



# PENNSYLVANIA PATIENT SAFETY AUTHORITY

2010 ANNUAL REPORT



P A T I E N T  
**S A F E T Y**  
A U T H O R I T Y

An independent agency of the Commonwealth of Pennsylvania

*Analyzing, Educating, and Collaborating for Patient Safety*

# Letter from the Board Acting Chair



April 28, 2011

Dear Fellow Pennsylvanians:

In 2010, the Pennsylvania Patient Safety Authority extended its activities to improve patient safety and reduce medical errors across the Commonwealth. Among these activities was a broadening of its educational endeavors with the completion of the Patient Safety Liaison (PSL) program. This program has given every hospital, ambulatory surgical facility, birthing center and abortion center a non-regulatory patient safety consultant they could turn to for the latest educational resources to improve patient safety in their institutions.

To date, over 1,700 Patient Safety Officers (PSOs) and other healthcare professionals have attended educational courses developed by the Authority based upon feedback received by the Patient Safety Liaisons from PSOs. Comments from PSOs about the educational sessions, collaboratives, the PSL program and Authority overall are detailed in this Annual Report.

In December 2010, the Authority's blood mislabeling specimen collaborative ended in Northeast Pennsylvania. Nine facilities participated in the collaborative and all facilities saw a 37% drop in their blood specimen mislabeling mishaps. One facility saw a decrease of 84%. Best practices were established from the collaborative for other regions to implement in their facilities.

Last year, over 700 nursing homes received healthcare-associated infection (HAI) prevention education from the Authority through *Pennsylvania Patient Safety Advisories*, presentations, webinars and a poster campaign to raise awareness of *C. diff*-- a potentially deadly bacterium that causes serious infection. Recent data shows *C. diff* cases increasing in Pennsylvania and nationwide. All Pennsylvania nursing homes began reporting HAIs to the Authority in June 2009.

The Authority switched to a new e-mail distribution system in July 2010 and has seen its general subscriber list continue to grow. Since that time, 180 individuals (7% increase from initial mailing list) elected to receive the *Advisory*, of whom 101 (56%) are located in Pennsylvania. Subscribers also include individuals from every state in the U.S. and 28 other countries.

As acting chair of the Pennsylvania Patient Safety Authority's Board of Directors, I look forward to working with Pennsylvania healthcare facilities and nursing homes to further improve patient safety through these new educational initiatives and programs detailed in this report.

On behalf of the Board, I am pleased to submit this Annual Report for your review.

Stanton Smullens, M.D.  
Acting Chair, Board of Directors  
Pennsylvania Patient Safety Authority



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\*

## **Quotes from Collaborative Leaders**

“Even with near perfect compliance with SCIP, SSIs are not at zero. Western PA has reunited as a formal collaborative, as we had done in the past with CLABs, to take on this important work. Southwestern PA Infection Preventionists have partnered with the PA Department of Health and the Patient Safety Authority to create an environment that will facilitate improved outcomes in our patients undergoing surgical procedures. The SSI collaborative is focused on expanding the SSI prevention bundle. To decrease the SSI rate 3 additional preventative measures will be added: CHG patient bathing, *S. aureus* screening followed by eradication, and CHG-alcohol (e.g. Chloroprep) for surgical site prep. We believe these measures will help to get us closer to our goal of zero.”

Carlene Muto, MD, MS  
Medical Director of Infection Control and Hospital Epidemiology  
Medical Director for Infection Control  
Center for Quality Improvement and Innovation, UPMC Health System  
Surgical Site Infection Collaborative

“Sound, reliable measurement is key to tracking progress in improving patient safety. Beginning in 2008, the Health Care Improvement Foundation joined with the Pennsylvania Patient Safety Authority to help address the wide variability in how hospitals were reporting the incidence of patient falls. Through a collaborative process, common definitions of "falls" and "falls with harm" were adopted and implemented by 28 hospitals in Southeastern Pennsylvania. [The Authority] prepares customized quarterly benchmarking reports for the participants, supporting them in gauging the effectiveness of their falls prevention programs. As an illustration of the value of collaboration with the [Authority], the aggregate group results are now demonstrating a significant reduction in the number of falls causing patient harm.”

Kate J. Flynn, FACHE  
President  
Healthcare Improvement Foundation (HCIF)  
Falls Collaborative

“Working collaboratively towards a shared goal with our system hospitals and physicians has been very rewarding. Through our work with Dr. John Clarke and the Wrong-Site Surgery Prevention Collaborative, we have made a meaningful difference in improving patient safety and in particular, safety within our Operating Rooms at UPMC. Since joining the collaborative, I am very pleased to say that we have had zero wrong site surgeries in the OR.”

Tami Minnier, RN, MSN, FACHE  
Chief Quality Officer  
University of Pittsburgh Medical Center (UPMC)  
Wrong-Site Surgery Collaborative

“The collaborative was a wonderful opportunity to bring together members of the healthcare field as a team to address this important aspect of patient safety. Our facilities were directly impacted by the focus on patient identification. We experienced significant reduction in labeling errors over the 18 months of this project and we implemented new processes that will allow us to continue that trend.”

Tammy Germini, MT (ASCP)  
Director of Laboratory Excellence  
Geisinger Medical Laboratories  
Phlebotomy Specimen Mislabeling Collaborative

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## EXECUTIVE SUMMARY

The Pennsylvania Patient Safety Authority (the Authority) is an independent state agency established under Act 13 of 2002, the Medical Care Availability and Reduction of Error “MCare” Act. It is charged with taking steps to reduce and eliminate medical errors through data collection, identifying problems and recommending solutions that promote patient safety in hospitals, ambulatory surgical facilities, birthing centers and certain abortion providers. In June 2009, the Authority began collecting infection reports from nursing homes. The Authority’s primary functions include data collection, data analysis, guidance, education and training. The Authority’s role is non-regulatory and non-punitive. The Pennsylvania Department of Health is the regulatory agency of the Commonwealth.

The Authority initiated statewide mandatory reporting in June 2004, making Pennsylvania the only state in the nation to require the reporting of Serious Events and Incidents (near misses). With respect to civil law matters, all reports are confidential and nondiscoverable, and they do not include any patient or provider names. In 2007, the legislature added a chapter to the MCare Act that addressed reporting of healthcare-associated infections (HAIs) in Pennsylvania and required infection reporting from nursing homes to the Authority and the Department of Health. The Authority developed a new module in the Pennsylvania Patient Safety Reporting System (PA-PSRS) to collect this data.

This Annual Report focuses on the primary activities, accomplishments and achievements of the Authority in 2010 including enhancement of the Authority’s educational initiatives through the Patient Safety Liaison (PSL) program. The PSLs will help initiate more collaboratives designed to help measure patient safety in facilities and will also help increase our interaction with consumers/patients. In addition, the report focuses on the Authority’s activities to eliminate HAIs in hospitals, ambulatory surgical centers, birthing centers, abortion facilities and nursing homes.

Inquiries from other states as to how the MCare Act and the Authority were developed prompted a background piece for a trade journal. Excerpts from the article are included in this Annual Report. An *Advisory* article regarding the substantial drop in medical malpractice claims and its potential relationship to patient safety is also included. A value analysis of the Authority’s output is also detailed in Section VIII of this Annual Report.

Aggregate data from 2010 facility reports will be given for report volume, patient demographics and patterns in reports. This information will include updated information from healthcare-associated infection data collected from Pennsylvania nursing homes. Samples of information provided in the *Pennsylvania Patient Safety Advisories* and the latest subscription rates which include countries around the world are also included in this Annual Report. Results of our annual survey of Patient Safety Officers are also highlighted in Section VI.

For copies of the 2010 Annual Report, go to [www.patientsafetyauthority.org](http://www.patientsafetyauthority.org).

## **Patient Safety Authority Receives Cheers Award**

In October 2010, the Pennsylvania Patient Safety Authority received a Cheers Award from the Institute for Safe Medication Practices (ISMP) for its educational efforts in preventing medication errors and adverse drug events. An awards ceremony took place in December in Anaheim, California. ISMP honored six individuals, organizations and companies that have set a “superlative standard of excellence for others to follow in the prevention of medication errors and adverse drug events.”

## **The Authority’s Strategic Plan Drives Activities**

In 2007, the Patient Safety Authority Board decided that the Authority should do more to educate Pennsylvania providers about patient safety and should increase collaboration with other entities in order to improve patient safety. After a strategic planning exercise at a board retreat, objectives were developed for the Authority’s next steps for improving patient safety. The board approved the 11 initiatives unanimously. Much of the Authority’s work highlighted in this Annual Report is a result of the board’s strategic focus.

Most of what the Authority presented in the strategic plan has been accomplished. However, the Authority has not made much traction with respect to an initiative calling for more standardization in reporting. While reporting has increased significantly since development of the strategic plan, significant differences in facility reporting rates persist. The Authority produced a set of reporting principles which could have blunted the reporting discrepancy somewhat, but it has not been approved by the Department of Health and has not been implemented. The Authority identified and communicated with 50 facilities that appeared to be the lowest reporters. This exercise greatly increased the number of reports coming from these facilities.

Quantifying overall improvements in patient safety in Pennsylvania remains a challenge for the safety field in general, as differences in facility reporting recommend against using the volume of staff-generated reports as a statistically relevant method for measuring overall patient safety. The Authority has taken steps to showcase the value of its efforts including the requirement that collaborative efforts projects include a measurable outcome and development of an analysis of the annual value created by the Authority’s output.

The Authority must continue to review its activities to ensure resources are being used effectively and efficiently. In 2011, the Authority Board will develop a new strategic plan that will provide direction for the next several years. Strategic planning must consider some of the current and potential issues facing patient safety including potential implications of national health care reform, patient and provider relationships under accountable care organizations, and increasing use of pay-for-performance and non-payment for hospital acquired conditions.

## **The Authority's Educational Programs**

To implement the Strategic Plan the Authority focused its resources on educational programs. These resources were applied to the following six activities:

- Increasing Outreach Efforts for Process Change through the Pennsylvania Patient Safety Liaison Program
- Educating hospital Boards of Trustees and executive management for improved Cultures of Safety
- Expanding Educational Offerings to Encourage Process Change among Healthcare Providers
- Helping Patients and Consumers Engage more in their Healthcare for Patient Safety
- Improving the Authority's Website for Easier Access to Educational Materials
- Developing PassKey to Give Healthcare Providers a Network of Colleagues to Learn From

These activities are described in more detail below.

### **Increasing Outreach Efforts through the Pennsylvania Patient Safety Liaison Program**

In 2010, the Patient Safety Liaison program became fully staffed. The Director of Educational Programs oversees six Patient Safety Liaisons (PSLs) located within six regions of Pennsylvania. The PSLs act as non-regulatory consultants who visit Pennsylvania's healthcare facilities to ensure they are aware of the numerous educational resources available to them from the Authority and other patient safety leaders. They provide training and educational materials to facility patient safety officers and discuss each facility's patient safety program. While acting as a liaison between the Authority and healthcare facilities, the PSL also serves as a liaison between healthcare facilities within the region. The program includes: one PSL in the Northeast, one PSL in the Northwest, one PSL in the South Central region, one PSL in the Southwest, and two PSLs in the Delaware valley (one north and one south). In 2010, the liaisons served approximately 540 facilities in Pennsylvania including hospitals, ambulatory surgery facilities (ASFs), birthing centers and certain abortion facilities. Since the pilot program began with one PSL in August 2008, the program has continued to have success in each region. Much more about the PSL program and its success is discussed in Sections IV and V of this Annual Report.

## **Patient Safety Training for Executives and Boards of Trustees for Improved Cultures of Safety**

In 2010, the Authority and the Hospital and Healthsystem Association of Pennsylvania (HAP) moved beyond the pilot program to educate hospital executives and boards of trustees, begun in 2009, and began putting the pieces in place to train education consultants who will then educate facilities across the state. The education consultants are needed to fully implement the program statewide.

The pilot program to educate executive management and boards of trustees about their role in improving patient safety is an initiative designed to raise awareness and increase responsibility for patient safety by bringing it to the board of trustee level.

The Patient Safety Authority partnered with the Hospital and Healthsystem Association of Pennsylvania (HAP) and the American Hospital Association (AHA) to develop and execute the pilot program. An advisory panel composed of executive leaders and trustees from hospitals and health systems assisted the Authority and HAP in developing our customized program to foster the kind of senior level and board engagement needed for improved patient safety.

For an update on the patient safety training for facility executives and boards of trustees go to page 94 of this Annual Report.

## **Educating Healthcare Providers for Process Change**

The Authority offers numerous education and training programs to Pennsylvania healthcare providers. The live and web-based training and education sessions are free of charge. Some programs are regional and some are facility/system-specific.

In 2010, the Authority educated thousands of healthcare staff on a wide range of patient safety topics that often come from Patient Safety Officers (PSO) or from the PSLs who notice a patient safety issue that needs addressed regionally or statewide. Topics include but are not limited to: Just Culture™, human factors, wrong-site surgery, retained foreign bodies, mislabeling specimens, operating room safety, radiation safety, crew resource management and infection control.

A popular course, the Patient Safety Officer Basic Foundation Course, discusses the specifics behind patient safety and Act 13 of 2002 (the MCare Act). In 2010, over 200 healthcare providers attended the course that was offered six times. A second course, Beyond the Basics, is offered for healthcare providers who feel they've mastered the basic principles behind the MCare Act. This course teaches the seasoned PSO how to move forward with improving patient safety on a higher level. Topics of this course include but are not limited to Just Culture™, Root Cause Analysis (RCA), disclosure of adverse events to

patients and TeamSTEPPS™. Over 100 healthcare providers attended the two-day program offered three times in 2010. Ninety-eight percent of the attendees surveyed said they learned something new as a result of the program.

To learn more about the specific objectives of these and other educational programs offered by the Authority go to page 86 in this Annual Report.

## Helping Consumers Become More Engaged in Their Healthcare

The Authority is committed to providing individual citizens, the consumers of healthcare, with information that can impact their experience in the healthcare arena by giving them tips on how they can receive quality care.

### Consumer Tips and Brochures

In 2010, the Patient Safety Authority continued to develop and distribute consumer tips sheets with selected *Advisory* articles. These tips provide patients with more knowledge about specific healthcare topics. They include: medication errors, wrong-site surgery, color-coded wristbands, falls, MRSA, the risks for sleep apnea patients and the importance of knowing your medical history. There are many opportunities for patients and their loved ones to become involved in their healthcare, from making decisions about treatment protocols to assuring that providers are adhering to safe practices such as hand washing and verifying medications before administering them. The consumer tips sheets are another educational tool the Authority uses to reach out to the facilities and their patients. For a detailed list of the consumer tips and brochure topics, go to page 96 of this Annual Report.

Most recently, the Authority redesigned its consumer web page to make the consumer tips and brochures more easily accessible. Also included on the new consumer site is information from other state agencies responsible for hospital, healthcare provider and nursing home comparisons. These links are easily accessible from the Authority's new consumer web page, go to [www.patientsafetyauthority.org](http://www.patientsafetyauthority.org), click on "Patients and Consumers."

