failure.*

*As they investigated, Berwick saw a clear bag dangling below the blood bag. It was plasma. Horrified and devastated, he realized his mistake: He had transfused a baby with only hematocrit. In this hospital, the system used to deliver blood product did not automatically combine the plasma and hematocrit as was done in an adjacent hospital. In a poorly lit room, the clear bag of plasma laying uncombined on the floor wasn't visible to him.*

*Sensing Berwick's angst, the on-call physician consoled him, saying, "Don, I know this is hard for you. Don't feel bad. This could have happened to anyone."*

*Berwick's shift ended with a pat on the back and instructions to go home. He didn't talk to the patient's family. He didn't report the mistake to anyone. He didn't talk to his residents about how he almost killed a baby, so they didn't have the opportunity to learn from his mistake. Berwick absolutely wanted to do all of the above—but back then, such behavior wasn't common practice in U.S. hospitals.*

*Until recently, this was how medical errors were handled.*

## Exploring the Human Mind

Errors are part of the human condition. It's a matter of science—a science that the health care delivery system has been slow to embrace.


Figure 1

Take the example above. Berwick asked the audience of the 2012 Patient Safety Leadership Congress (PSLC) what they saw. Approximately 80 percent saw "Paris in the Spring."

When asked to read it again, more people recognized that it actually said "Paris in the the Spring." Berwick explained that this had nothing to do with the intelligence of the people in the room. The example explores a human factor—that our minds see what we expect them to see.

In the classroom, this exercise is funny. In the operating room, this type of mistake can be deadly.

The science of error tells us that we cannot change the human mind. Therefore, we cannot eliminate its propensity for making errors. But here's what we can do: We **can** mitigate the effect of errors in medicine.

## The Incidence of Harm in Medicine

The incidence of harm varies based on how harm is defined and who is doing the calculating. But there's one thing for sure: Too many patients are harmed by medical care.

The statistics can be staggering. Dr. Berwick cited a few recent studies:

- 1.3 million injuries to patients occur annually[i]
- 180,000 patients die from preventable causes
- One of every three hospital patients experiences harm[ii]

Why are there so many instances of harm? Berwick points out that some of it can be explained by exposure (see Figure 2).

**EXAMPLE OF EXPOSURE**

Hospital beds: 500
Patients: 24,000
Medications: 240,000
Doses: 2,880,000

**Even if Hospital X gets it 99.9 percent right:**

Doctors (0.1%): 240 errors
Pharmacists (0.1%): 2,880 errors
Nurses (0.1%): 2,880 errors

**TOTAL ERRORS: 6,000**

Figure 2

## The Costs Associated with Harm

Statistics on the cost of harm also vary. Nationally, it is suggested that harm costs the health care system in the U.S. upwards of $50 billion per year. *(For more information about costs of harm, see "Develop a Business Case for Patient Safety," page 12).*

## Punishing Providers for Mistakes

Berwick's medical mistake recounted above occurred during a time that formal processes for reporting errors were not customary. As such, investigations into why errors occurred and how future errors could be prevented were rare. Although error reporting has become common today, Berwick indicated that providers may still hesitate to report errors and near misses because of a fear of reprisal—whether in the form of a disciplinary action made by the hospital, or a malpractice suit initiated by the patient's family.

Berwick asserts that there is a prevailing attitude in the patient safety arena that suggests:

*"If we try hard enough, we will not make any errors."*

Another common attitude is this:

*"If we punish people, they won't make any more mistakes."*

Science tells us that everyone makes errors—every day. In general, no one makes medical errors on purpose, Berwick notes—yet, in health care, we continue to treat errors as misconduct.

## Design of Work as a Cause of Errors

Latent errors occur when you exceed the brain's innate capacity for memory (see Figure 3). They can also occur due to the design of a system. Our health care system is wrought with design flaws that predispose us to errors:

- Conditions of work (long shifts, tired providers)
- Training (in Berwick's mistake, no one told him that the two blood bags were separate at this facility)
- Design and maintenance of equipment (e.g., it's hard to see a clear bag in a dark room!)

*See also "suggested reading" on page 24.*

Berwick asked the PSLC audience to remember a series of numbers. The first was a set of five numbers; nearly everyone remembered them correctly. The second was a series of seven numbers; again, most people remembered. The third set was 10 numbers—which most people were unable to recall. Why? Because the human mind can only store so much information.

Figure 3

## Decreasing Errors by Improving Systems

*"We can't change the human condition, but we can change the conditions under which humans work." – James Reason*

Though a transforming thought, bad systems cause errors in medicine. As such, Berwick believes that we shouldn't punish the individual. And to decrease errors, we need to improve the system.

Berwick offers the following suggestions that Colorado physicians and hospital leaders are already thinking about:

- **Stop relying on memory.** Berwick told the story of a surgeon studying for a new procedure. He studied for nights on end to memorize the steps. Why didn't he just bring the book to the operating room with him?
- **Simplify.** Remove steps that don't work.

