



Learning Lessons All Along The Way

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S1 Staff, 8/23/2002

S2 Multiprogram Lab - environmental, energy, and fundamental science, and national security
Roles - Quality Engineer, Quality Auditor, Sr. Performance Analyst, BP/LL Program Coordinator
Sr. Examiner for DOE's Performance Excellence Award 5 years, exposed to the Malcolm Baldrige Criteria, idea for a Best Practices program was born here. One thing led to another, and now I manage both BP and LL.
Staff, 8/23/2002

What We Hope To Accomplish With Lessons Learned

- ▶ **Avoid duplicating mistakes.**
- ▶ **Prevent accidents.**
- ▶ **Safeguard personal health.**
- ▶ **Protect the public/the environment.**
- ▶ **Work in accordance with laws/regulations.**
- ▶ **Use our resources strategically.**
- ▶ **Create a Learning Organization.**

Essential To Remember

- ▶ Training doesn't always result in **learning.**
- ▶ Nor does information always result in **knowledge.**
- ▶ Learning means **behavior change.**
- ▶ Organizationally, behavior change is **daunting.**

The Traditional Approach To Lessons Learned

Deals with facts and experiences in an objective manner with the goal of improving performance by distributing pertinent information, tracking results, and setting performance targets.

Focuses primarily on environment, safety and health.

- Emphasizes trending.
- Information tends to be very specific.
- Targets lessons learned to those who need to know (primarily support staff, SMEs).

- S3** This is not an "either or" situation! It's a call for both the traditional approach and a new approach that is the subject of this presentation.
Staff, 8/23/2002
- S4** This is not an "either or" situation but a call to build on the traditional approach to lessons learned to increase their effectiveness. The premise is that a change in behavior will lead to the number of events going down -- not away - but down. At the same time, to prove a statistical correlation between these two things is very difficult. Some features that most lessons learned programs have in common.
Staff, 8/23/2002

Is The Traditional Approach Important? Yes!

- ▶ It gives us the big picture/detects trends.
- ▶ It allows us to compare ourselves with others and with our own past performance.
- ▶ It can help measure effectiveness of corrective actions.

Can this kind of Lessons Learned Program be improved?

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Without the big picture, you can't really tell if you're ahead of the pack or trailing behind. What might seem to you to be a dandy score turns out to be not so hot when compared with others.

Improvements - need to present lessons learned as an integral part of how we plan and conduct work. Learn from others, use their experience. Present material in a way that people can relate to, bring it down to earth.

Staff, 8/23/2002



Yes. But How?

By developing a new mindset that transforms information into knowledge, knowledge into behavior.

Collectively, this mindset characterizes an organization's culture, its attitude toward how work is done.

What's The Nature of This New Mindset?

- ▶ The “DNA” of the mindset we’re trying to achieve is captured in 4 questions that need to be asked -- and answered -- before work begins, every time:
 - “What’s in this job that can hurt me?” (Curiosity)
 - “What can I do to prevent or mitigate the hazard(s) I’ve identified?” (Analysis)
 - “What’s the best way to share what I’ve learned with my co-workers?” (Concern for Others)
 - Are there better (proven) ways to do this job?

How Can You Change The Current Mindset?

By introducing these characteristics into your lessons learned program:

- Familiarity – LL incidents that involve people you know because they happened where you work.
- Freshness – LL that tell a story in everyday language, not in ES&H jargon.
- Fairness – LL that bring out all the positive things/things done right, not just what went wrong.
- Involvement – managers that acknowledge staff who submit LL, read LL, and use them as a resource.
- Best Practices – BP that provide models of behavior/practices proven to be successful.

What About Content?

- Offer **DIVERSITY**.
 - “Home-grown” best practices and lessons learned
 - Book reviews on current topics relative to your organization
 - Professional journal articles
- Work with your author(s) – subject matter experts, involved staff.
- Link topics to your organization’s highest strategic goals.
- Use references to maintain your credibility.
- Name names when you can.

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All of these types of input are important! The "home-grown" articles should be the mainstay of your program. Three key things to remember: not all people are good writers, many of them don't like to write, and all of them are short on time.