## Website Traffic Increases Since Improvements

During 2008 and 2009, the Authority completely redesigned its website that hosts the library of output created by the Authority. During 2010 the Authority continued with enhancements designed to improve the experience of the site's users. Based on 2010 usage statistics, the traffic on the Authority's website has experienced a substantial increase with over 60,000 hits per month.

## Speakers' Bureau and Tips Booth

The Authority continues to reach out to the community through its speakers' bureau and information booth. Throughout 2010, hundreds of presentations were given to a host of healthcare facilities and organizations on a variety of patient safety issues. When possible, the Authority analyzes data from PA-PSRS that is directly related to the facility or organization topic being presented. These presentations offer their audience a first-hand look at what is going on in Pennsylvania's healthcare facilities and helps provide insight for setting patient safety goals.

The Patient Safety Authority information booth is available for senior expos and health fairs and other healthcare related events. Much of the information encourages the consumer to participate in their healthcare and gives information related to real events happening in Pennsylvania where the patient or family member helped prevent a medical error by asking questions. Please call the Authority at 717-346-0469 for more information about its speakers' bureau and information booth.

## Development and Implementation of PassKey

It is through collaboration and sharing that patient safety can be efficiently improved. During 2010, the Authority developed and implemented the Pennsylvania Patient Safety Knowledge Exchange (PassKey). PassKey is a custom Pennsylvania application that provides Patient Safety Officers in Pennsylvania with a confidential electronic forum to share information, ideas and solutions. Information on the site is provided by PSOs, but maintained by the Authority staff. The Authority encourages facilities to post as much information as possible regarding how they are improving patient safety in their facilities so other facilities can learn from their success stories. PassKey also allows facilities to ask questions and search for answers that may already be provided on the site.

## The Pennsylvania Patient Safety Advisory

The flagship product developed by the Authority is the quarterly *Pennsylvania Patient Safety Advisory*. The *Advisory* is a reflection of the reports submitted to the Authority through PA-PSRS. *Advisory* articles address specific patient safety topics and events that occur in Pennsylvania. Articles typically provide an analysis of the problem, deidentified narratives reflecting Pennsylvania reports, and guidance for improvement based on standards and existing literature.

Since June 2004, over 340 *Advisory* articles have been published. In addition, patient safety toolkits accompany many articles and are posted at the Authority's website. The toolkits are additional resources that can be used by providers to improve patient safety in their facilities. In a recent annual Authority survey, 63% of the Patient Safety Officers (PSOs) who responded reported making or planning to make changes based upon a *Patient Safety Advisory* article. Hundreds of process changes were made by facilities in 2010.

The MCare Act calls for healthcare professionals to periodically earn credits in patient safety. The Authority has partnered with the Pennsylvania Medical Society and the Pennsylvania State Nurses Association to provide patient safety credits through quarterly *Advisory* articles. The partnerships give healthcare professionals the opportunity to earn patient safety credits while keeping up with the latest data submitted by Pennsylvania's healthcare facilities.

The Authority distributes its *Pennsylvania Patient Safety Advisory* to more than 5,000 program affiliates (i.e., acute healthcare facilities, nursing homes, boards and panel members in Pennsylvania). About 25% of these recipients are patient safety officers or infection prevention designees. The remaining majority are other recipients affiliated with the Authority's reporting facilities or patient safety programs (e.g., senior corporate officials, other affiliates of the facilities reporting events to the Authority through PA-PSRS).

In addition, approximately 2,500 others subscribe to the *Patient Safety Advisory*. Of these, approximately 96% have a United States address and over half of these are from Pennsylvania. The remainder is distributed to recipients in all other states. Approximately 100 subscribers represent 28 separate countries.

A more detailed review of the *Patient Safety Advisory* and condensed versions of selected *Advisory* articles are included in Section VII of this report.

## Participating in Collaboratives to Improve Patient Safety

In line with the strategic plan, the Authority has developed or participated in several collaboratives designed to improve patient safety related to specific events. Collaboration characteristics include:

- Significant number of participating Pennsylvania facilities
- Use of PA-PSRS data, if appropriate
- Measurable outcome
- Authority Patient Safety Liaison and Patient Safety Analyst assigned to each collaborative

Currently, the Authority is participating in six collaboratives in conjunction with over 125 separate Pennsylvania hospitals. The role of the Authority is varied depending on the particular endeavor. The Authority's role can include:

- Application and use of PA-PSRS data
- Data analysis
- Preparation and distribution of reports
- Team education and training
- Outcome analysis and measurement
- Collaborative management and administration
- Publication of collaborative results through the *Patient Safety Advisory*
- Development and use of collaborative work sites in PassKey

The six collaborations currently underway include:

- Surgical site infection collaborative with the Three Rivers Chapter of the Association of Professionals in Infection Control (TRAPIC)
- A falls reduction collaborative with the Health Care Improvement Foundation (HCIF)
- Wrong-Site Surgery collaborative with the University of Pittsburgh Medical Center (UPMC)
- Phlebotomy specimen mislabeling collaborative with Northeastern PA Healthcare Facilities
- Reducing central-line associated bloodstream infections with the Hospital and Healthsystem Association of Pennsylvania (HAP) and the Agency for Healthcare Research and Quality (AHRQ)
- Reducing surgical site infections with the Pennsylvania NSQIP (National Surgical Quality Improvement Program) Consortium

One of the collaborative efforts addressed the mislabeling of blood specimens. A short description of that effort follows.

At the same time that nationally recognized credible agencies were pursuing answers to laboratory medicine best practices, the Pennsylvania Patient Safety Authority facilitated a collaborative effort among nine hospitals in northeastern Pennsylvania whose mission was to improve patient safety by decreasing the number of mislabeled blood specimens. This initiative was developed and implemented through a series of workshops that provided education, tools, technical assistance, resources and an interactive forum. The success of this joint collaboration required a moderate level of commitment, funding and cooperation from the senior management and leaders at each participating facility. Project managers from each site worked closely with the Authority's Patient Safety Liaison who was responsible for coordinating and facilitating this project. Overall, the nine facilities decreased mislabeling specimen errors by 37 percent. One facility decreased mislabeling errors by 84 percent. For more on the phlebotomy mislabeling specimen collaborative go to page 92 of this Annual Report.

## **Healthcare-Associated Infections Update**

Pennsylvania is a national leader in addressing the challenge of reducing and ultimately eliminating healthcare-associated infections (HAIs) to prevent unnecessary illnesses and deaths, and to eliminate the avoidable costs of treating these infections. Act 52 of 2007 amended the Medical Care Availability and Reduction of Error (MCare) Act, with the goal of reducing and eliminating HAIs.

Pennsylvania hospitals have invested substantial effort to comply with the MCare reporting requirements by conducting surveillance for HAIs and reporting them into the Centers for Disease Control and Prevention's National Healthcare Safety Network (NHSN). The Department of Health, the Pennsylvania Healthcare Cost Containment Council, and the Authority share access to this data.

For hospital HAI reporting the Authority's responsibilities include the following:

- Analyze the infection reports hospitals enter in the CDC's NHSN system
- Maintain the HAI Advisory Panel for use by Pennsylvania agencies named in Act 52 of 2007
- Provide facilities with guidance on best practices based on this analysis
- Publish the results of this work in the *Pennsylvania Patient Safety Advisory*
- Develop educational programs and supporting multi-facility collaboratives to encourage cross-institutional learning.

The Department of Health is responsible for publishing final hospital HAI rates and benchmarks. The 2009 data results determined by the DOH forms the baseline for the purpose of benchmarking. Act 52 requires that Pennsylvania hospitals reach a 10% reduction target for the year 2010 onwards, based on the baseline data reported in 2009. The 2010 data presented by the Authority in this report is a first cut and is prepared in aggregate. The Authority does not publish information by individual facilities.

While the rates of HAIs in Pennsylvania hospitals fared well when compared to the national data, and some findings indicated that rates were substantially lower in some categories, this finding must be cautiously interpreted since Pennsylvania facilities are mandated to report through NHSN while in other parts of the country, reporting is voluntary.

Section III of this report presents details regarding HAI events. Some highlights that relate to hospitals include:

- Hospitals reported over 22,000 HAIs to the Authority in 2010.
- The overall rate of infections reported by hospitals decreased by approximately 6% between 2009 and 2010.
- Between 2008 and 2010, hospitals reduced Catheter-Associated Urinary Tract Infections (CAUTI) by 26%, Central-Line Associated Bloodstream Infections (CLABSI) by 44%, and Ventilator-Associated Pneumonia by 27%.
- From hospitals, surgical site infections were the most commonly reported type (26.1%), followed by UTIs (23.2%), gastrointestinal infections (17.3%), BSIs (11%), and pneumonia (10.9%).

In 2010, nursing homes reported their first full year of infection reports. Nursing homes report HAIs to the Authority through the Pennsylvania Patient Safety Reporting System (PA-PSRS), based on a unique list of infections and criteria developed by the Authority and the Department of Health with guidance from the HAI Advisory Panel.

The Authority's goals for HAI reporting from nursing homes are to:

- Implement the legal requirements of MCare as amended by Act 52 of 2007, by establishing and maintaining the reporting system and publishing data to allow the assessment of HAI prevention efforts in this care setting.
- Provide limited validation of data quality.
- Analyze the data to support *Advisory* articles, educational programs and the Annual Report.
- Use the data to identify facilities that are successful with their HAI prevention efforts and those that are unsuccessful in implementing best practices and to assist with methods of implementing improvement strategies.

A major focus of the Authority in 2010 was the analysis of the 27,898 HAI events entered into PA-PSRS by Pennsylvania nursing homes. The Authority analysis shows declines in all five care areas that include: dementia unit, mixed unit, nursing unit, skilled nursing/short-term rehabilitation unit and ventilator dependent unit.

Section III of this report presents details regarding HAI events. Some highlights and observations from that section that relate to nursing homes include:

- Approximately 714 nursing homes reported 27,869 HAIs to the Authority in 2010. Infections reported include: Respiratory tract infections (9,929); gastrointestinal infections (8,495), skin and soft tissue infections (5,214) and urinary tract infections (3,883).
- Between 2009 and 2010, nursing homes reduced urinary tract infections by 14% in residents without a catheter and by 15% in residents with catheters.
- In 2010, preliminary rates of skin and soft tissue infections were reduced by 18% compared to 2009.

Section III of this report also identifies the HAI educational programs and collaboratives being pursued by the Authority in the fight to reduce and ultimately eliminate HAIs in healthcare facilities and nursing homes.

## Highlights of Data Submitted to the Pennsylvania Patient Safety Authority

Section II of this report presents details regarding the patient safety events (excluding nursing home HAI) submitted through PA-PSRS during 2010. Some highlights include:

- 538 hospitals, ambulatory surgical facilities, abortion facilities and birthing centers submitted 225,624 reports of Serious Events and Incidents to the Authority, a decrease of 1,046 reports from 2009. In 2010, the Authority received 18,802 reports per month on average, a decrease of 0.5% from 2009. The total number of Serious Events and Incidents reported to the Authority since reporting began June 2004 is in excess of 1.3 million.
- Approximately 97% of all reports submitted by these facilities in 2010 were Incidents, or did not cause harm to the patient. Approximately 3% of all reports were submitted as Serious Events, meaning the patient received some level of unanticipated injury ranging from minor, temporary harm to death. Despite several months where this percentage rose to 4% or greater, there appears to be a downward trend in the percentage of Serious Events among reports submitted to the Authority during the last three years.
- The number of Incident reports averaged 18,176 per month, a decrease of 0.1% from 2009. Serious Event reports averaged 626 per month, a 9.2% decrease from the previous year. Most of the decrease of Serious Event submissions can be attributed to a 39% drop in Skin Integrity (pressure ulcers) Serious Event reports and a 13% decrease in Falls from 2009.
- Reports from hospitals accounted for 85% of all reports submitted. Nursing homes submitted 13.2% of the overall total. Among acute-level facilities (non-nursing homes), hospital's account for 98% of all reports submitted.
- Ambulatory surgical facilities submitted 13.2 reports per facility in 2010 compared to 12.2 reports per facility in 2009 and 11.8 reports per facility in 2008.
- Statewide, the most frequently reported events in hospitals involved Errors related to Procedures/Treatments/Tests (22%) and Medication Errors (20%) totaling 42% of all reports submitted.
- Reports of Medication Errors decreased overall by 8% from 48,881 reports submitted in 2009 to 45,034 reports submitted in 2010. Approximately 98% of these reports were Incidents or near misses.

- While Errors related to Procedure/Treatment/Test were the event type most frequently reported through PA-PSRS, they were not the event type most frequently associated with patient harm. The event type Complications of Procedures/Treatments/Tests accounted for just 13% of all submitted reports, but totaled 46% of all Serious Event reports and 60% of all reports of events resulting in or contributing to the patient's death; meaning this event type is significantly associated with harm to the patient. Conversely, while Medication Errors comprise 20% of reports in 2010, they only accounted for 4% of events involving harm and 2% of events contributing to or resulting in death.
- Reports on perinatal patients (those aged 20 days or younger) increased 5.2% compared to 2009. Four percent of all perinatal reports were classified as Serious Events, higher than the overall rate of Serious Events reporting for 2010 (3.32%).
- Reports on patients over age 65 continued to show decreases as in previous years. In 2004 and 2005, older patients accounted for 64% of Falls. This figure declined to 56.2% in 2010. Also, Skin Integrity reports (pressure ulcers) among older patients dropped to 70.6% in 2010 from 71.2% in 2009. More than half of all reports (51.8%) in 2009 involved patients 65 and older; this figure dropped to 48.3% in 2010.
- The Authority expects to be able to measure more effectively patient safety improvement in Pennsylvania healthcare facilities through more collaboratives. Ongoing collaborative topics include wrong-site surgery, falls, surgical site infections and central-line associated blood stream infections.

# **I. THE PATIENT SAFETY AUTHORITY JOURNEY**

## **THE LEGISLATION (MCARE ACT)**

The Pennsylvania Patient Safety Authority has come a long way since the Medical Care Availability and Reduction of Error (MCare) Act was signed into law in March 2002. But in order to understand the Authority and its mission, it helps to know where and why the concept for the Pennsylvania Patient Safety Authority was born.

The atmosphere in late 2001 leading up to the Act created the perfect storm for something, anything, to be done to help combat escalating medical malpractice insurance rates. Also hovering was the recent report from the Institute of Medicine (IOM) "To Err is Human" that showed between 44,000 and 98,000 preventable deaths from medical errors were occurring each year in the United States.

As talks began in late December 2001 as to how Pennsylvania could reduce medical malpractice costs, it was clear what the main issues were: trial lawyers argued that medical malpractice costs would not be so high if patients were not being harmed from medical mistakes, doctors made the argument they would be forced to do business elsewhere if insurance rates and medical malpractice cases didn't subside and hospitals conceded that patient safety in healthcare facilities could be improved.