  *"Stop by any hospital and look at all the protocols and forms in every chart. There are so many that you can't find what is relevant!" – Colorado physician*

  *"As management, we take patient safety and the need to identify and eliminate risky behaviors, policies and practices very seriously. We need physician input to help us identify those elements that work, and mechanisms that (do not)." – Colorado hospital executive*
- **Standardize.** In most care cases, if every clinician is expected to do procedures the exact same way, errors can be reduced.

  *"Consistent practices, standardization, and use of evidence-based protocols are necessary. Taking some autonomy out of decisions can improve safety." – Colorado hospital executive*
- **Use constraints and force functions.**


Figure 4
Medication bottles that are clearly marked with dosage information and are color-coded make dosage instructions more clear.

- **Use protocols and checklists wisely.**

  *"I feel the hospitals—and this goes across all hospital systems—are too reactionary to the guidelines being suggested by the various regulatory agencies." – Colorado physician*

## Example: Scottish Patient Safety Program

According to Berwick, one of the best examples of patient safety success comes from Scotland. They took the science of error and designed standardized systems that prevent and mitigate errors—and it's working. Here are the results the Scottish national health system achieved from January 2008 to December 2011:

- Adjusted mortality: -9.4 percent
- Surgical mortality: -28 percent
- Intensive care unit mortality: -24 percent
- Intensive care unit ventilator pneumonia cases: -61 percent
- Central line-associated blood stream infections in all intensive care units in 2011: N = 14

Berwick challenged Colorado: Get on a plane to Scotland and see how they made this work!

## The Bottom Line

Everyone has made an error. And no one does it on purpose. Errors are not misconduct.

But then, we all know this. The problem is not knowledge—it's execution.

# Executing a Successful Patient Safety Initiative

**Vinod K. Sahney, PhD**

It's clear that there are serious problems surrounding patient safety—and that's just looking at reported problems. Analysis shows that actual problems may be 10 times worse when compared to what is reported.

According to Sahney, system issues are the source of most errors in medicine. Like Berwick, Sahney believes that safety issues surround our health care delivery system because we do not apply what Berwick described as "the science of error." Sahney asserts that because we treat simple care delivery processes as complex—by leaving all decisions up to the provider's personal judgment—errors are likely to occur.

## Barriers that Impede Patient Safety Initiatives

*"Encourage physicians and staff to look at each occurrence as a 'systematic' problem and not an issue of personal accountability. Make this approach known." – Colorado physician*

**The health care delivery system affects your patient safety program.**

- We value individual freedom over reliable design
- We fail to design and implement standard work
- We lack ownership
- We focus on outcomes rather than process

*"From my active practice experience, I saw different levels of care at different hospitals—even in the same hospital." – Colorado physician*

- We have a high degree of variability in how care is delivered
- We aren't delivering **evidence-based** medicine

*"It is difficult to compile data and implement actions that demonstrate measurable improvements to safety. Much of our activity is reactive rather than proactive." – Colorado hospital executive*

- We're reactive, not proactive
- We lack performance metrics
- We're punished for mistakes

*"We have seen great improvement in medical error and fall rates. (We are) not doing so well on convincing staff that we have a no-retaliation culture." – Colorado hospital executive*

**Your organization also affects your patient safety program.**

*"(We) need strong medical staff leaders willing to have tough conversations." – Colorado hospital executive*

- We lack engagement at the senior level
- We lack feedback from all staff levels
- We lack an executable plan

*"In very small facilities there are limits to resources that do not allow for a full program as at large facilities." – Colorado hospital executive*

- We don't devote resources (personnel, equipment, budgets)
- We fear conflict
- We lack follow-up

### What needs to shift to create a culture of improvement


Figure 5
Geller, E.S. and Solomon, D. The Anatomy of Medical Errors, Coastal, 2007 (as cited by Sahney, 2012)

## How Organizational Change Can Improve Your Patient Safety Initiatives

To make real, sustainable changes in patient safety, we need to change our organizations. Sahney offers the following suggestions to implement change and empower leadership.

### Create a shared vision of patient safety

*"Having a philosophy of continual review, analysis and adjustments based on the input of everyone engaged in the process—with open communication between doctors, nurses, and support staff—is the only way to assure continual improvement, reduction in errors and awareness of potentially dangerous situations. You have to create a culture of safety that everyone buys into, from the CEO to the valet staff." – Colorado physician*

Organizations without a shared vision for safety will not make the kind of improvements necessary to significantly reduce harm. Consider your mission, vision and value statements and the promises you make to your community. Then consider how your front-line staff, clinical staff and board would define patient safety.

A shared vision helps define—and meet—your patient safety objectives. Involve your staff, because each member of your organization should understand and carry out your organization's definition. This includes physicians, clinical staff, front-line staff and patients.

**For Your Consideration**

Ask a random sample of your staff about how your organization defines patient safety. Do they provide a uniform answer? How would your board define patient safety? And what do your patients expect in terms of safety?

## Standardize work

Like Berwick, Sahney believes that medical care needs to be standardized. He cited a recent study in which there were four defects for every 10 opportunities to deliver evidence-based care in a physician practice. Hospitals didn't fare much better; the same study cited one to two defects for every 10 opportunities to deliver evidence-based care in hospital settings.