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1. Lessons Learned

- ▶ Based on events that happen in your own backyard.
- ▶ Experienced by people you know and often work with.
- ▶ Include prevention actions to decrease the likelihood of recurrence.
- ▶ Off-site LL are not ruled out. Especially good for highlighting trends across the complex.

This lessons learned has a couple of significant points. Be aware of the potential for accidents precipitated by poor workstation ergonomics. And consider the cost of packaging versus the cost of a spill and injury to staff. In this case, a glass bottle with a rubber-like coating that diminishes the spread of glass shards if the container should break. *Pass it on.*



Acetone Spill At EMSL Ergonomic Factors Involved

Summary

When you think of ergonomic problems, you typically think of repetitive motions that over time can cause damage to nerves and soft tissue. But there's another angle: how well your workplace is designed to allow you to use natural body motions to do your work; e.g., enabling you to leverage your body when you're attempting to lift something "up and over." In this case, lifting a 4-liter container of acetone that weighs in the neighborhood of 10 pounds out of a cardboard box whose sides are almost as tall as your shoulders.

Description

Acetone. (CH₃)₂CO. A manufactured chemical also found naturally in the environment. A colorless liquid with a distinct smell and taste. Also called dimethyl ketone, 2-propanone, and beta-ketopropane. Better known as fingernail polish remover.

Acetone evaporates easily, is flammable, and dissolves in water. It's used to make plastic, fibers, drugs, and other chemicals. It is also used to dissolve other substances.

With its excellent cleaning properties, acetone, is used in many of the laboratories on our campus. Very high grade acetone is packaged in glass containers because glass is relatively inert (e.g., acetone would dissolve plastic and become contaminated in the process).

At EMSL, there is a central receiving area and stockroom for chemicals that are used throughout the EMSL facility. Acetone is one of these, and it's often ordered in large (4-liter) containers, 4 to a carton. When it's received at the



2. Best Industry Practices

- ▶ Based on the knowledge and experience of companies renowned for their success in the marketplace. Examples:
 - Apple
 - Xerox
 - Proctor & Gamble
- ▶ Include book reviews and articles on leading edge and impactful business concepts. Examples:
 - Balanced Scorecard (Kaplan & Norton)
 - Strategy Maps (Kaplan & Norton)
 - Disruptive Innovation (Christensen)
 - Change Management (Kotter)
 - Staff Engagement (Gallup)

3. PNNL Insights

- ▶ Based on practices that our own staff have discovered to be effective in enhancing some aspect of the work environment.
- ▶ Range from administrative to technical. Examples:
 - Identity theft
 - Mentoring programs
 - Project management
 - Proposal writing
 - Rad packaging/preventing leaks

4. PREVENT

- ▶ **PREVENT** articles are lessons learned and best practices that focus on **PRECURSORS** to illness or injury. Examples:
 - **at Work**
 - ❖ Winter Safety In The Parking Lot & Other Potentially Treacherous Places
 - ❖ Go For The Gold! Personal Fitness At PNNL
 - ❖ Advice For Desk Jockeys Working Out The Kinks
 - ❖ The Art and Science Of Benign Housekeeping
 - ❖ Ergonomics At The Bench
 - **at Home**
 - ❖ Take A Load Off Spare Your Back
 - ❖ Take A Good Look At Yourself: Stress At Work -- And Home
 - **at Play**
 - ❖ Deep Vein Thrombosis Reloaded, Economy Class Syndrome Update
 - ❖ Two Arms Are Better Than One

Environment Safety & Health Categories

- ▶ Biological Safety (4)
- ▶ Chemical Safety (12)
- ▶ Electrical Safety (12)
- ▶ Environmental Compliance (1)
- ▶ Facility Safety (3)
- ▶ Field Work (1)
- ▶ Fire Safety (4)
- ▶ Laser Safety (1)
- ▶ Nuclear Facilities (6)
- ▶ Office Safety (1)
- ▶ Radiological Safety (26)
- ▶ Respiratory Protection (1)
- ▶ Transportation and Packaging (4)
- ▶ Vehicle Safety (3)
- ▶ Waste Management (2)
- ▶ Worker/Personal Safety & Health (55)

General Management Categories

- ▶ Business & Finance (9)
- ▶ Communication (17)
- ▶ Computers (5)
- ▶ Customer Focus (20)
- ▶ Facility Operations (5)
- ▶ Human Resources & Leadership (75)
- ▶ Innovation (11)
- ▶ Performance Measurement (16)
- ▶ Policies & Procedures (6)
- ▶ Project Management (8)
- ▶ Property Management (1)
- ▶ Purchasing & Contracting (2)
- ▶ Quality (5)
- ▶ Security (16)
- ▶ Strategic Planning (4)
- ▶ Travel (13)
- ▶ Training (2)

Keep Track!