All three of these components created the discussion around the MCare Act. The core groups involved in the discussion were: the Pennsylvania Medical Society, the Hospital and HealthSystem Association of Pennsylvania (HAP), the Pennsylvania Trial Lawyers Association and the Insurance Federation of Pennsylvania. Legislative staffs were asked to set the parameters for the discussion. The group convened for the first time in late December 2001.

The MCare (Medical Care Availability and Reduction of Error) Fund established in 2002 was an evolution from the Medical Catastrophe Loss Fund (developed in 1975) and was created to make available professional liability insurance at a reasonable cost and to establish a system for the prompt adjudication of claims which exceeded basic insurance coverage. The venue for medical liability claims was altered by a rule of civil procedure created by the Pennsylvania Supreme Court and provides that a medical professional liability action may be brought only in a county where the cause of action arose or where a transaction or occurrence took place out of which the cause of action arose.

These two components in dealing with medical malpractice were important in getting the Pennsylvania hospital association on board. The Hospital and Healthsystem Association of Pennsylvania (HAP) and the Pennsylvania Trial Lawyers Association agreed there must be a patient safety component added to the bill for the medical malpractice issue to be addressed. Conversely, those in the room negotiating the bill acknowledged without these medical malpractice components the patient safety chapter probably would not have made it as a standalone bill. Once the hospital association acknowledged that patient safety could be better in healthcare facilities, the discussion began as to how the Authority would work. The groups worked together to ensure the medical malpractice components of the bill and the Patient Safety Authority component were included in the final law known as the MCare Act.

## **CONFIDENTIALITY BOOSTS REPORTING**

The model used for the Authority is based upon the one used in the aviation industry. A major hurdle was determining what from the reports would be confidential, and what would not. It was decided no names would be mentioned in the reports. The premise for this confidentiality component was the same in the aviation industry--more reports would be submitted if people were not blamed in reports because a mistake occurred. The model is based upon evidence that errors are committed because of system failures that are carried out by people, not simply people committing errors. To eliminate errors, you must fix the system. If you simply fire the person who committed the error, you're masking the problem and most likely the error will occur again, only the next time by a different person.

## **FUNDING FOR THE PENNSYLVANIA PATIENT SAFETY AUTHORITY**

A major factor in developing the Authority was funding. It was established that hospitals would have to pay for the Authority, but the hospital association would determine how to implement the funding. Without a steady funding stream, the Authority would not be as successful in conducting its educational mission. The hospital association decided a surcharge on the number of beds per hospital and the number of procedure rooms per ambulatory surgery facility (ASF) would be the fairest way to fund the Authority. The funding formula is the same used by the Pennsylvania Department of Health for licensure fees. A five million dollar annual budget was estimated by the hospital association for the Authority's annual expenditures.

## **REPORTING DEFINITIONS LEFT OPEN FOR INTERPRETATION**

Serious Events (events that cause harm to a patient) and Incidents or near-misses (events that do not cause harm to a patient) are collected by the Authority for analysis and educational purposes. The Pennsylvania Department of Health (DOH) also receives these Serious Event reports in its regulatory role, as well as reports on Infrastructure Failures (non-medical events caused by weather, crime etc.). The Authority does not receive Infrastructure Failures and the department does not receive Incident reports. However, facilities have asked for more guidance in reporting, and the Authority is planning to work with Pennsylvania healthcare facilities and the Pennsylvania Department of Health to develop educational initiatives to encourage consistency in reporting.

## **OPENING COMMUNICATION BETWEEN PATIENT AND PROVIDER**

Opening communication between patient and provider was another "must have" for developers of the legislation. A provision in the MCare Act calls for patients who have experienced a Serious Event to receive a disclosure letter regarding the event. The Serious Event letter is an important element of the MCare Act for improving patient safety and decreasing medical malpractice costs.

## **LEGISLATION ENACTED INTO LAW**

After round-the-clock negotiations among the groups, a bill was hammered out in mid-February and signed into law as the Medical Care Availability and Reduction of Error (MCare) Act in March 2002. This landmark piece of legislation was credited in October 2010 with decreasing medical malpractice payouts in Pennsylvania by 61% since 2003.

## **NEXT STEP - DEVELOPING THE PENNSYLVANIA PATIENT SAFETY AUTHORITY**

Once the MCare Act became law, the development of the Authority began in deliberate stages. By law, the Authority is governed by an 11-member board.

Several of the provisions in the MCare Act, such as calling for each healthcare facility to establish a Patient Safety Committee, were already being done by many healthcare facilities. The Act served to ensure that all healthcare facilities reporting under the MCare Act established the patient safety committee and included consumer advocates.

By law, the Authority had to select contractors to develop a reporting system and analyze the data. After a lengthy bid review process, in July 2003, the Authority announced its selection of ECRI Institute to design, develop and implement Pennsylvania's statewide reporting system. ECRI partnered with EDS (now HP) and the Institute for Safe Medication Practices (ISMP) to carry out this provision in the new law. ECRI is a non-profit health services research agency. HP is a leading international information technology firm and ISMP is a nonprofit organization that specializes in analyzing medication errors.

## **THE PENNSYLVANIA PATIENT SAFETY REPORTING SYSTEM (PA-PSRS)**

In November, 2003 the Authority initiated the Pennsylvania Patient Safety Reporting System (PA-PSRS), the most comprehensive statewide reporting system in the country. Twenty-two healthcare facilities volunteered to participate in a preliminary test phase of the new system. After a successful test phase, the Authority conducted 19 training sessions in 11 locations throughout the state. Over 400 Pennsylvania healthcare facilities participated in the daylong demonstrations and hands-on training sessions.

In June 2004, mandatory reporting was implemented in three phases across the state. In 2009, as the result of legislation enacted in July 2007, the Authority began collecting healthcare-associated infections from over 720 Pennsylvania nursing homes through an upgraded PA-PSRS system.

To date, Pennsylvania healthcare facilities have submitted over 1.3 million reports to the Pennsylvania Patient Safety Authority, making the database one of the largest in the country.

## **THE PENNSYLVANIA PATIENT SAFETY ADVISORY – AVOIDING THE DATA BLACK HOLE**

The Authority recognized that in order to gain the necessary buy-in from Pennsylvania healthcare facilities for reporting, it had to ensure that data collected from them would not disappear into a black hole. The primary way the Authority communicates with healthcare facilities about the significant trends identified in the reports is through the award-winning *Pennsylvania Patient Safety Advisory*, a quarterly research publication with periodic supplements. The *Advisory* is free to all subscribers, is widely distributed via e-mail, and is also available online at the Authority's website [www.patientsafetyauthority.org](http://www.patientsafetyauthority.org). Since the first *Advisory* was issued in March 2004, the Authority has published nearly 340 articles on a variety of clinical issues.

Each *Advisory* article contains data analysis and guidance so facilities can implement process changes within their institutions. Several of the *Advisory* articles are accompanied by educational toolkits, so facilities have evidence-based resources at their fingertips. Some of the educational

toolkit topics include: the risks of color-coded wristbands, wrong-site surgery, skin tears, verbal orders, norovirus, behavioral health patient safety, airway fires during surgery, central line associated blood stream infection (CLABSI) risk reduction and clostridium difficile (C-diff) strategies.

While the Authority's primary objective is to improve patient safety by educating healthcare facilities about the trends seen in the data, consumer tips are developed for articles when the data shows that patient participation could have helped prevent a medical error. While patients certainly are not responsible for ensuring they receive quality care, studies show that when patients participate fewer errors occur. Over 30 consumer tips and patient brochures are also available on the Authority's website encouraging patients to participate in their own healthcare.

The Authority's website has also been enhanced to enable users to quickly search for specific topics and to forward *Advisory* articles more easily. The website receives over 61,000 hits monthly.

Ninety-six percent of the subscribers to the *Advisory* are U.S. based, with a subscriber in nearly every state. Internationally, healthcare personnel in 29 other countries have also taken advantage of the lessons learned in Pennsylvania by subscribing to the *Advisory*.

## **THE PENNSYLVANIA PATIENT SAFETY LIAISON PROGRAM**

In 2007, based in part on focus groups with Pennsylvania Patient Safety Officers (PSOs), the Authority developed a strategic plan to determine its next steps for improving patient safety. A major part of the plan included developing a Patient Safety Liaison (PSL) program, providing Pennsylvania healthcare facilities with consultants to help them improve patient safety in their facilities.

Led by the director of Educational Programs, PSLs are each located in one of six regions of the state: the northeast region, south central region, northwest region, southwest region, Delaware Valley South and Delaware Valley North regions.

Collaboratives with Pennsylvania healthcare facilities are also a major educational initiative of the Authority and the PSLs. Currently, the Authority is working with other healthcare facilities and organizations on the following collaborative topics: mislabeled specimens, wrong-site surgery, falls, CLABSI, surgical site infections (SSI) and patient safety training for executive management and boards of trustees.

The PSL program has been fully complemented with six PSLs since May 2010. Now that the program is fully staffed and each Pennsylvania healthcare facility has its delegated PSL, the Authority has the unique opportunity to receive feedback directly from the facilities on patient safety practices in their institutions. On a daily basis, the Authority receives information through the PSL program which helps facilities break down barriers and create working environments that are conducive to a culture of safety.

More about the PSL program and collaboratives is discussed later in this report.

## **PASSKEY (PATIENT SAFETY KNOWLEDGE EXCHANGE)**

To open up communication among PSOs in Pennsylvania, the Patient Safety Knowledge Exchange (PassKey) initiative was developed by the Authority in June 2010. It is a confidential, electronic forum that allows PSOs to share information, ideas and solutions. Information on the site is provided by PSOs and maintained by Authority staff. The PSLs encourage facilities to post as much information as possible regarding policies and procedures that have helped them improve patient safety in their facilities. The information helps other facilities learn from their success stories or failures. PassKey also allows facilities to ask questions and search for answers that may already be provided on the site.

## **JOHN M. EISENBERG AND CHEERS AWARDS**

In 2006, the Authority received the prestigious John M. Eisenberg Award for advancing patient safety and quality in the Commonwealth. Presented jointly by the Joint Commission and the National Quality Forum (NQF), the award acknowledges the Authority's impact in patient safety on a regional and national level. The award also recognized the Authority's efforts to make the Pennsylvania Patient Safety Reporting System (PA-PSRS) into a nationally recognized resource for education and learning about patient safety.

In 2010, the Authority received the Institute for Safe Medication Practices (ISMP) "Cheers" Award. ISMP honored six individuals, organizations and companies that have set a "superlative standard for excellence for others to follow in the prevention of medication errors and adverse drug events."

## **THE AUTHORITY JOURNEY CONTINUES**

As shown, the Authority journey has been marked with many milestones along the way. Early in the journey, a near-miss report in which a patient almost died because a healthcare worker confused the meanings of the color-coded wristband placed on the patient's arm. That near-miss raised the awareness of the risks associated with color-coded wristbands. As a result of that one near-miss, 40 states have standardized or are in the process of standardizing their wristband colors, giving Pennsylvania credit for raising awareness of the issue and providing the tools to produce change.

In 2007, the Authority brought wrong-site surgery to the forefront by announcing its data showed wrong-site surgery actual harm and near-miss events were reported every other day in Pennsylvania, and that Pennsylvania was not alone. Since then, the Authority has developed educational tools based upon evidence-based practices and currently is working with Pennsylvania hospitals to eliminate wrong-site surgeries.

With over 340 *Advisory* articles in its archives, the Authority has provided Pennsylvania healthcare facilities and others, nationally and internationally, with information based upon real time data and evidence-based practices to help facilities implement process changes in their facilities. Each year, PSOs make process changes (63% of PSOs in 2010) based upon analysis and guidance provided in *Pennsylvania Patient Safety Advisories*.

As the PSL program and educational initiatives continue to take shape, the Authority's journey will continue with more milestones and lessons learned that ultimately will be used to reduce medical errors and improve patient safety.

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## II. DATA COLLECTION AND ANALYSIS

### Section Summary

- In 2010, 225,624 patient safety reports were submitted to the Authority, 3.3% of which noted harm reaching the patient.
- Since inception of the Authority's reporting program, more than 1.3 million reports have been submitted.
- The ratio of harmful events to non-harmful events continues to decrease annually.
- While Errors related to Procedures, Treatments and Tests and Medication Errors account for the most overall reports, Complications of Procedures, Treatments and Tests account for almost half of the reported harmful events.
- Deaths accounted for 0.1% of all submitted reports in 2010.

### Introduction and the Pennsylvania Reporting System

The Pennsylvania Patient Safety Reporting System (PA-PSRS) is a secure, web-based system that permits healthcare facilities to submit reports of what Act 13 of 2002 (MCare Act) defines as "Serious Events," "Incidents" and "Infrastructure Failures. Statewide mandatory reporting through PA-PSRS went into effect June 28, 2004. All information submitted through PA-PSRS is confidential. By law, reports should not contain any identifiable information and no information about individual patients and providers is required or requested. In addition, no information about individual facilities is made public.

As defined by the MCare Act, PA-PSRS is a facility-based reporting system. It is important for Pennsylvania consumers to recognize there are other complaint and error reporting systems meant for individuals. The Department of Health can issue sanctions and penalties, including fines and forfeiture of license, to healthcare facilities as appropriate. Citizens can file complaints related to hospitals and ambulatory surgical facilities by calling the Department of Health at 1-800-254-5164; for complaints related to birthing centers, they can call the Department of Health at 717-783-1379. Complaints against licensed medical professionals can be filed with the Department of State's Bureau of Professional and Occupational Affairs at 1-800-822-2113.

All reports are submitted by facilities through a process identified in their patient safety plans, as required by the Act. However, the MCare Act provides for one exception to this facility-based reporting requirement. Under this exception, a healthcare worker who feels his or her facility has not complied with reporting requirements may submit an Anonymous Report directly to the Authority. (See the section on Anonymous Reports on page 154.)

To access PA-PSRS, facilities need only a computer with Internet access (i.e., access to the World Wide Web). There is no need for a facility to procure costly equipment or software to meet statutory reporting requirements, and only minimal self-directed training is necessary to learn how to navigate the PA-PSRS system.

In submitting a report, acute care facilities (including hospitals, ambulatory surgery centers, birthing centers and abortion facilities) respond to 21 core questions through check boxes and free-text narrative. The system directs the user through the process, offering drop-down boxes of menu options and guiding the user to the next series of questions based on the answers to previous

questions. The process is similar for nursing homes, which began reporting healthcare-associated infections (HAIs) in June 2009, with the system posing different questions depending on what type of infection is reported. The system is very user-friendly, despite the software's underlying complexity.

Questions answered by the facilities include those related to limited demographic information (such as a patient's age and gender), the location within a facility where the event took place, the type of event and the level of patient harm, if any. In addition, the report collects considerable detail about "contributing factors," details related to staffing, the workplace environment and management and clinical protocols. The facility is also asked to identify the root cause of a Serious Event and to suggest procedures that can be implemented to prevent a reoccurrence.