Aside from missed opportunities to deliver evidence-based care, the high degree of variability throughout an organization impacts the quality of care received. Yes, individuals will lose autonomy. But if providers want to improve care, they need to understand the existing evidence that **standardization reduces errors**.

Sahney used an example of standardizing work change hand-overs—a common transaction that has been known to lead to error-reduction using the science of improvement.

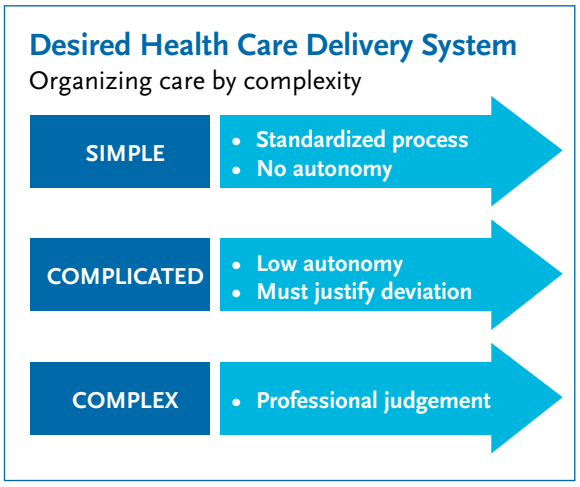


Figure 6

### Science of improvement

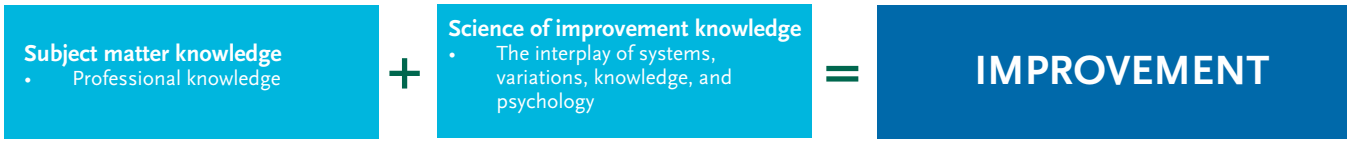


Figure 7, Sahney 2012

By looking at what is known about shift changes (knowledge about what happens during transfers and understanding how errors happen) and human-factors reliability knowledge (e.g., verbal exchanges increase understanding), Sahney illustrated a standardized method of completing hand-overs. Because we know that variability can lead to errors, it included a clear

sequence of steps. One person was designated to monitor the transfer, which eliminates the issue of a "lack of authority" (also known to cause errors); and protocols were developed for each team member so that everyone has a defined role and a metric for which they are responsible. As stated earlier, a lack of metrics can lead to error.

## How leadership can encourage standardized care

### Engage physicians, nurses, and clinical staff

*"There is no data presented that clearly shows that all the extra work done on these initiatives have made a statistically significant improvement in patient outcomes." – Colorado physician*

Hospital leadership must engage clinicians when creating and implementing patient safety strategies. If they are not engaged—and not shown the results of their efforts—then initiatives will not work. Physicians want to be involved in the creation of evidence-based, data-driven patient safety efforts that result in better outcomes for patients and less of their own time wasted.

This is why clinicians need to be involved in patient safety initiatives from the start. Sahney encourages leadership to frame its goals in terms that are important to clinical staff—and to do this with each group you need to engage. For example, don't tell physicians that your new plan will improve productivity and patient safety. They want to hear that their efforts will reduce avoidable readmissions or unnecessary, avoidable deaths. And they want to provide input as to how to improve systems to achieve those goals.

### Enabling all to act

Berwick shared a story about life on an aircraft carrier and their culture of safety. He explained that on the ship, every person has an individual role. Any deviation from said role resulted in the cancellation of their processes. Even crew members that have low seniority can abort high-level missions. Why? Because that person is an expert in the area he/she is in charge of—if he/she sees something amiss, it's his/her responsibility to act, and has the authority to do so.

Leadership needs to be responsible for enabling people at all levels to act.

### Have a mechanism for change

*"When there are steps in the process that clearly don't make sense, then there needs to be a process to identify those and a process for change. It is pretty rigid right now, meaning that if something is in place then it is extremely difficult to change or improve it. Everyone involved in the patient's care and safety works hard, and doing extra steps or paperwork that is really not effective just wears people out and decreases morale and enthusiasm." – Colorado physician*

*"As management, we take patient safety and the need to identify and eliminate risky behaviors, policies and practices very seriously. We need physicians' input in helping us to identify those elements and working with us to identify mechanisms that (do not)." – Colorado hospital executive*

### Know your numbers

*"Getting staff/physicians to understand there is a problem to begin with is half the battle. Many times there is a prevailing idea that we don't have any patient safety problems here." – Colorado hospital executive*

Sahney insists that people at all levels need to know how many patients are harmed in their organization—in terms of "patients," not abstract data. When you don't communicate your numbers in terms of actual patients harmed, it becomes

a nebulous concept. Everyone within the organization needs something visible to look at, whether it's posters, newsletters, emails or handouts detailing the patient safety numbers in your organization.