- ▶ **If you don't know who's reading what, you won't know if anyone's reading anything.**
 - Track your **reader group** – who's in it and what's their role in your organization?
 - Track your **articles** – which ones are read most frequently – and by whom?
 - Track **reading patterns** – some months are slow, some are active – these patterns can tell you if it's a good time to take a break or publish the show-stoppers

Other Things To Consider

- ▶ Use of existing venues to distribute articles.
- ▶ The value of critiques.
- ▶ Maintaining a website you can search for specific topics.
- ▶ Searching other websites for relevant information.
- ▶ Imagination and style, please!
- ▶ Complaints and compliments.
- ▶ The importance of rewards and recognition.
- ▶ Universal audience versus specific

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The audience is everybody. People who work in labs don't have the corner on the market for making mistakes. Administrators make their share of mistakes - you just don't hear about them.

Use your in-house newsletter to distribute your lessons learned. Advertise frequently to put your program on everyone's screen, and consistently to keep it there (build up a sense of anticipation).

Build a website - it's your library! Address complaints and compliments with equal grace. Admit mistakes, thank the complainer. Provide contributors with small tokens of appreciation that recognize the individual and provide advertising. Do it publicly, in front of their peers and their boss.

Staff, 8/23/2002

The Few Versus The Many

- ▶ If you send LLs just to the small group of SMEs and others “who need to know,” you’re placing emphasis on the specific content of the information. Good.
- ▶ If you allow all staff to self-select the LL they read, you’re placing emphasis on a much broader message that reflects a mindset and the kind of behavior that mindset tends to produce. Also good.
- ▶ If you distribute LLs to the group who needs to know and provide access to the whole organization, you’ve got the best of both worlds. Even better.

Phases Of Behavioral & Cultural Change

- ▶ **Staff READ** the lessons learned/best practices.
- ▶ **Staff DISCUSS** them/share them.
- ▶ **Staff USE** them as a resource in planning/training, hazard recognition.
- ▶ **Managers SUPPORT** lessons learned in a visible way.
- ▶ **Staff & Managers THINK & ACT** in a more strategic way.
- ▶ **NEW MINDSET** is integrated into the culture as “the way we do business.”

How We Measure LL/BP Program Performance

▶ 1. Program Functionality

- **Defined** (program description, subject area)
- **Communicated** (electronic newsletter, email, other venues)
- **Operational** (retrievable, searchable, reliable, subscribable)

2. Program Performance Objectives

- a) **Used as a resource** (training, work planning)
- b) **Valued** (by management and staff, readership)
- c) **Involvement** (articles submitted by staff, mgt support for the program)
- d) **Attitude** towards work focuses on safety (mindset)

3. Program Performance Indicators

- e) **Positive correlation** between a + b + c + d:
= improved ops performance over time
- f) **External validation** (input from other sites/programs)

How We Did Then How We're Doing Now

▶ CY 2002

%Unique readers- 40%
(#1400)

Staff submissions- 45%

Used as resource- 23%

Awareness- up 31%

Level of effort- ½ FTE

Demographics- S&E/60%

▶ CY 2004

%Unique readers- 62%
(# 2252)