The Authority's clinical team analyzes submitted reports. This team includes professionals with degrees and experience in medicine, nursing, law, pharmacy, health administration, risk management, product engineering and statistical analysis, among other fields. In addition, through our contract staff, the Authority has access to a large pool of subject matter experts in virtually every medical specialty.

After the system electronically receives and prioritizes each report, the clinical team performs review, analysis and, at times, follows up with individual facilities. The team's primary role is to identify situations of immediate jeopardy and to identify trends or improvements which can be implemented to improve patient safety.

As a result of this comprehensive analysis, the Authority issues *Patient Safety Advisories* based on data submitted through PA-PSRS, supplemented by a scholarly search of the medical and clinical literature. *Advisory* articles are directed primarily to healthcare professionals for use by both clinical and administrative staffs. The Authority encourages these providers to use the articles as learning tools for patient safety and continuous quality improvement. In a recent survey, there were more than 400 responses indicating that Pennsylvania facilities have implemented improvements as a result of information contained in this year's *Advisories*.

Primary distribution of the *Advisories* is through electronic emails, enabling the Authority to circulate the *Advisories* to thousands of individual healthcare providers, hospitals and government and healthcare organizations around the world, including national patient safety and quality improvement organizations. As a result, the Authority is able to generate considerable interest in Pennsylvania's approach to promoting patient safety and in the lessons learned through the PA-PSRS system.

More information about the *Patient Safety Advisories* and the data collected through PA-PSRS is in the section "*Patient Safety Advisories*" (see page 106). In addition, all copies of the *Advisory* are accessible on the Authority website, [www.patientsafetyauthority.org](http://www.patientsafetyauthority.org).

Another component of the PA-PSRS system is the set of analytical tools available to reporting facilities. These tools provide patient safety, quality improvement and risk managers with detailed reports analyzing data related to their specific facilities. Many reports can also be exported to other software programs for inclusion in facility publications or in reports and presentations to trustees and senior management. In addition, facility personnel have the ability to export all, or any portion, of their facility's data. Managers can use this information for their internal quality improvement and patient safety activities.

These analytical tools are an essential component of patient safety improvement efforts in Pennsylvania. While the PA-PSRS system allows the Authority to focus on analyzing statewide aggregate data, the analytical tools within the system provide immediate, real-time feedback to individual facility managers helping them identify trends and actual or potential adverse patient outcomes within their institutions.

PA-PSRS was developed under contract with ECRI Institute, a Pennsylvania-based independent, non-profit health services research agency, in partnership with HP, a leading international, information technology firm, and the Institute for Safe Medication Practices (ISMP), also a Pennsylvania-based, non-profit health research organization.

## Interpreting PA-PSRS Data

Considerable caution is advised when interpreting data from PA-PSRS. Many factors influence the number of reports submitted by any particular facility or any group of facilities, of which safety and quality are just two. Additional factors include facility size, utilization or volume, patient case mix, severity of illness, differences in facilities' understanding of what occurrences are reportable, differences in facilities' success in detecting reportable occurrences and others.

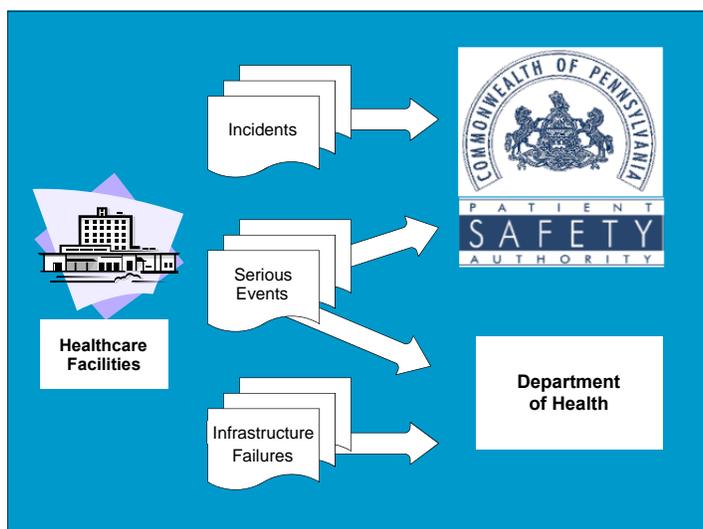


Figure 2.1 Submission of PA-PSRS Reports

PA-PSRS data is not a “report card” for individual healthcare facilities. For example, if Facility A has substantially more reports than a similar facility (Facility B), this would not mean Facility A is necessarily less safe than Facility B. In fact, Facility A could be *safer* than Facility B, because they may have better systems in place for recognizing and reporting actual and potential adverse events.

Numbers by themselves do not provide complete answers. For example, the number of incorrect medications administered is not meaningful without knowing the total number (known as the “denominator”) of all medications administered. In other words, 10 incorrect

medications out of a total of 50 administered doses are much different than 10 incorrect medications out of 10,000 administered doses.

Additional considerations when reviewing Authority data presented in this report include the following:

- Data presented in this report include only reports of Serious Events and Incidents. While PA-PSRS also collects reports of Infrastructure Failures, these reports are submitted only to the Department of Health. The Authority does not receive reports of Infrastructure Failures.
- Unless otherwise noted, data presented in this report are based on reports submitted through PA-PSRS between January 1, 2010, and December 31, 2010. Data from acute care facilities are presented in this section. Healthcare-associated infection data (HAI) from acute and long-term care facilities is presented on page 45 of this report.

- Unless specifically noted, numbers of reports in different categories are actual “raw numbers” and have not been adjusted for any facility- or patient-related factors that may influence differences in report volume among different facilities.
- The data are not adjusted to account for healthcare facility openings, closings or changes of ownership.

Caution is advised when comparing data contained in this report with data published by other patient safety reporting systems. The PA-PSRS program was developed within the context of Act 13, which has its own unique definitions for what is and what is not reportable to the Authority. It also uses a specific list of Event Types that may be different than the lists used by other systems. Most important, PA-PSRS is the only mandatory program collecting data on “near misses”—events which did not harm patients.

Many factors may influence differences between data from various patient safety reporting systems. The key comparisons to make are those made by individual healthcare facilities, as they monitor their own performance over time and in relation to specific patient safety goals relevant to their healthcare setting.

## Definitions

Act 13 requires healthcare facilities to submit reports of the following three kinds of occurrences:

- **Serious Event**—An adverse event resulting in patient harm. The legal definition, from Act 13, reads: “An event, occurrence or situation involving the clinical care of a patient in a medical facility that results in death or compromises patient safety and results in an unanticipated injury requiring the delivery of additional health care services to the patient. The term does not include an Incident.”
- **Incident**—A “near miss” in which the patient was not harmed. Act 13 defines this as: “An event, occurrence or situation involving the clinical care of a patient in a medical facility which could have injured the patient but did not either cause an unanticipated injury or require the delivery of additional health care services to the patient. The term does not include a Serious Event.”
- **Infrastructure Failure**—A potential patient safety issue associated with the physical plant of a healthcare facility, the availability of clinical services or criminal activity. Act 13 defines this as: “An undesirable or unintended event, occurrence or situation involving the infrastructure of a medical facility or the discontinuation or significant disruption of a service which could seriously compromise patient safety.” Reports of Infrastructure Failures are not addressed in this report because these are submitted only to the Department of Health.

Reports of Serious Events and Incidents are submitted to the Patient Safety Authority for the purposes of learning how the healthcare system can be made safer in Pennsylvania. In contrast, reports of Serious Events and Infrastructure Failure are submitted to the Department of Health for the purposes of fulfilling their role as a regulator of Pennsylvania healthcare facilities.

Act 13 requires the following types of facilities to submit reports of Serious Events, Incidents and Infrastructure Failures (nursing homes are required to report only healthcare associated infections) through PA-PSRS:

- **Hospital**—The Health Care Facilities Act (35 P.S. §448.802a) defines a hospital as “an institution having an organized medical staff established for the purpose of providing to inpatients, by or under the supervision of physicians, diagnostic and therapeutic services for the care of persons who are injured, disabled, pregnant, diseased, sick or mentally ill, or rehabilitative services for the rehabilitation of persons who are injured, disabled, pregnant, diseased, sick or mentally ill. The term includes facilities for the diagnosis and treatment of disorders within the scope of specific medical specialties, but not facilities caring exclusively for the mentally ill.” For the purposes of this report, at the end of 2010, there were 242 Hospitals in the Commonwealth of Pennsylvania.
- **Ambulatory Surgical Facility**—The Health Care Facilities Act defines an ambulatory surgical facility as “a facility or portion thereof not located upon the premises of a hospital which provides specialty or multispecialty outpatient surgical treatment. Ambulatory surgical facility does not include individual or group practice offices or private physicians or dentists, unless such offices have a distinct part used solely for outpatient treatment on a regular and organized basis. Outpatient surgical treatment means surgical treatment to patients who do not require hospitalization but who require constant medical supervision following the surgical procedure performed.” For the purposes of this report, at the end of 2010, there were 276 ambulatory surgical facilities in the Commonwealth of Pennsylvania.
- **Birthing Center**—The Health Care Facilities Act defines a birthing center as “a facility not part of a hospital which provides maternity care to childbearing families not requiring hospitalization. A birthing center provides a home-like atmosphere for maternity care, including prenatal, labor, delivery, post partum care related to medically uncomplicated pregnancies.” For the purposes of this report, at the end of 2010, there were five birthing centers in the Commonwealth of Pennsylvania.
- **Abortion Facility**— Act 30 of 2006 extended the reporting requirements in Act 13 to abortion facilities that perform more than 100 procedures per year. For the purposes of this report, at the end of 2010, there were 15 qualifying abortion facilities in the Commonwealth of Pennsylvania.
- **Nursing Home** – Act 52 of 2007 revised Act 13 of 2002 (MCare) to require nursing homes to report HAIs to the Authority. Reporting from these facilities began in June 2009. See page 58 for data received to date from nursing homes. For the purposes of this report, at the end of 2010, there were 714 licensed nursing homes in the Commonwealth of Pennsylvania.

Other pertinent definitions used in this report include:

- **Medical Error**—This term is commonly used when discussing patient safety, but it is not defined in Act 13. The word “error” appears in the PA-PSRS system and in this report. For example, one category of reports discussed is “Medication Errors.” In PA-PSRS the word “error” is used in the sense intended by the Institute of Medicine Committee on Data Standards for Patient Safety, which defined an error as:

*The failure of a planned action to be completed as intended (i.e., error of execution), and the use of a wrong plan to achieve an aim (i.e., error of planning). It also includes failure of an unplanned action that should have been completed (omission).<sup>1</sup>*

Within Act 13, the term medical error is used in the *Declaration of Policy*: “Every effort must be made to eliminate medical errors by identifying problems and implementing solutions that promote patient safety.” It is also used in defining the scope of Chapter 3, Patient Safety: “This chapter relates to the reduction of medical errors for the purpose of ensuring patient safety.”

While PA-PSRS does include reports of events that result from errors, the program’s focus is on the broader scope of actual and potential adverse events-not only those resulting from errors.

- **Patient Safety Officer**—Act 13 requires each healthcare facility to designate a single individual to serve as that facility’s Patient Safety Officer. Under Act 13, the Patient Safety Officer is responsible for submitting reports to the Patient Safety Authority. Act 13 also assigns other responsibilities to the Patient Safety Officer.

## Report Volume

### Reports by Month and Submission Type

Between January 1 and December 31, 2010, Pennsylvania acute care facilities submitted 225,624 reports through PA-PSRS, bringing the number of reports submitted by these facilities since the program’s inception to 1,319,902. Figure 2.2 shows the distribution of submitted reports by month for calendar year 2010.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Serious Events	589	598	722	658	602	655	577	604	599	607	678	619	7,508
Incidents	18,951	18,638	20,180	18,248	16,875	17,563	19,315	18,950	16,634	17,119	16,072	19,571	218,116
Total	19,540	19,236	20,902	18,906	17,477	18,218	19,892	19,554	17,233	17,726	16,750	20,190	225,624

Figure 2.2. Reports Submitted to PA-PSRS in 2010, by Month, excluding Nursing Homes

Approximately 3.3% of submitted reports were Serious Events, while 96.7% were Incidents. In 2010 the Authority received 18,802 reports per month on average, a decrease of 0.5% from 2009. The number of Incident reports averaged 18,176 per month, a decrease of 0.1% compared to the previous year. The number of Serious Event reports averaged 626 per month, which represents a 9.2% decrease from 2009.

<sup>1</sup> Institute of Standards for Patient Safety. Patient safety: Achieving a new standard for care. Washington DC: National Academies Medicine, Committee on Data Press; 2004.

## Reports by Facility Type

As shown in Figure 2.3, the vast majority of reports (85.4%) submitted through PA-PSRS were submitted by hospitals. Among acute-level facilities (non-nursing homes), the majority is even more pronounced (98.3%). Nursing homes submitted 13.2% of the overall total.

Facility Type	Hospitals	Ambulatory Surgical Facilities	Birthing Centers/Abortion Facilities	All Acute Level Facilities	Nursing Homes (HAI Only)	All Facilities Reporting via PA-PSRS
Number of Reports Submitted	221,855	3,649	120	225,624	34,243	259,867
Number of Facilities Active for year ending December 31, 2010	242	276	20	538	714	1,252

Figure 2.3. Reports through PA-PSRS by Facility Type (2010)

The remainder of this data section will focus on acute-level facilities; nursing homes will be addressed in the section on HAIs.

Figure 2.4 shows reporting rates among non-hospital acute-level facilities - ambulatory surgical facilities, birthing centers and abortion facilities (ASFs/BCs/ABFs) - compared to hospitals from year to year. An increase in the percentage of reports submitted from non-hospitals is attributable to an increased number of ambulatory surgical facilities and greater reporting from those facilities. ASFs submitted 13.2 reports per facility in 2010 compared to 12.2 reports per facility in 2009 and 11.8 reports per facility in 2008.

Year	Hospitals		Ambulatory Surgical Facilities/ Birthing Centers/Abortion Facilities		All Facilities Total
	No.	% of Reports	No.	% of Reports	
2008	216,732	98.57%	3,142	1.43%	219,874
2009	223,026	98.39%	3,644	1.61%	226,670
2010	221,855	98.33%	3,769	1.67%	225,624
Total*	1,301,084	98.57%	18,822	1.43%	1,319,902

\*The Pennsylvania Patient Safety Authority began mandatory reporting statewide on June 28, 2004.

Figure 2.4. Reports by Acute Facility Types since 2008

## Report Submission Trends

The trend lines superimposed over the actual track of monthly reports in Figure 2.5 suggests the volume of reports continues to stabilize entering the seventh full year of the program.