**For Your Consideration**

Ask people throughout your organization—including the board of trustees—about common causes of harm. Do they know how many patients suffered from the following incidents last year? They should if patient safety is embedded within your culture.

- Central line infections
- Ventilator-associated pneumonia
- Patient falls
- Urinary tract infections
- Deep vein thrombosis
- Surgical site infections
- Pressure ulcers
- Medication errors

### How leadership can shift the focus to actual numbers

Leaders must challenge the status quo. Sahney encourages leaders to start every meeting with stories of harm—in other words, get people thinking about harm in your organization. Once they understand harm, leaders need to establish a sense of urgency to start fixing the systems that lead to errors. Because you've enabled each person in your organization to act, they will likely start exploring ways to improve their processes and the systems in which their teams work.

## Develop a business case for patient safety

Sahney asserts that investing in properly executed patient safety initiatives saves money—and not just in the long-term. A 2006 study of community-acquired pneumonia in the hospital setting found a correlation between reliable care (consistently executing evidence-based care processes) and the cost of care (including length of stay, readmissions and mortality). The study concluded that the hospitals with the lowest costs had better patient care, which shows that aligning financial incentives with quality can drive improvement.

Sahney also cites a study by Berwick[iii] that projects what we could save if we eliminated waste by improving processes. When the median cost of waste is 34 percent of our total health care spending, there's definitely room for improvement.

**For Your Consideration**

Think about how pay-for-performance might affect your organization when it comes to harm. If private insurers start refusing payments for readmissions or incidents of "Never Events," how much will harm cost your organization?

Sahney cites an example from Dignity Health, a health system with hospitals in California, Arizona and Nevada. When eight of its hospitals implemented a training program in sepsis management, the system saw a 65 percent decline in sepsis mortality. This decline alone equated to a savings of $44 million.

## Shift to Patient- and Family-Centered health care

The Patient- and Family-Centered model was developed specifically for health care and is based on science. The goal is to make things better for the "end user"—which in health care are patients and families.

This process involves understanding exactly what your patients and families currently experience during and after the delivery of care, and comparing that with what patients and families actually want and need. Once you understand where you are and where you need to be, you can partner with your patients to work together to "redesign" your services, interactions, processes and environment to create exceptional experiences. The shift is associated with other key outcomes:

## How a better patient experience improves health and business outcomes

### BETTER HEALTH

- Patients adhere to instructions
- Processes improve
- Clinical outcomes improve, including a decrease in adverse events

### BETTER BUSINESS

- Increase in patient loyalty and market share
- Malpractice risk reduction
- Increased employee satisfaction (which can lead to higher retention)
- Better financial performance:
  - Reduced length of stay
  - Lower cost per case
  - Reduced operating costs

Figure 8
Charmel P, Frampton S. Building the Business Care for Patient-Centered Care. HFM, March 2008 (as cited by Sahney, 2012)

Medical harm represents a significant portion of our health care dollars. Improving patient safety can help eliminate costs without taking away necessary care—but it requires work on the part of physicians, nurses and other health care leaders.

## Providers: Your role in Patient- and Family-Centered care

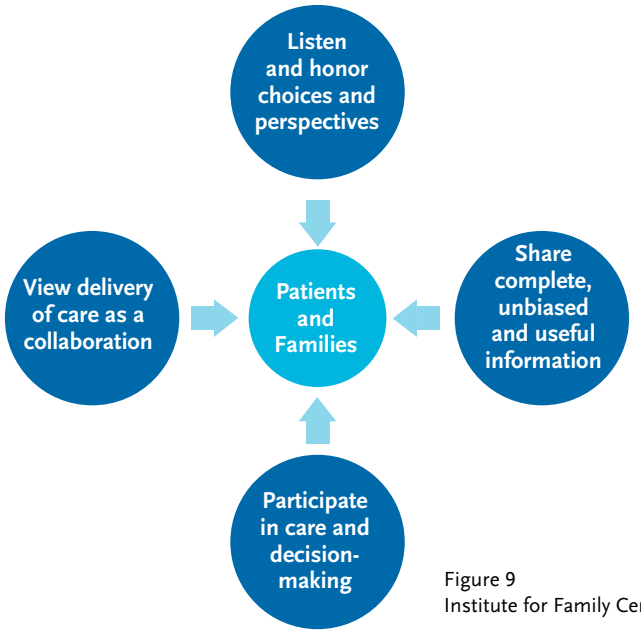


Figure 9
Institute for Family Centered Care via Sahney, 2012

## What a properly executed plan looks like

### Start with your patient safety numbers

- How many patients were harmed
- How many patients died
- How much does harm cost your organization

### Provide a clear statement of harm reduction with metrics

- Begin with a few, focused breakthrough quality and safety aims
- Share a "rational portfolio of projects" developed by senior management with scale and pace to achieve breakthrough aims
- Provide the resources necessary to achieve key products, including leaders and infrastructure

### Senior leaders must present plans to all employees

- Empower them to make positive change
- Encourage teams to work together to improve their processes through standardization, reducing needless steps and thinking creatively

### Senior leaders must monitor and respond

- Set up frequent reporting mechanisms
- Respond to their efforts
- Keep monitoring and responding

### Celebrate success

- Even the smallest victories deserve a celebration—no exceptions

## Who is responsible for execution?

If you want to get things done, you've got to start at the top. Leadership is responsible for executing your patient safety plan.