Staff submissions- 45%

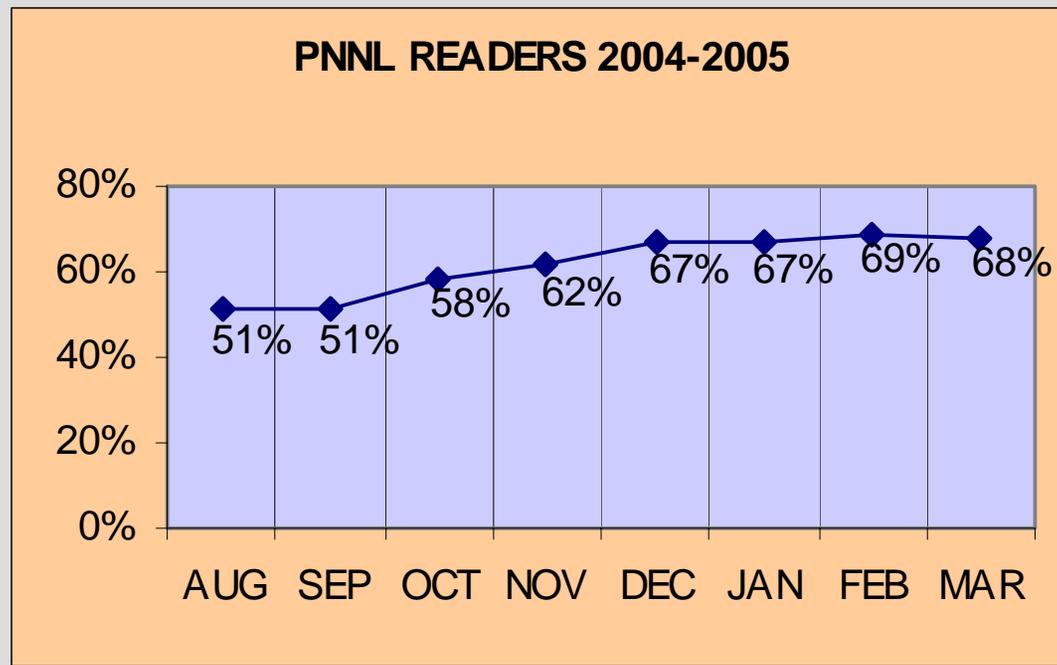
Used as resource- 24%

Awareness – up 45%

Level of effort- ½ FTE

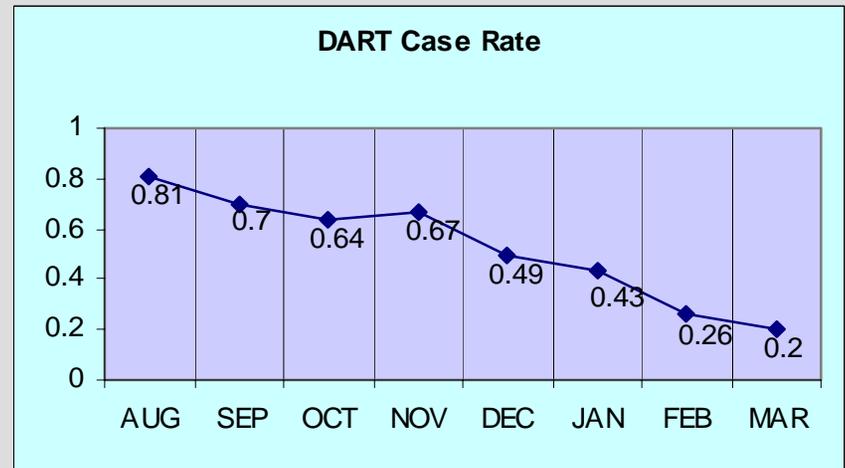
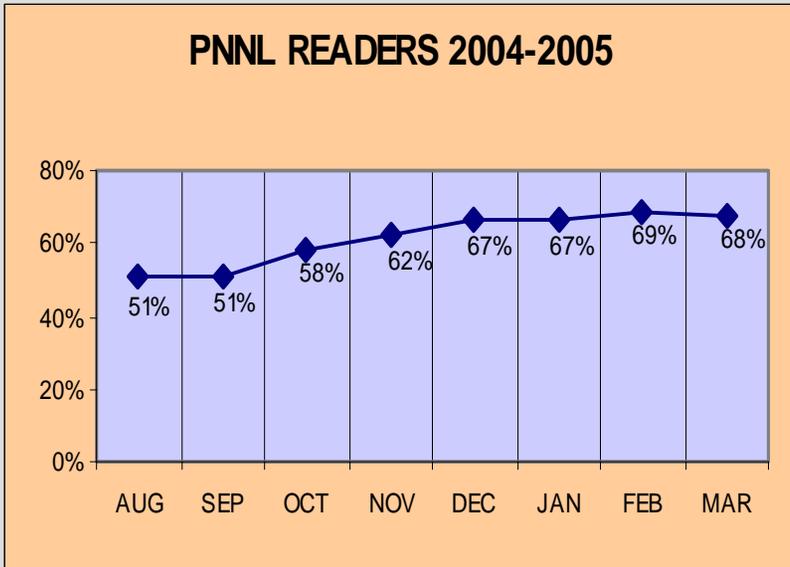
Demographics- S&E/60%

Reading Trends Last 8 Months



Compared with Recordable Case Rate and DART Case Rate...