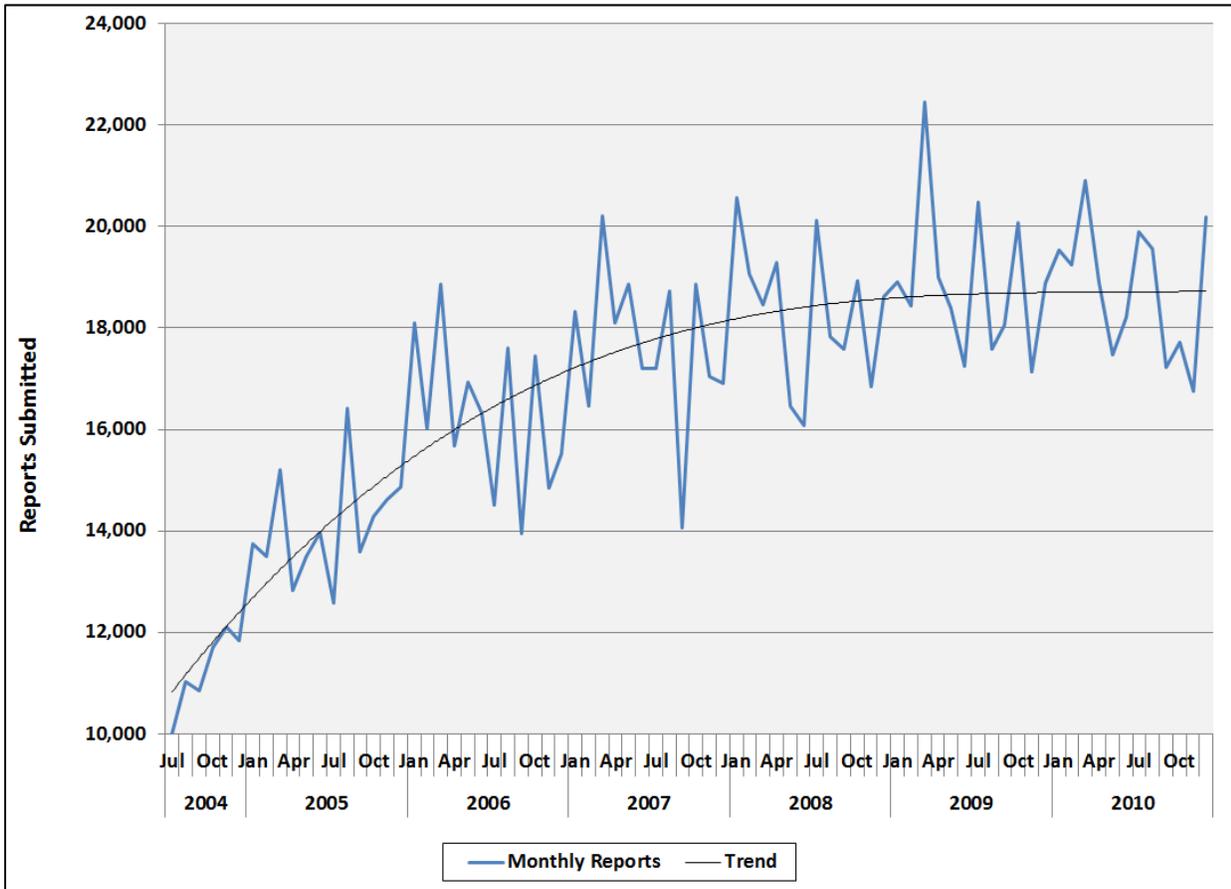


Figure 2.5. Number of Submitted Reports since Inception of PA-PSRS, by Month

Figure 2.6 supports the proposition of improved reporting and a more consistent level of reporting by facilities. Depicting the volume of Serious Events and Incidents on a relative scale (24:1 given that Serious Events have been consistently about 4% of all submitted reports) the volume of Serious Events has increased somewhat over the long-term, but not as sharply as the volume of Incidents.

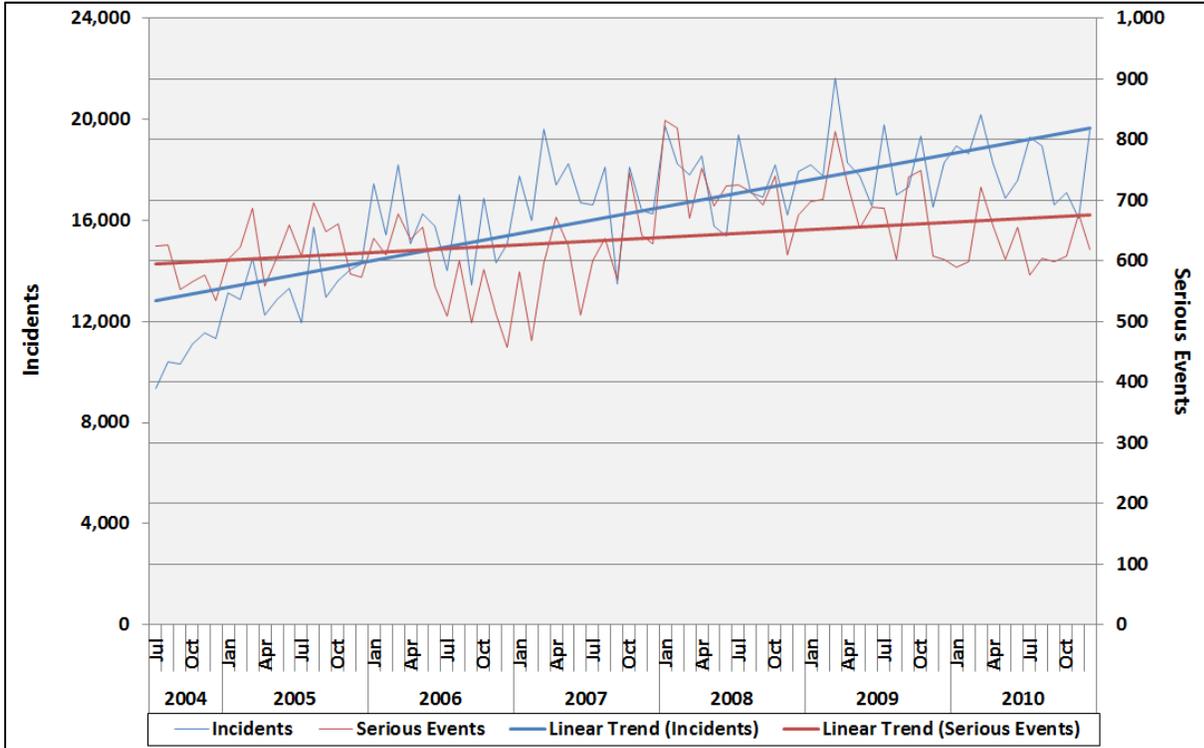


Figure 2.6. Number of Serious Event and Incident Reports by Month since Inception of PA-PSRS

Figure 2.7 illustrates the percentage of Serious Events among all submitted reports since 2008. Despite several months where this percentage rose to 4% or greater, there is a downward trend in the percentage of Serious Events among reports submitted to the Authority during the last three years.

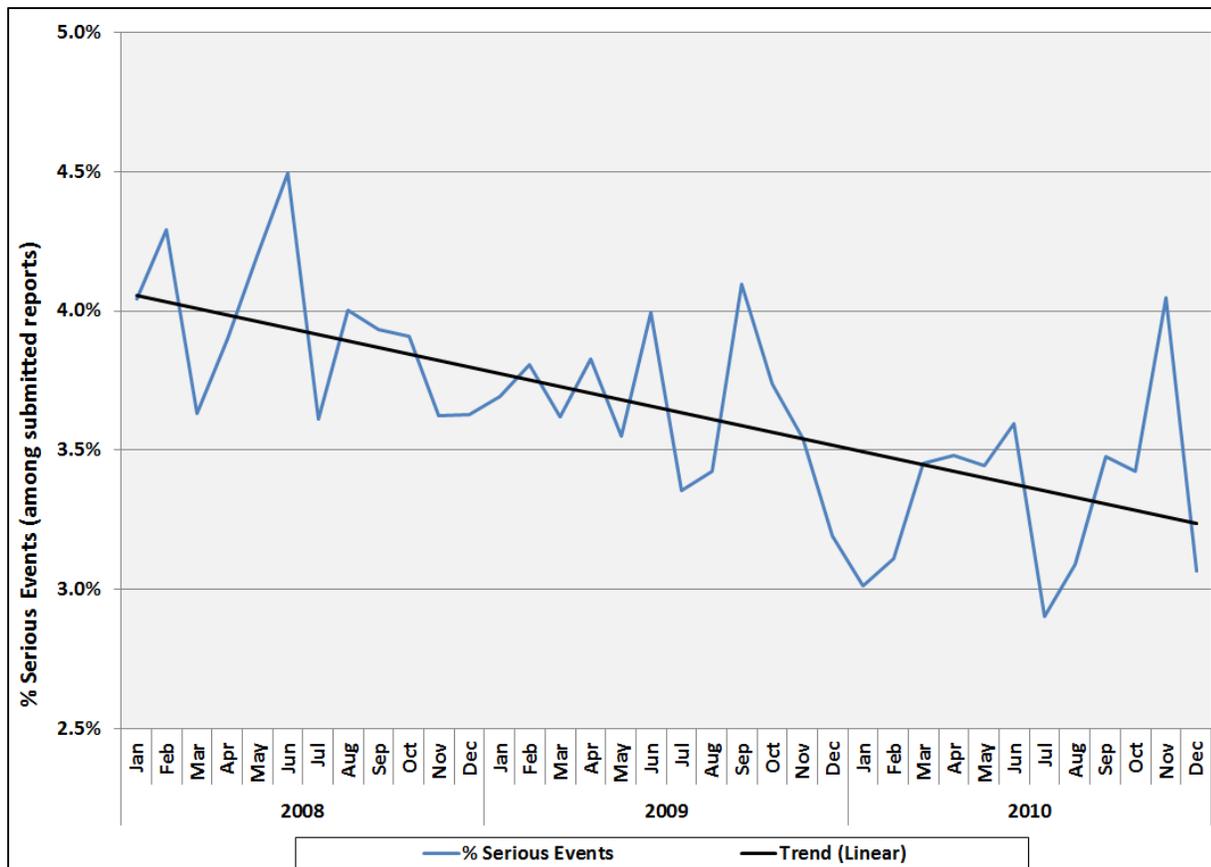


Figure 2.7. Percentage of Serious Event Reports by Month (2008-2010)

## Reports by Event Type

When reporting an event through PA-PSRS, a facility uses a classification system to characterize the occurrence they are reporting. This is usually referred to as the “taxonomy.” At the outset, a facility classifies a report by identifying what PA-PSRS defines as the “Event Type.” The Event Type essentially answers the most basic question about an occurrence: “What happened?”

At its most basic level, PA-PSRS contains the following nine Event Types:

- Medication Errors
- Adverse Drug Reactions (not a medication error)
- Equipment, Supplies, or Devices
- Falls
- Errors Related to Procedures, Treatments, or Tests
- Complications of Procedures, Treatments, or Tests
- Transfusions
- Skin Integrity
- Other / Miscellaneous

These categories are further broken down into second- and third-level subcategories. For example, the category “Falls” includes a series of subcategories such as:

- Falls while Lying in Bed
- Falls while Ambulating
- Falls in the Hallways of the Facility
- Other Types of Falls

The complete Event Type dictionary is a three-level, hierarchical taxonomy with 212 distinct Event Types. This Event Type dictionary is one way PA-PSRS classifies and looks for patterns and trends in submitted reports.

Figure 2.8 shows the percentage of reports submitted under each top-level Event Type. The most frequently reported occurrences were Errors Related to Procedure/Treatment/Test (22%) and Medication Errors (20%). These two Event Types account for 42% of all reports submitted. While Errors Related to Procedure/Treatment/Test was the Event Type most frequently reported through PA-PSRS, they were not the ones most frequently associated with harm to the patient.

Also shown in Figure 2.8, the largest number of Serious Event reports was under the Event Type category Complications of Procedures/Treatments/Tests, accounting for 47% of all Serious Event reports.

Relative to the overall average of 3% of reports indicating harm, harm was significantly less likely to be reported under Medication Errors, Equipment Issues, Transfusion Issues and Errors Related to Procedures, Treatments and Tests (1%).

Event Type	Serious Events			Incidents			Total	Percent of Total
	No.	% of Type	% of Total	No.	% of Type	% of Total		
Medication Errors	261	1%	3%	45,034	99%	21%	45,295	20%
Adverse Drug Reactions (not a medication error)	292	6%	4%	4,578	94%	2%	4,870	2%
Equipment / Supplies / Devices	54	1%	1%	3,800	99%	2%	3,854	2%
Falls	1,157	3%	15%	34,788	97%	16%	35,945	16%
Errors Related to Procedure / Treatment / Test	709	1%	9%	49,725	99%	23%	50,434	22%
Complications of Procedure / Treatment / Test	3,522	12%	47%	25,571	88%	12%	29,093	13%
Transfusions	33	1%	0%	3,147	99%	1%	3,180	1%
Skin Integrity	729	2%	10%	34,124	98%	16%	34,853	15%
Other / Miscellaneous <sup>2</sup>	751	4%	10%	17,349	96%	8%	18,100	8%
<b>Total</b>	<b>7,508</b>	<b>3%</b>	<b>100%</b>	<b>218,116</b>	<b>97%</b>	<b>100%</b>	<b>225,624</b>	<b>100%</b>

Figure 2.8. Reports by Event Type and Submission Type for 2010

A closer look at Serious Events of report type Complications of Procedure/Treatment/Test shows a decrease from 2008 through 2010, as shown in Figure 2.9.

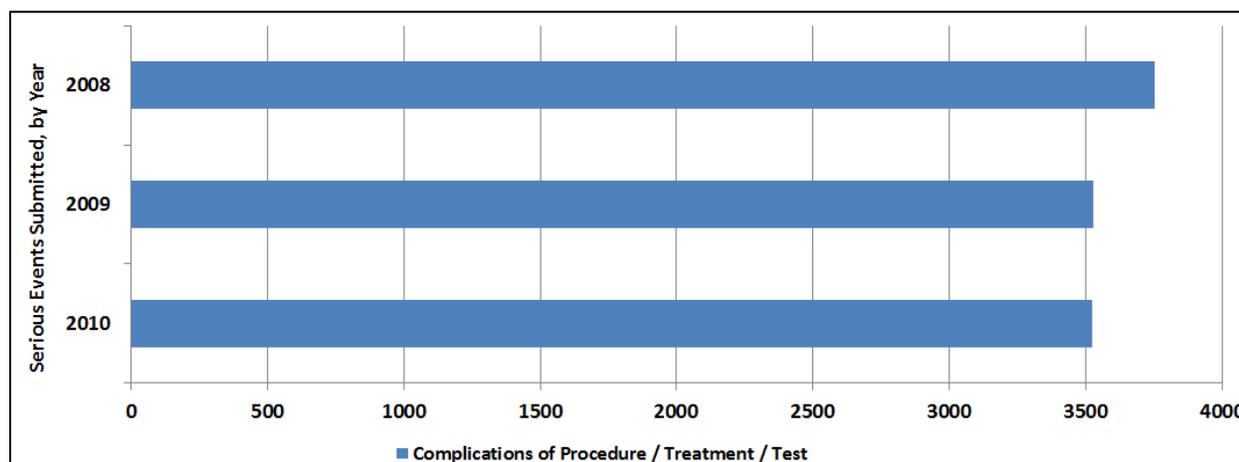


Figure 2.9. Serious Events of report type Complications of Procedure/Treatment/Test, since 2008

<sup>2</sup> This is not a single category of completely unclassified reports but rather a category that includes specific subcategories that did not logically fit under other existing top-level headings. Examples of subcategories under Other/Miscellaneous include inappropriate discharge, other unexpected death, electric shock to the patient, and others.