Organizations fail when they are unable to link their ideas and the ability of their organizations to deliver on those ideas. Therefore, it's the job of a leader to help bridge that gap.

## Model your organization after other top organizations

It's also helpful to examine high-performing organizations. How do they do it? Through the engagement of all the wisdom and skill embedded in each worker, the organizations and their learners never stop learning.

### What's a high-performing organization?

- High-performing organizations are the best in class
- They achieve high performance not necessarily through technological advances but through complete engagement of the wisdom and skill embedded in each staff member
- These organizations and their leaders never stop learning

Leaders play a big role in a high-performing organization. They set clear and unambiguous expectations. They are problem solvers who empower and create systems that provide answers to their organization's problems.

**The Top Five Hospitals in the U.S.:**

- Exhibit a shared sense of purpose
- Have good leadership
- Hold the organization accountable for quality and safety
- Focus on results
- Collaborate

When asked to self-rate, top hospitals said they needed to improve. Lower ranked hospitals said they were "doing just fine."

*Source: University Health System Consortium*

Figure 10

## Building Organizational Capabilities for Improvement

To execute a patient safety program, you need to build the leadership skills of your executive staff. Again, we start with the science of improvement.

### What it takes to improve


Figure 11
Sanhey, 2012

## Strategies for improvement

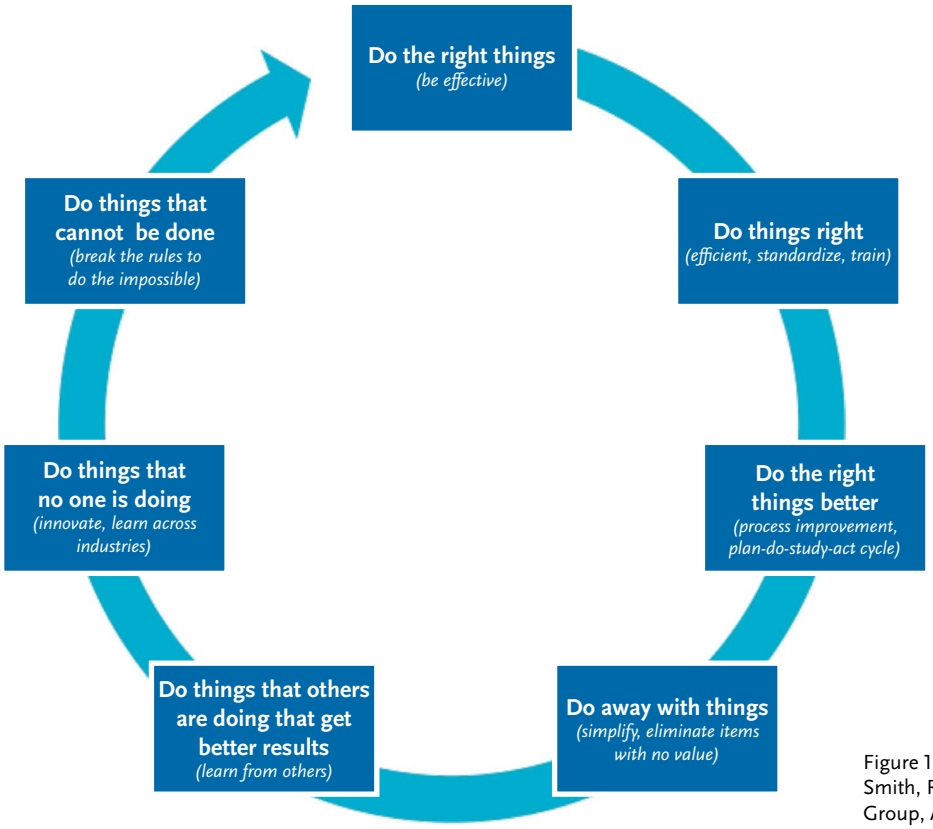


Figure 12
Smith, Rolf. The Seven Levels of Change, The Summit Publishing Group, Arlington Texas, 1997 (as reported by Sanhey, 2012)

## Three stages of development for senior executives

| | |
|---|---|
| Stage 1<br>DISCOVERY | • Visit with executives who have been successful<br>• Develop system measures<br>• Site visits and study tours<br>• Pay attention to quality data, and local and national benchmarks<br>• Focus on the meaning, not just the measure |
| Stage 2<br>LEARNING | • Lead internal organizational assessment<br>• Attend to basics—caring for patients and their families<br>• Minimize quality improvement talk<br>• Connect executive team to reality (i.e., make sure execs and front-line staff are on the same page)<br>• Align mission/vision activities with medical staff<br>• Develop a plan to move the metrics (HSMR: "first we fixed coding, then HAIs, RRTs, sepsis...") |
| Stage 3<br>IMPLEMENTATION | • Strengthen capabilities for oversight and guidance<br>• Develop capacity in middle management<br>• Transparency ("Shared data with medical staff and employees for the first time...")<br>• Spread strategy—everything, everywhere |