Correlation: The simultaneous increase in the value of one and decrease in the value of the other of two numerically valued variables.



Lessons We've Learned Along The Way

- ▶ Make sure you enlist the people most closely involved in each lessons learned incident to review and comment before anything is published.
- ▶ Make sure your reviewers understand the responsibilities they assume – as reviewers.
- ▶ Accept that you can't please all the readers all the time. As long as you register more compliments than complaints, you're probably doing ok.
- ▶ Recognize complaints as the gift they are, and don't argue with people's perceptions. Instead, pay attention to them.

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Calculated risks are made every day. Risks taken that are most likely to turn out well are those where three questions have been asked and answered: “What’s the worst that can happen?” “What can I do to prevent or mitigate it?” and “Is the risk worth taking considering the return?” Original material provided by Randy Hansen, NSD.

Pass it on.



Encounter With A Hacksaw At 323

Summary

In January at the 323 Building, a staff member received a minor injury from a hacksaw. But he’d asked all the right questions and decided that given the results of not taking the risk, and the low probability of an accident happening, the risk was worth taking. But the accident happened. Why?

Description Of Event

While working on an assembly, a staff member encountered an unexpected problem. A cylindrical radiation detector, encased in Bismuth, had been inserted inside a plastic pipe that was in turn placed inside a metal pipe. See Figure 1 below.

A cap was designed to fit inside the end of the metal pipe, which meant that the threads that the cap would screw into had to be exposed. The problem? The plastic pipe was a little too long, about a quarter of an inch too long. The cap couldn’t be tightened. **Figure 1.**

Although the plastic pipe could be removed from inside the metal pipe, it would take approximately 2 hours to disassemble the system and another 2 hours to reassemble. Four hours? When it would take only a couple of minutes to make a cut using a hacksaw without removing the plastic pipe? Also, the staff member had performed this kind of work before without any problems, and was confident that this time would be no different. The choice was obvious.

Lifting up the 24” plastic tube from inside the metal pipe, and using the top of the metal pipe as a guide, the staff member held the plastic tube with his hand to steady it and began cutting into the plastic. No problems. Except that after completing the cut, the plastic pipe was still 1/8” too long.

When coaching your staff, think about how their talents and strengths can be put to even better use. Give suggestions that build on what they do really well. These suggestions will be much more effective than critiques that focus on their mistakes. A message from Gallup. *Pass it on.*

Coaching Is Not Critiquing

Summary

Managers, take note: In many situations, when you offer a critical suggestion to a staff member on their performance (with the best of intentions to be helpful), you may not be helping at all. Instead, you may have just caused a negative reaction that may adversely affect his or her performance. In most situations, coaching is the better alternative to critiquing. Exceptions are unacceptable behavior on the job; e.g., visiting restricted websites, making inappropriate comments to other staff, etc.

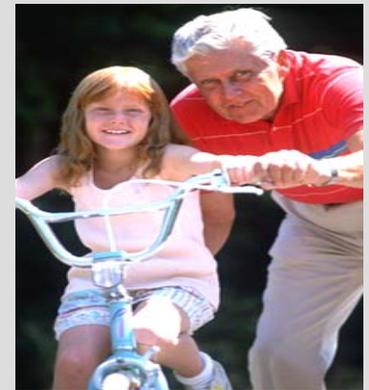
Description

Over the past decade, "coaching" has become a part of many managers' job descriptions. Managers are no longer expected to be just bosses – they're now asked to be coaches who lead teams.

The idea of coaching sounds positive -- but what exactly are managers supposed to do as coaches? Should they run around their companies' halls with hats and whistles? Give pep talks like Vince Lombardi while reminding their staff that "Winning isn't everything; it's the only thing?" Or is coaching just another way of repackaging some of the employee development strategies that great managers have used all along?