Figure 2.10 below further illustrates the report submission fluctuation relative to harm level by event type. Recalling the above statements that there was a large decrease in Serious Events, along with a relatively minor decrease in Incidents and overall submissions, we found an interesting perspective when we could identify the two event types that contributed to most of the decrease. The majority (61%) of the decrease of Serious Event submissions can be attributed to a 39% drop in Skin Integrity Serious Event reports. The other large contributing event type was Falls, which decreased by 13% from 2009 and accounted for 23% of the overall decrease.

Reports of Medication Errors decreased overall by 8%, but since 98% of this event type were Incidents or did not harm the patient, there was little impact on the number of Serious Events for the year. However, the drop in the number of Medication Error Incident reports (down 8% from 2009) was offset by increased Incident submissions of these event types: Other/Miscellaneous (up 10%), Falls (up 3%), and Complications of Procedures, Treat and Tests (up 4%).

Event Type	Serious Events			Incidents			Total		
	2009	2010	% change	2009	2010	% change	2009	2010	% change
Medication Errors	296	261	-12%	48,881	45,034	-8%	49,177	45,295	-8%
Adverse Drug Reactions	292	292	0%	4,464	4,578	3%	4,756	4,870	2%
Equipment / Supplies / Devices	60	54	-10%	3,455	3,800	10%	3,515	3,854	10%
Falls	1,332	1,157	-13%	33,718	34,788	3%	35,050	35,945	3%
Errors Related to Procedure/Treatment /Test	747	709	-5%	50,203	49,725	-1%	50,950	50,434	-1%
Complications of Procedure/Treatment /Test	3,529	3,522	0%	24,577	25,571	4%	28,106	29,093	4%
Transfusions	35	33	-6%	3,445	3,147	-9%	3,480	3,180	-9%
Skin Integrity	1,195	729	-39%	33,850	34,124	1%	35,045	34,853	-1%
Other / Miscellaneous	784	751	-4%	15,807	17,349	10%	16,591	18,100	9%
Total	8,270	7,508	-9%	218,400	218,116	0%	226,670	225,624	0%

Figure 2.10. Report submissions from 2009 to 2010, by event type and harm level

## Reports by Region and Submission Type

For the purposes of this report, the Patient Safety Authority Board of Directors has adopted a geographic breakdown of the Commonwealth into six regions, as shown in Figure 2.11. This breakdown is based on the Department of Health’s Public Health Districts.

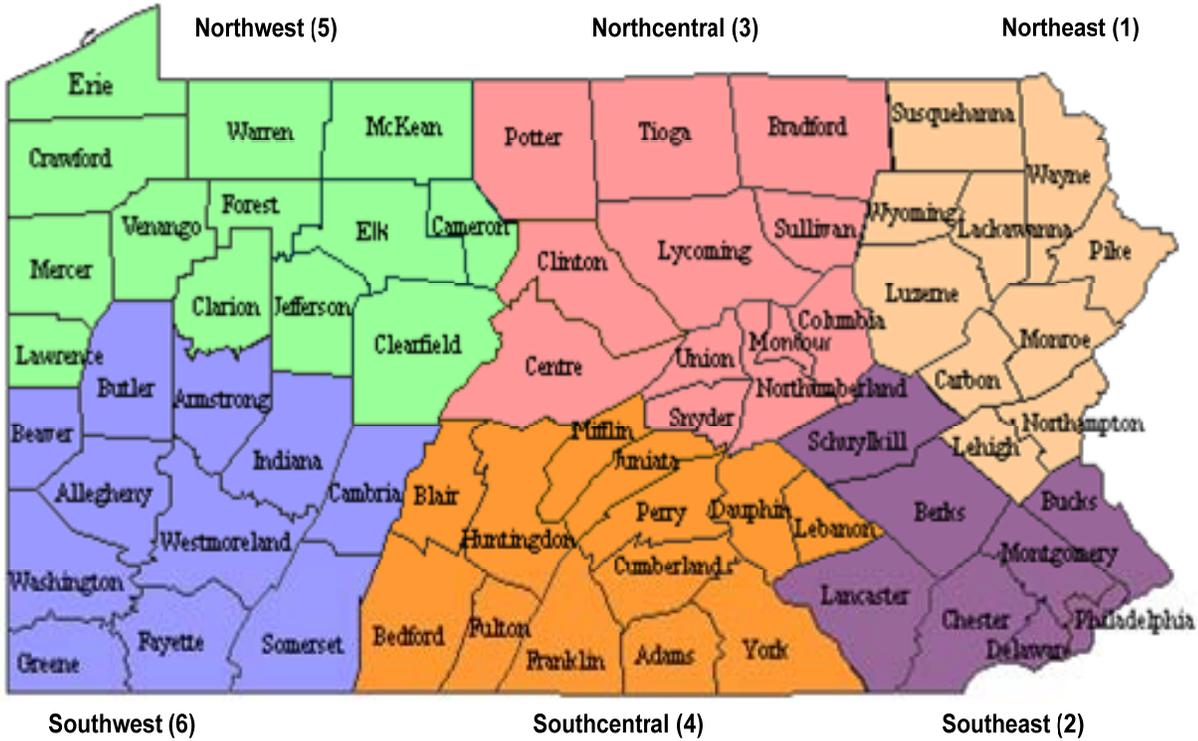


Figure 2.11. Public Health Districts

The variation in the number of reports submitted through PA-PSRS by geographic region (see Figure 2.12) is not particularly surprising. One expects more reports to be submitted in regions with larger populations and greater numbers of healthcare facilities. Consistent with this expectation, the regions with the largest number of reports (southeast and southwest) were those with the Commonwealth's two largest population centers: Philadelphia and Pittsburgh, respectively.

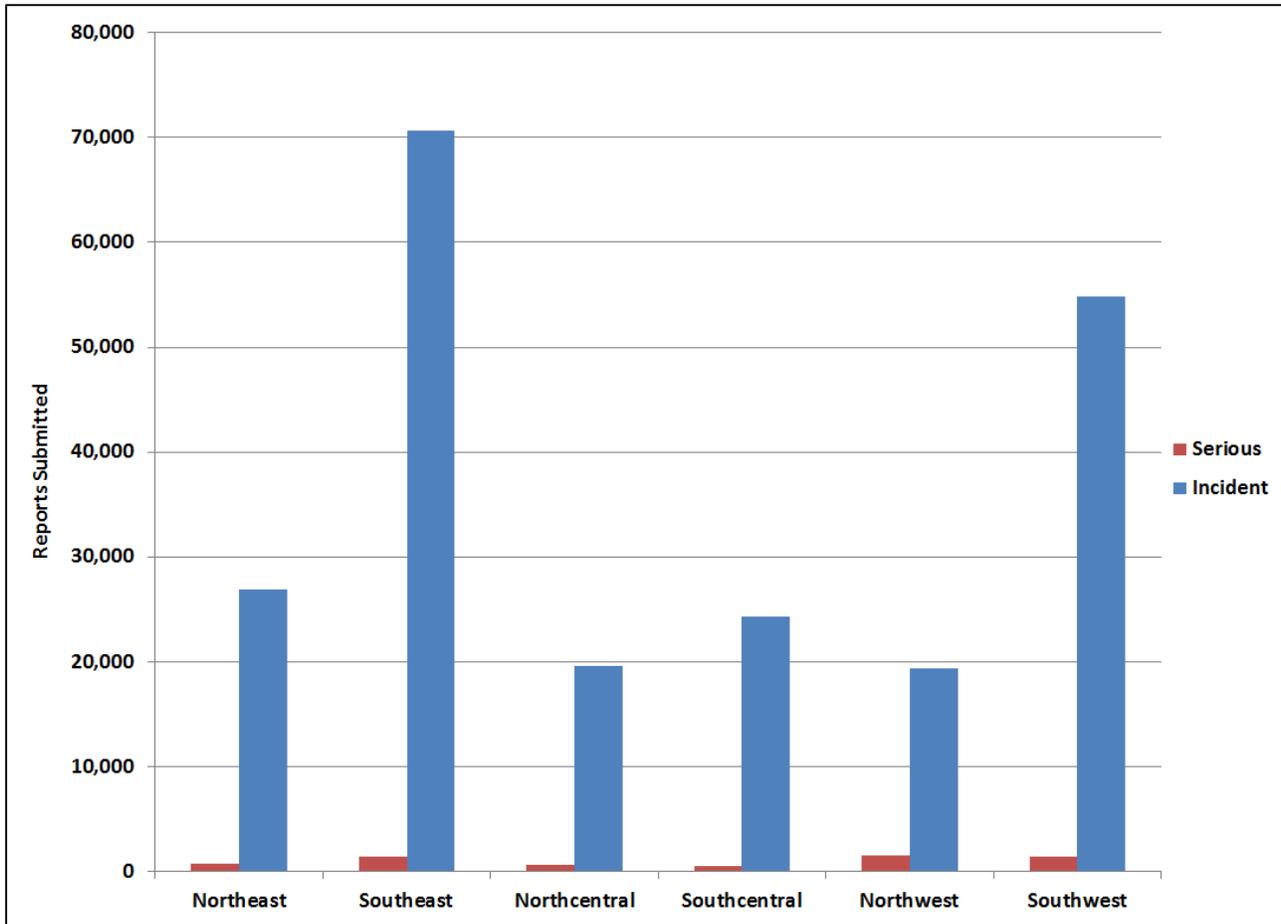


Figure 2.12. Number of Serious Event and Incident Reports from Hospitals by Region (2010)

Adjusting the report volume for a measure of healthcare utilization paints a different picture. Figure 2.13 shows, by region, the number of reports from hospitals per 1,000 patient days<sup>3</sup>. This figure shows that, after accounting for the differences in the volume of healthcare provided in each region, facilities in the North Central region reported 50 Incidents per 1,000 patient days, far more per 1,000 patient days than any other region. The other regions reported between 20.4 to 34.8 Incidents per 1,000 patient days.

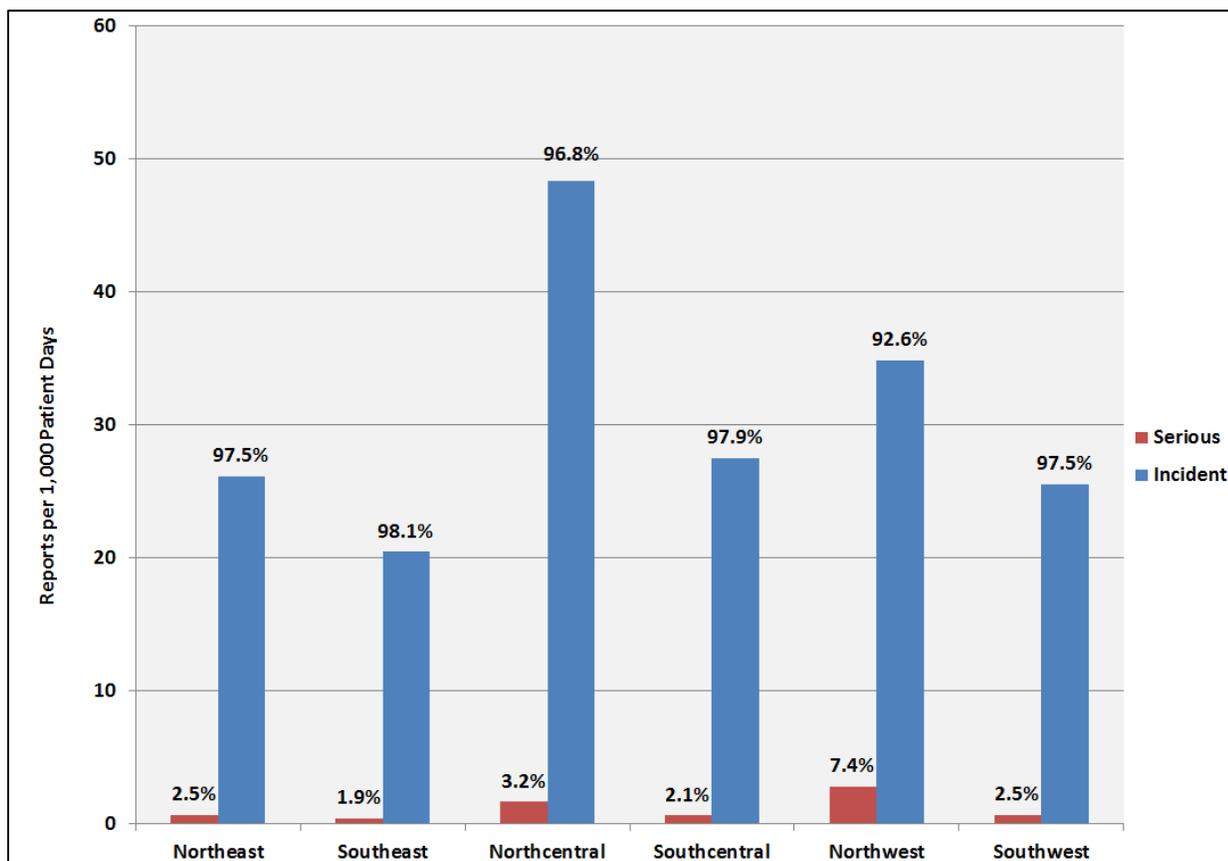


Figure 2.13. Reports from Hospitals per 1,000 Estimated Patient Days by Region (2010)

Also of note in Figure 2.13, the Northwest region submitted a significantly greater proportion of Serious Events (7.4% of their reports) than the statewide average (2.8%). Conversely, the Southeast region submitted the highest proportion of Incidents (98.1%) followed closely by the South Central region (97.9%).

This does not necessarily suggest that facilities in the Northwest region were less safe than those in other regions. It may mean that the healthcare providers in these facilities were better at identifying and reporting potential patient safety issues.

<sup>3</sup> Based upon publicly available data from the website of the Pennsylvania Health Care Containment Council ([www.PHC4.org](http://www.PHC4.org)). Estimates were based on statewide inpatient data from the second quarter 2009 through first quarter 2010.

In Figure 2.14, we see that the Southwest region has the largest number of reports submitted per hospital.