Figure 13; Sahney, 2012

## The Bottom Line

*"To renew and reinterpret values that have been encrusted with hypocrisy, corroded by cynicism, or simply abandoned; and to generate new values when needed." – CHA member, on leadership*

Any change is difficult, particularly when the change required is as complex as those illustrated by Berwick and Sahney. Asking an entire organization to make such a shift—if not done correctly—can lead to resistance and distrust. Most of your employees have become accustomed to being told how to improve and long, drawn-out projects that lose steam after implementation.

The primary role of leadership is to reframe operational values. It's up to the leaders in your organization to manage change effectively and empower every person to do their part. It won't be easy, but it will be worth it.

# Patient Safety and Health Care Reform Overview

**Don Berwick, MD**

The current health care climate in the U.S., as explained by Berwick, is rife with uncertainty. We live in a time of economic pressure, political polarization and confusion about what needs to happen to improve health care.

Berwick explained the 2010 Patient Protection and Affordable Care Act (ACA) in two parts: insurance reform and delivery reform. In terms of insurance, the act covers more people with better coverage. Delivery reform includes provisions of integrated care, a focus on quality and a level of innovation necessary for radical change.

The bottom line, according to Berwick, is the ACA asserts that health care in America is a human right, and will be sustainable through the improvement of health care as a system.

If the ACA is legislatively repealed, it will cause:

- 32 million uninsured
- 19 million more patients losing Medicaid
- Medicaid cuts exceeding $810 billion
- Medicaid benefits cut by 33.5 percent
- Medicare seniors will be responsible for $6,400 more per enrollee

## Patient Safety as a Focus of Reform

The health care system is already seeing changes that focus on safety. Whether it's Medicare nonpayment for certain events or hospital payment reductions for bottom quartile performance, safety is a key to health care reform.

### Better care, better health, lower costs

The Institute of Medicine (IOM) aims to improve medicine in the following areas:

- Safety
- Effectiveness
- Patient-centeredness
- Timeliness
- Equity

Similarly, the Institute for Healthcare Improvement (IHI) developed the Triple Aim, which focuses on three dimensions:

- Improving the patient experience of care (including quality and satisfaction)
- Improving the health of populations
- Reducing the per capita cost of health care

## The Triple Aim

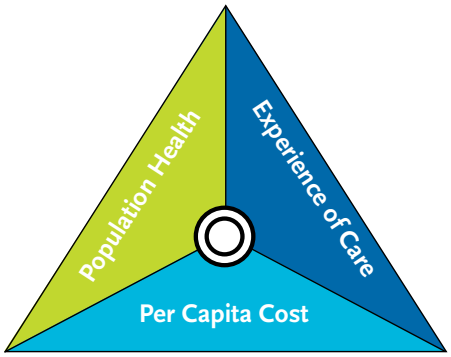


Figure 14

Most health care organizations do not have resources devoted to all three areas identified by IHI. For those that have implemented strategies to improve the areas identified through the Triple Aim, there has been marked improvement in all three areas.

Berwick asserts that the emphasis and focus on patient safety has started and won't stop, so it's time for all health care organizations to get on board. He believes we will continue to see:

- Payment for value and quality, not volume
- Consolidated payment to support seamless care and cooperation
- Emphasis on reducing chronic illness
- Widespread use of electronic health records
- Consumerism and person-centered care
- Threats to the classic role of insurers

## The Opportunity is Now

*"There has never before been a better time, or a more important role, for health care professionals to lead the reform and improvement of American health care as a system." – Don Berwick, 2012*

We can improve health care by following these basic principles:

- Put patients first
- Protect the disadvantaged
- Start at scale (no more pilot projects—just do it and go big!)
- Act locally

# Case Studies: Organizations with Better Care, Better Health, Lower Costs

## West Penn Allegheny Health System
## Preventing Central Venous Line (CVL) Infections by Bundling

When West Penn Allegheny implemented the central line-associated blood stream infection (CLABSI) bundle, they significantly reduced the number of catheter-related blood stream infections associated with central venous catheters. Studies estimate between 500 and 4,000 U.S. patients die annually due to catheter-related bloodstream infections.