This much is certain: Companies are putting a priority on coaching, and coaching courses are now among the most popular training programs out there. And many organizations are now evaluating managers' "coaching skills" as part of their annual performance reviews.

The Gallup Organization's own research, including interviews with more than 25,000 managers, confirms that managers who help their employees grow and develop are more likely to have engaged staff. If we think of coaching as putting people in the right roles, setting clear expectations, and praising accomplishments, then the more coaching managers do, the better it is for their organizations.



Tracking nonfinancial measures like customer satisfaction and staff turnover can be a powerful supplement to traditional performance measurement. Unfortunately, most companies botch the job. The 1st of a three-part series on common pitfalls companies fall into when measuring performance, and a series of best practices they have developed to improve their performance measurement systems. *Pass it on.*

Coming Up Short On Nonfinancial Performance Measurement Part 1: Measures That Link To Strategy

Summary

Businesses that don't scrupulously uncover the fundamental drivers of their units' performance often end up measuring too many things, and trying to fill every perceived gap in their performance measurement system. The result is a wild profusion of peripheral, trivial or irrelevant measures. Amid this excess, companies can't tell which measures provide information about progress toward the organization's ultimate objectives and which are just noise.

Description

During the past ten years, increasing numbers of companies have been measuring performance areas that are not financial but are ones they believe ultimately affect their bottom line: productivity. Systems such as Kaplan and Norton's Balanced Scorecard and other performance measurement models such as Accenture's Performance Prism or Skandia's Intellectual Capital Navigator, are sound approaches to gauging an organization's chances of success. Measures such as customer loyalty and staff engagement (to name only two) have the potential for reaping great benefits and predicting progress before a financial verdict is pronounced. Additionally, staff can receive better information on specific actions needed to achieve strategic objectives. Then why is it that so few companies realize these benefits and come up short? In a word, the cause-and-effect linkages between improvements and profits and nonfinancial measures haven't been identified. A little like shooting blind and believing you'll hit the target. These approaches only work *IF organizations do the hard work first*. Identifying the activities that truly affect their business domain.

The original article, on which this series of best practice articles is based, presents the findings of extensive field research by Christopher D. Ittner and David F. Larcker (see Reference section) into more than 60 manufacturing and service companies. During the survey, senior and mid-level managers were interviewed about their organizational strategies and performance measurement



This is one in a series of articles describing a *PNNL Insight*, a best practice that PNNL staff have found to be effective in enhancing some aspect of the work environment, our foundation for business and operational success. Mike Schwenk, Director of the Intellectual Assets Management Directorate (IAMD), implemented the following *PNNL Insight* in his organization. *Pass it on.*



A Small Price To Pay

Summary

As Director of IAMD, this has been a long-standing goal of Mike Schwenk's. But for Mike, this is more than just words. Just ask the Worker Safety & Health folks who do the ergonomic evaluations for PNNL, and they will tell you that IAMD is the only directorate in the Lab who offers an ergonomic evaluation of the workstation to every new hire. What this has meant for the IAM Directorate is no incidences of repetitive motion injuries that have required time away from work and a substantial cost savings to the directorate and the Lab.

Description

Ergonomic hazards are the biggest job safety problem in America today and a major problem across every sector of the economy -- meat packers, poultry workers, nurses, cashiers, assembly line workers, computer users, truck drivers, stock handlers, sewing machine operators, construction workers – and even people who work in laboratories like ours. These injuries are expensive. And in most cases, they're preventable.

Each year, more than 1.8 million U.S. workers suffer ergonomic injuries on the job. Over 600,000 of these are serious enough to require time off from work. Ergonomic hazards cause a type of injury called musculoskeletal disorders (MSDs) caused by repetitive motion and overexertion.

Women workers are particularly affected by these injuries. Women make up 46 percent of the overall workforce, but in 1998 accounted for 64 percent of repetitive motion injuries (42,347 out of 65,866 reported cases) and 71 percent of reported carpal tunnel syndrome cases (18,719 out of 26,266 reported cases).



Don't Give Up!

- ▶ Don't lose your sense of humor or perspective. The beginning can be ragged. Challenges abound.
- ▶ Find a champion to institutionalize the use of lessons learned/best practices as an integral part of doing business.
- ▶ Learn. Learn some more.

And pass it on.