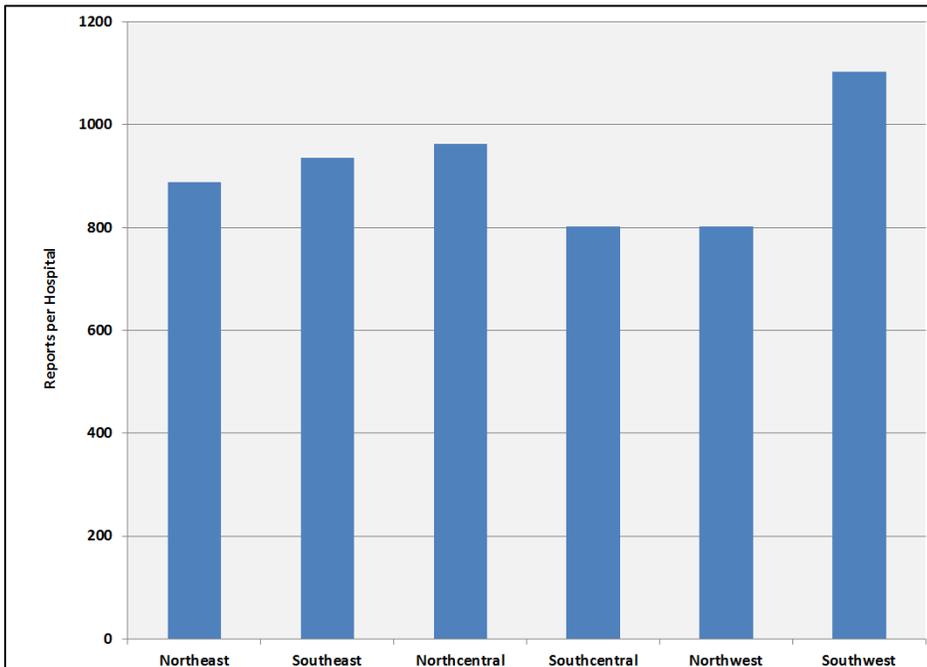


Figure 2.14. Number of Reports Submitted Per Hospital by Region (2010)

Comparing year to year, there is an observable increase of hospital reports per 1,000 patient days across the eastern and western regions and a decrease across the central regions, as seen in Figure 2.15. There was an overall increase of 7.7% hospital reports per 1,000 patient days from 2009 to 2010.

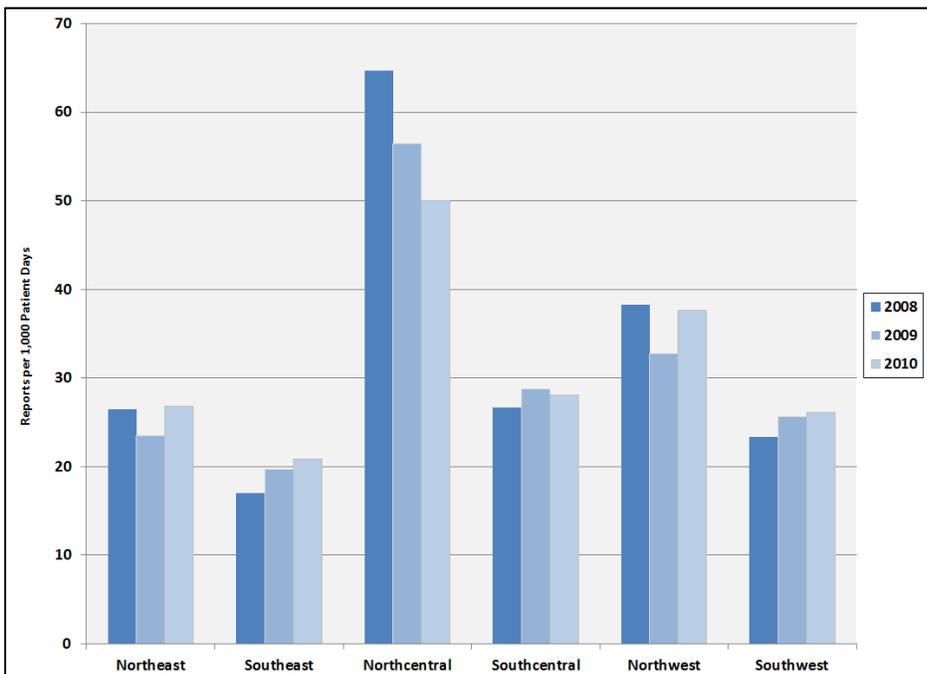


Figure 2.15. Reports from Hospitals per 1,000 Patient Days by Region (2008 through 2010)

## Reports by Level of Patient Harm

For every report submitted through PA-PSRS, the healthcare facility applies a harm scale to measure whether an event “reached” the patient and, if so, how much harm it caused.<sup>4</sup> This scale ranges from “unsafe conditions” (e.g., look-alike medications stored next to one another) to the death of the patient and can be summarized as follows:

- Unsafe Conditions—Circumstances that could lead to an adverse event (accounting for 12% of all reports)
- Event, No Harm—An event that either did not reach the patient or did reach the patient but did not cause harm (often called a “near miss,” accounting for 85% of all reports)
- Event, Harm—An event that reached the patient and caused temporary or permanent harm (3.2%)
- Event, Death—An event occurred that resulted in or contributed to death (0.1%)

Figure 2.16 shows the reports received during 2010 categorized by the level of harm (as described above) and by event type. For the most part, the reports at each level of harm follow a similar distribution by event type as they do in the database as a whole. There are exceptions to this, however. For example, while Complications of Procedures/Treatments/Tests comprise 13% of reports overall in 2010, they comprise 46% of the reports of events involving harm and 60% of all reports of events resulting in or contributing to the patient’s death.

At the other end of the spectrum, while Medication Errors comprise 20% of reports in 2010, they only comprise 4% of events involving harm and 2% of events contributing to or resulting in death. Reports of Errors related to Procedures/Treatments/Tests were also associated with harm or death at a frequency lower than their representation in the database as a whole. No deaths were associated with Transfusions or Skin Integrity.

A certain portion of the reports could be referred to as examples of “unsafe conditions,” meaning there was an observed situation in which some harm was a possibility if corrective action was not taken. Unsafe conditions were cited in 12% of the reports submitted in 2010. As shown in

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<sup>4</sup> For example, an event in which a phlebotomist goes to draw blood from the wrong patient but catches the error by checking the patient’s wristband, would be an event that did not reach the patient.

Figure 2.16, the event type in which unsafe conditions were most often reported was Skin Integrity (37%). The event type where unsafe conditions were least reported by percentage was Adverse Drug Reactions. Of all reports of the Adverse Drug Reactions event type, 0.22% was reported as unsafe conditions.

Event Type	Unsafe Conditions		Event, No Harm		Harmful Event		Death Event		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Medication error	1,770	7%	43,264	23%	255	4%	6	2%	45,295	20%
Adverse Drug Reaction	58	<1%	4,520	2%	289	4%	3	1%	4,870	2%
Equipment / Supplies / Devices	477	2%	3,323	2%	51	1%	3	1%	3,854	2%
Fall	327	1%	34,461	18%	1,141	16%	16	5%	35,945	16%
Error related to Procedure / Treatment / Test	6,426	25%	43,299	23%	687	10%	22	7%	50,434	22%
Complication of Procedure / Treatment / Test	1,736	7%	23,835	12%	3,342	46%	180	60%	29,093	13%
Transfusion	305	1%	2,842	1%	33	0%	0	0%	3,180	1%
Skin Integrity	9,639	37%	24,485	13%	729	10%	0	0%	34,853	15%
Other / Miscellaneous	5,443	21%	11,906	6%	682	9%	69	23%	18,100	8%
Total	26,181	12%	191,935	85%	7,209	3%	299	<1%	225,624	100%

Figure 2.16. Reports by Event Type and Level of Patient Harm (2010)

Also, to repeat figures shown previously, only 3.3% of all reports submitted involve harm to the patient, ranging from a simple laceration to a life-threatening situation and death. Figure 2.17 illustrates that the vast majority of reports do not result in patient harm.

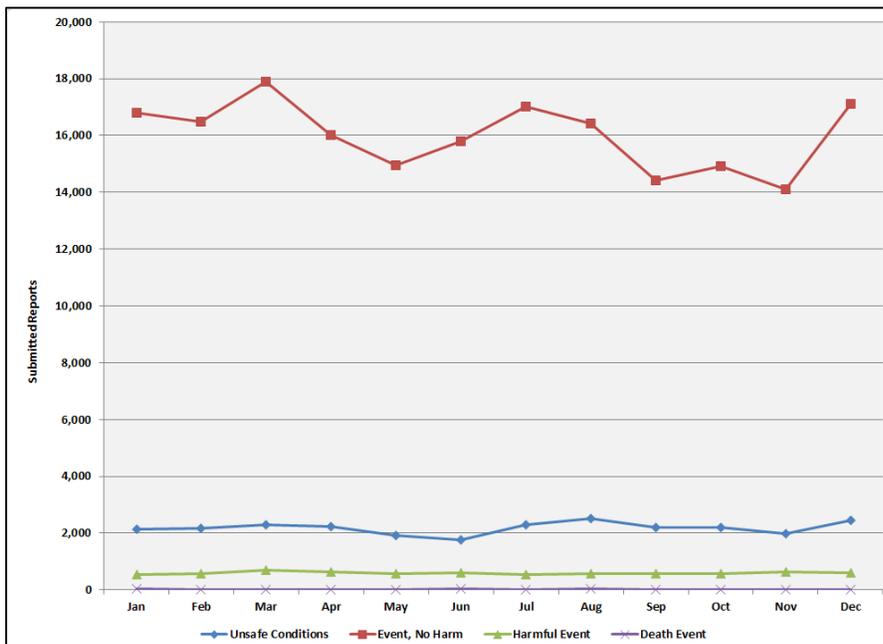


Figure 2.17. Reports by Level of Harm by Month (2010)

## Reports Involving the Patient's Death

In 2010, the Authority received 299 reports of events that may have contributed to or resulted in the patient's death. (Figure 2.18) Not all of these patient deaths were preventable, and they did not necessarily have to involve an error on the part of a healthcare provider to be reportable under Act 13 of 2002.

Event Type	No.	%
Medication error	6	2.0%
Adverse Drug Reaction	3	1.0%
Equipment / Supplies / Devices	3	1.0%
Fall	16	5.4%
Error related to Procedure / Treatment / Test	22	7.4%
Complication of Procedure / Treatment / Test	180	60.2%
Transfusion	0	0%
Skin Integrity	0	0%
Other / Miscellaneous	69	23.1%
Total	299	100%

Figure 2.18. Reports Involving the Patient's Death, by Event Type (2010)

These account for a little more than one eighth of one percent of all submitted reports. In terms of particular event types, although 13% of all reports in 2010 were attributed to Complications of Procedures/Treatments/Tests, about 60% of all reports involving the patient's death were of that event type. Of these reports involving death associated with complications, the majority describes patients who died following surgery or another invasive procedure (39%), patients who suffered cardiopulmonary arrest outside the ICU setting (28%), or neonatal complications (10%).

Many reports involving the patient's death were reported with the primary event type of "other/miscellaneous." This category in the taxonomy contains a subcategory "other unexpected death," which explains the extensive use of this category. Many of these reports involve patients who were found unresponsive, who went into respiratory arrest and resuscitation efforts failed, or who were admitted to the hospital and died of their disease.

## Patient Demographics

PA-PSRS collects few demographic details about patients because the Authority is not authorized to collect individually identifying information. In general, most reports include only information on patient gender and age. Figure 2.19 presents the number of reports received in 2010 by patient gender and age cohort.

Age Cohort	Female		Male		All Patients		% Patients Female
	No.	%	No.	%	No.	%	
0 - 4	5,472	4.56%	7,146	6.76%	12,618	5.59%	43.37%
5-14	2,540	2.12%	2,830	2.68%	5,370	2.38%	47.30%
15-24	6,583	5.49%	4,303	4.07%	10,886	4.82%	60.47%
25-34	7,790	6.49%	4,333	4.10%	12,123	5.37%	64.26%
35-44	8,622	7.19%	6,411	6.07%	15,033	6.66%	57.35%
45-54	13,407	11.18%	13,083	12.38%	26,490	11.74%	50.61%
55-64	16,357	13.64%	18,151	17.18%	34,508	15.29%	47.40%
65-74	19,046	15.88%	18,954	17.94%	38,000	16.84%	50.12%
75-84	23,206	19.35%	20,113	19.03%	43,319	19.20%	53.57%
85+	16,926	14.11%	10,338	9.78%	27,264	12.08%	62.08%
Unknown	3	0.00%	10	0.01%	13	0.01%	23.08%
<b>Total</b>	<b>119,952</b>	<b>100%</b>	<b>105,672</b>	<b>100%</b>	<b>225,624</b>	<b>100%</b>	<b>53.16%</b>

Figure 2.19. Reports Submitted by Age Cohort and Gender (2010)

### Patient Gender

Of the 225,624 reports submitted in 2010, 119,952 (53.2%) involved female patients, and 105,672 (46.8%) involved male patients. This pattern is consistent with our observations since 2004. During childbearing years, women are more likely than men to have encounters with the healthcare system, and because women have a longer life expectancy than men, there are simply more women in the general population in the older age cohorts.

The proportion of reports classified as Serious Events hardly differed according to the patient's gender, with 3.5% of reports involving female patients classified as Serious Events, compared to 3.2% for reports involving males.

Figure 2.20 shows the distribution of reports by patient gender and event type. Many of the same patterns observed in 2009 are evident this year as well. Among these observed patterns, the proportion of reports involving female patients was significantly higher among reports of Adverse Drug Reactions.

Event Type	Female		Male		All Patients	
	No.	%	No.	%	No.	% of Total
Medication Errors	24,297	53.6%	20,998	46.4%	45,295	20.1%
Adverse Drug Reactions	3,140	64.5%	1,730	35.5%	4,870	2.2%
Equipment / Supplies / Devices	1,955	50.7%	1,899	49.3%	3,854	1.7%
Falls	17,970	50.0%	17,975	50.0%	35,945	15.9%
Errors Related to Procedure / Treatment / Test	27,239	54.0%	23,195	46.0%	50,434	22.4%
Complications of Procedure / Treatment / Test	16,157	55.5%	12,936	44.5%	29,093	12.9%
Transfusions	1,712	53.8%	1,468	46.2%	3,180	1.4%
Skin Integrity	18,089	51.9%	16,764	48.1%	34,853	15.4%
Other / Miscellaneous	9,393	51.9%	8,707	48.1%	18,100	8.0%
<b>Total</b>	<b>119,952</b>	<b>53.2%</b>	<b>105,672</b>	<b>46.8%</b>	<b>225,624</b>	<b>100%</b>

Figure 2.20. Reports Submitted by Gender and Event Type (2010)

## Patient Age

Figure 2.21 shows the proportion of reports through PA-PSRS, from hospitals only, by gender and by patient age cohort. As noted above, this chart also illustrates women are more likely than men to have encounters with the healthcare system during childbearing years. Patients aged 65 and older account for 48% of all reports from hospitals through PA-PSRS in 2010. Also shown in this figure is the proportion of hospital inpatient admissions as reported by the Pennsylvania Healthcare Cost Containment Council (PHC4).<sup>5</sup> However, this chart does not suggest that older patients are necessarily more likely than younger patients to be involved in a Serious Event or Incident. Rather, older patients' larger representation in the database simply reflects their larger representation in the healthcare system in terms of number of admissions and increased length of stay.