The bundle is a group of evidence-based interventions that, when implemented together, result in better outcomes than when implemented individually. This includes:

- Hand hygiene
- Maximal barrier precautions
- Chlorhexidine skin antisepsis
- Appropriate catheter site and administration system care
- No routine CVL replacement

### 12-month results

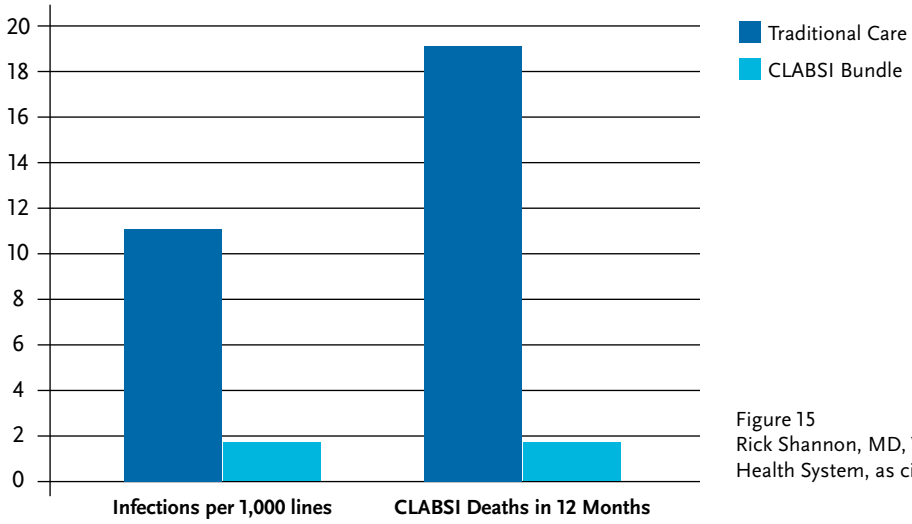


Figure 15
Rick Shannon, MD, West Penn Allegheny Health System, as cited by Berwick, 2012

## Southcentral Foundation (Anchorage, Alaska)
## Remodeling a Health Care System to Use Team-Based Innovation for Better Care

### Nuka

An Alaskan-native word for "strong, giant structures and living things," Nuka is also the name for the health care model that transformed the system from health care transactions for patients to a healthy system with the population.

- **Population-based.** To succeed in transforming, we have to think at a population level and begin to think, plan and react over time.
- **Team-based.** All caregivers sit in cubes in the same room and patients cycle through.
- **New roles.** Specialists are part of primary care.
- **Delivering "health"**—not just disease care.

**Results**

- Urgent care and emergency department use = 50 percent ↓
- Hospital admissions = 53 percent ↓
- Specialist use = 65 percent ↓
- Primary care use = 20 percent ↓
- Healthcare Effectiveness Data and Information Set (HEDIS) outcomes and quality = 75-90 percentile
- Employee turnover rate < 12 percent per year
- Customer and staff satisfaction > 90 percent

## Denver Health
## How LEAN Production Improved Quality and Reduced Costs

Denver Health has become a national model for their health care implementation of Toyota Production System's LEAN philosophy. In 2005, Denver Health set a goal to identify waste and improve efficiency while continuing to provide high-quality patient care despite the hospital's high rate of uncompensated care and reduced reimbursements.

**Results**

Since 2006, LEAN at Denver Health has generated $144 million in financial benefit with no staff layoffs. Despite adding four additional buildings to the campus, budgets have not increased. Denver Health has completed more than 300 LEAN management improvements that have involved 1,300 employees.[iv]

## University of New Mexico Health Sciences
## ECHO Project Expands Scope of Practice to Reduce Costs and Improve Outcomes

Project ECHO (Extension for Community Healthcare Outcomes) linked university specialists with rural and prison-based clinicians to improve care for people with chronic Hepatitis C in New Mexico and monitor outcomes. By using telemedicine and clinics, specialists extended their reach through community-based physicians, and the project improved outcomes and reduced costs. It also allowed for successful expansion into other specialties. Through the use of technology, best-practice protocols, and co-management of case-based learning, rural primary care clinicians deliver Hepatitis C care (HCV) that is safe and effective.

### Results

Patients who received HCV treatment per the ECHO clinical protocol had similar cure rates as those treated in the university's HCV clinic. Measured by sustained virologic response, the treatments resulted in cure rates of approximately 58 percent (which is considered high).[v]

## Ryhov Hospital, Sweden
## Using Patient-Centered Design and Innovation

### Ryhov Hospital

The hospital had a traditional hemodialysis and peritoneal dialysis center. In 2005, a patient asked about the possibility of performing dialysis on himself. It worked. Now, 60 percent of their dialysis patients are on self-dialysis. Their goal is to reach 75 percent of patients.

### Results

- Costs reduced by 50 percent
- Complications dramatically reduced

# In Conclusion

**Steven J. Summer, President and CEO**
**Colorado Hospital Association**

This was the second year of the Patient Safety Leadership Congress (PSLC), and the interest in and desire to collaboratively improve patient care quality and outcomes was visible in the fact that more than 325 hospital leaders, physicians and other stakeholders attended—nearly twice the number we had in 2011. The Colorado Hospital Association (CHA) is grateful that you decided to make this commitment as individuals, and hope that the PSLC proceedings contained herein will allow you to start making similar commitments as teams and organizations.

The increased interest in and attention to patient safety and care quality has grown exponentially over the years, both in Colorado and nationwide. While we have come a long way, there is still much work to do. A joint CHA/Colorado Medical Society survey recently found that the vast majority of both hospital and physician leaders think current patient safety initiatives are making a difference, and that there is a clear understanding of the goals. Yet the same survey found that less than half of surveyed physicians believe hospital management is willing to listen to their input on improving patient safety, and barely more than half of physicians said they feel safe about reporting near-miss adverse events. Clearly, there is still work to be done.

CHA stands ready to assist hospitals and physicians in meeting the challenges of an evolving health care delivery system—which, as our faculty demonstrated this year, can also reduce costs and improve the patient experience. There is truly a synergistic relationship between all of these variables that further emphasizes their importance, and the need to begin addressing them today and not tomorrow.

The Association has taken the lead on a number of initiatives in recent years that are already beginning to show real results. One such project is the Association's leadership in reducing preventable readmissions—studies show one in five Medicare patients ends up being readmitted to one of America's hospitals, and it costs our country close to $18 billion annually. With the help of a grant from UnitedHealthcare—a pioneering partnership that is truly the first of its kind nationwide between a hospital association and a private payer—CHA is helping more than 40 Colorado hospitals implement evidence-based protocols to help keep patients from unnecessarily reentering the hospital. Many participating facilities have already seen double-digit reductions in both all-cause and same-cause readmissions.

More than 60 Colorado hospitals are also part of CHA's Hospital Engagement Network, a federally funded initiative that is providing management and physician leadership training, sharing of best-practice models, technical assistance and other resources to help reduce catheter-associated urinary tract infections, pressure ulcers, surgical site infections and more. This work has just recently gotten underway and has tremendous potential to improve patient care quality, safety and coordination to an extent that we once never would have thought possible.

Yet it would be cliché to state that "this is just the beginning" of efforts to improve patient safety. Work is not only already underway at many hospitals, but already showing tangible success. In many cases, the only thing standing in the way of such success is inertia, as Dr. Sahney repeatedly pointed out. As much advice and tools now exist for health care professionals in these areas, it requires sustained will, energy and effort—on your part, and on your colleagues' part—to implement tactics and see them through to completion.

We are already planning the 2013 Patient Safety Leadership Congress (save the date for Oct. 22, 2013 in Denver), and hope you'll attend and continue to show your support and interest in this critical area. Let's keep working together to make Colorado the safest state in the country to receive health care. It's an audacious goal, and one worth making every effort to achieve.

# Appendix

## Faculty

**Don Berwick, MD,** former administrator of the Centers for Medicare & Medicaid Services and former president and chief executive officer of the Institute for Healthcare Improvement (IHI), is the leading advocate for high-quality health care in the United States. For 22 years, he was the founding CEO of IHI, a nonprofit dedicated to improving health care around the world. A pediatrician by background, he has also served on the faculty of the Harvard Medical School. He is the recipient of many awards, including the Ernest A. Codman Award, the American Hospital Association's Award of Honor, and the Heinz Award for Public Policy. For his important role in helping to redesign and improve Britain's health care system, Dr. Berwick was named a fellow of the Royal College of Physicians in London and Honorary Knight Commander of the Order of the British Empire. He has authored more than 160 articles in professional journals on such topics as health care policy and health care quality management. His books include *Curing Health Care* and *New Rules: Regulation, Markets and the Quality of American Health Care*.

**Vinod K. Sahney, PhD,** is a professor of Industrial Engineering and Operations Research at Northeastern University, senior fellow at IHI and adjunct professor of Health Policy and Management at Harvard University School of Public Health. Dr. Sahney was also elected to both the Institute of Medicine and the National Academy of Engineering. Prior positions include Blue Cross Blue Shield of Massachusetts as senior vice president and chief strategy officer from 2006-10. Prior to joining Blue Cross and Blue Shield, he served as senior vice president and chief strategy officer at Henry Ford Health System for 25 years. He has been a management consultant to more than 30 health care organizations in the areas of strategy, productivity and quality improvement. Professor Sahney has received a number of awards, including the Dean Conley Award from the American College of Healthcare Executives for the best paper published in health care management.

## Faculty-suggested reading

- *Human Error*, by James T. Reason
- *The Design of Everyday Things*, by Donald A. Norman
- *Managing the Unexpected: Resilient Performance in an Age of Uncertainty*, by Karl E. Weick and Kathleen M. Sutcliffe
- *Human Factors in Aviation*, Second Edition, by Eduardo Salas and Dan Maurino
- *Leading Change*, by John P. Kotter

## Notes

[i]Harvard Medical Practice Study
[ii]Classen, et al., Health Affairs 1
[iii]Berwick, D and Hackbarth, A ; "Eliminating Waste in US Health Care"; JAMA, April 11,2012 Vol. 307, No 14
[iv]Denver Health website, www.denverhealth.org
[v]NEJM : 364: 23, June 9-2011, Arora S, Thornton K, Murata G

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Colorado Hospital Association

7335 East Orchard Road | Greenwood Village, CO 80111
Phone: 720.489.1630 | Fax: 720.489.9400 | Web: www.cha.com