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<sup>5</sup> Based upon publicly available data from the website of the Pennsylvania Health Care Containment Council ([www.PHC4.org](http://www.PHC4.org)). Estimates were based on statewide inpatient data from the second quarter 2009 through first quarter 2010.

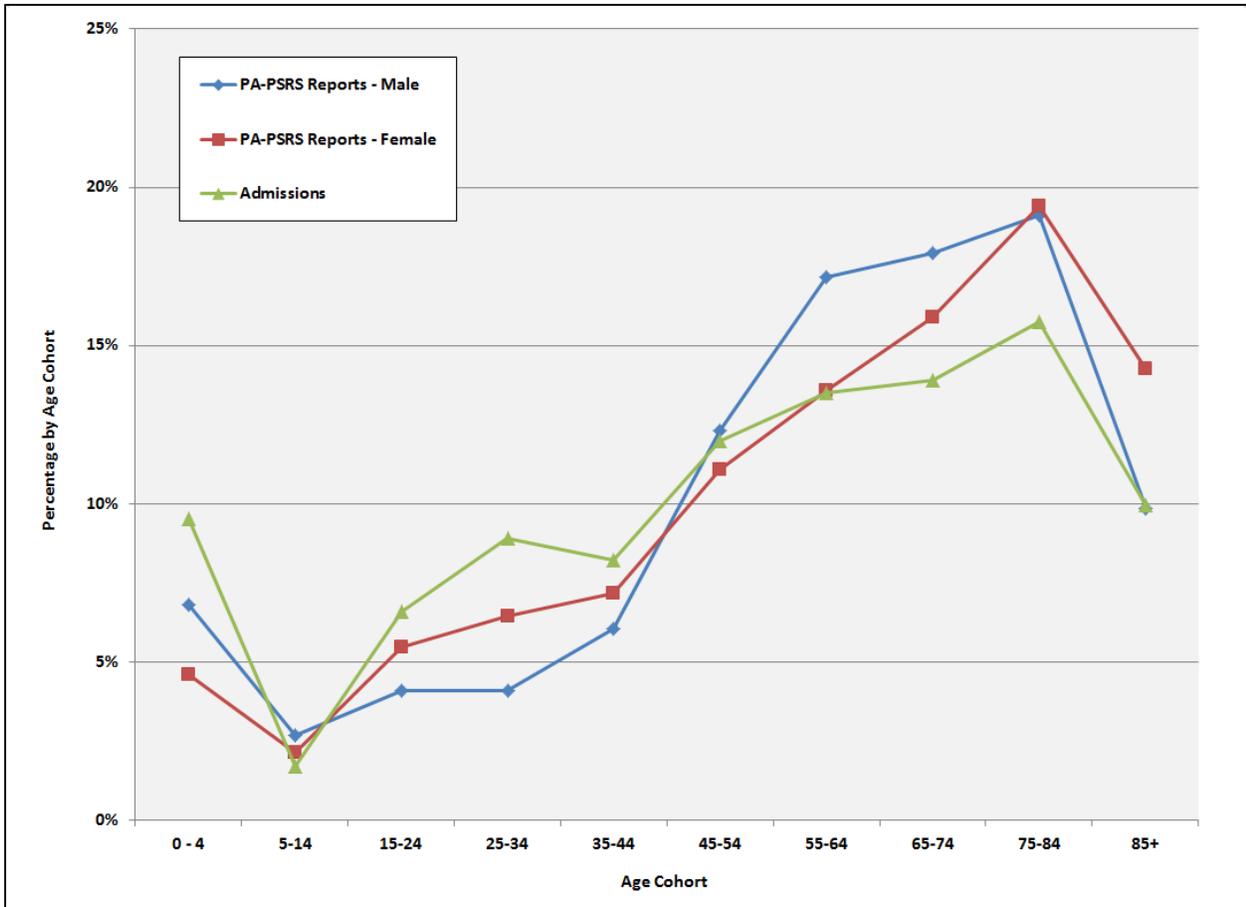


Figure 2.21. Proportion of Hospital Reports through PA-PSRS by Gender and Age Cohort (2010)

## Patients in High and Low Age Cohorts

### Older Patients

In the Authority's previous annual reports, we identified several patterns of interest in reports involving older patients (65 and older). In Figure 2.22 for example, older patients accounted for 64% of Falls in 2004 and 2005. This figure declined steadily to 56.2% in 2010. In another area of interest concerning older patients, the percentage of Skin Integrity reports among this age group has dropped to 70.6% in 2010. In 2009, more than half of all reports (51.8%) involved patients 65 and older; this figure has dropped to 48.3% in 2010.

Elderly Patients (65 and older)	2006	2007	2008	2009	2010
Falls	62.4%	61.2%	60.2%	57.9%	56.2%
Skin Integrity	73.1%	73.5%	73.1%	71.2%	70.6%

Figure 2.22. Percentage of Reports of Specific Event Types Submitted Involving Older Patients (2010)

## Perinatal Patients

There were 4,611 reports involving perinatal patients (those aged 20 days or younger), an increase of 5.2% from 2009, less than last year's 6.7% increase. 4.19% of perinatal reports were classified as Serious Events, a bit higher than the overall percentage of 3.32%.

Just as last year, about two thirds (62.4%) of reports for these patients were related to Errors or Complications of Procedures, Treatments, or Tests. This does not necessarily mean these patients are more likely to experience errors or complications. Rather, they may not be as prone to other types of events (e.g., falls, problems with skin integrity) as older patients.

About one fifth (20.1%) of reports involving perinatal patients was related to Medication Errors. This is comparable to the last three years (19.7% in 2009, 19.4% in 2008, 20% in 2007). Complications of Procedures, Treatments and Tests accounted for 82.4% of the Serious Events in this age group.

## Children and Adolescents

Reports submitted through PA-PSRS in 2010 involving children and adolescents (i.e., aged 21 and younger) totaled 24,166. Reversing in order the top two most commonly submitted types of reports from previous years, Medication Errors accounted for 29.5% of the reports of this population, followed by Errors Related to Procedures, Treatments and Tests at 27.4%. However, event type Complications of Procedures, Treatments and Tests made up 59.8% of all Serious Events for this age group.

## Reports by Location/Department (Hospitals Only)

PA-PSRS has 155 designated care areas for hospitals. These are the locations or departments of the hospital in which a patient receives care or is exposed to in the process of receiving care. As we see in Figure 2.23, the care areas that are considered General Medical/Surgical Units were cited as the location for the greatest number of all reports submitted in 2010, generating almost a quarter (22.6%) of the total. Other hospital departments with higher report rates are Critical Care (19.6%), Intermediate Unit (9.7%), Surgical Services (8.8%), and Pediatric Care (6.3%).

Examples of care areas by department:

- General Medical/Surgical Units
  - General Medicine Ward
  - Medical/Surgical/Oncology Unit
- Critical Care
  - Emergency Department
  - Burn Unit
  - Medical/Surgical ICU
- Intermediate Unit
  - Telemetry
  - Cardiac Intermediate Unit
  - Respiratory Intermediate Unit

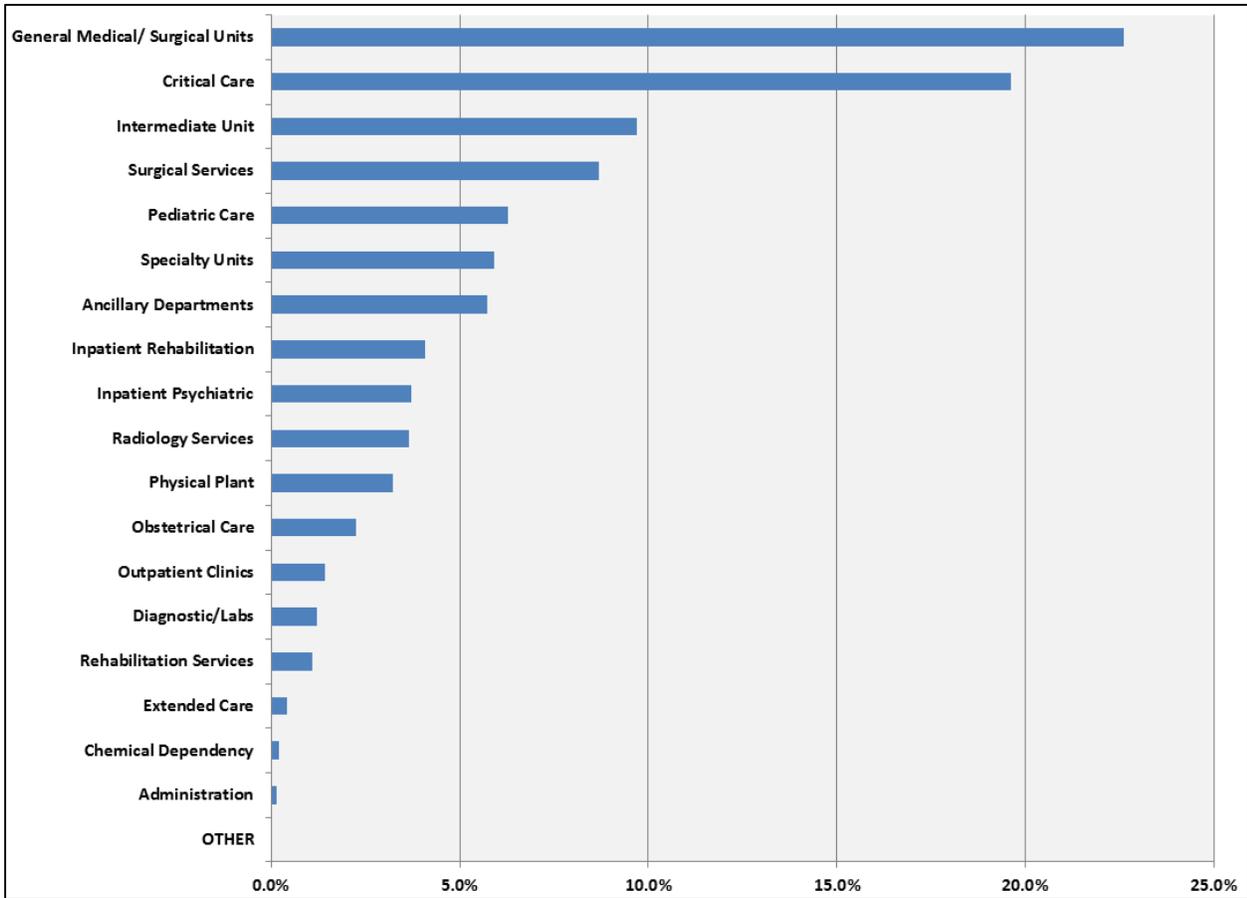


Figure 2.23. Reports by Location/Department (Hospitals Only, 2010)

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### III. HEALTHCARE-ASSOCIATED INFECTIONS

#### Section Summary

- 49,888 healthcare-associated infections (HAIs) were reported to the Authority in 2010; 22,019 from hospitals and 27,869 from nursing homes.
- Preliminary crude infection rates in hospitals dropped by about 6% overall from 2009 to 2010.
- Between 2008 and 2010, preliminary results show that hospitals reduced Catheter-Associated Urinary Tract Infections (CAUTI) by 26%, Central-Line Associated Bloodstream Infections (CLABSI) by 44%, and Ventilator-Associated Pneumonia by 27%.
- Between 2009 and 2010, nursing homes reported fewer urinary tract infections by 14% in residents without a catheter and by 15% in residents with catheters. Skin and soft tissue infections were reduced by 18%. The rate of respiratory tract infections was unchanged in 2010, and the rate of gastrointestinal tract infections was considerably higher in 2010; however, 2009 rates are based on the first six months of data collection and did not include several months of norovirus season.
- The Authority published seven HAI-related articles in the *Pennsylvania Patient Safety Advisory* in 2010 on such topics as norovirus preparedness, Clostridium difficile infection, skin and soft tissue infections, endoscope reprocessing, handling MRSA-positive patients in ambulatory surgery facilities, reducing CLABSIs, and others.
- The Authority is supporting several HAI collaborative projects, including the national CUSP initiative on reducing CLABSI, and programs to reduce SSIs with the Pennsylvania NSQIP Consortium and a group of hospitals in Western Pennsylvania.

Healthcare-associated infections are one of the nation's most important public health challenges. The Centers for Disease Control and Prevention (CDC) reports that healthcare-associated infections (HAI) are a significant cause of morbidity, and are among the leading causes of death in the United States, accounting for an estimated 1.7 million infections and 99,000 deaths annually. Another 1.6 to 3.8 million infections occur annually in long-term care facilities. It has been well established that some HAIs are largely preventable and that the occurrence of these infections can be drastically reduced in order to save lives and avoid excess costs.<sup>6</sup>

In addition to saving lives and reducing suffering, reducing HAIs would substantially reduce healthcare costs. The hospital costs of preventable ventilator-associated pneumonia are estimated to be \$2.19 billion to \$3.17 billion annually. Costs of preventable catheter-associated urinary tract infections are estimated to be \$115 million to \$1.82 billion annually, and the costs of preventable surgical site infections are estimated to be \$166 million to \$345 million annually.<sup>7</sup>

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<sup>6</sup> Centers for Disease Control and Prevention (CDC). Media Statement. CDC Statement: Public Reporting of Healthcare-Associated Infections [online] 2010 Feb. [ cited 2011 Jan 18] Available on Internet: <http://www.cdc.gov/media/pressrel/2010/s100202.htm>

<sup>7</sup> Estimating the Proportion of Healthcare-Associated Infections That Are Reasonably Preventable and the Related Mortality and Costs. Umscheid, Mitchell, Agarwal, Williams, Brennan. *Infection Control and Hospital Epidemiol* Vol. 32, No. 2, February 2011

Pennsylvania is a national leader in addressing the challenge of reducing and ultimately eliminating HAIs to prevent unnecessary illnesses and deaths, and to eliminate the avoidable costs of treating these infections. Act 52 of 2007 modified the Medical Care Availability and Reduction of Error Act (MCare), with the ultimate goal of producing consistent reductions in the occurrence of HAIs in order to eliminate them entirely.<sup>8</sup> Act 52 charged the Authority with appointing an advisory panel of HAI experts, publishing uniform requirements for HAI reporting from hospitals and nursing homes, issuing advisories to healthcare facilities and educating healthcare workers on HAI prevention, and providing information about HAIs in this annual report. The Department of Health (DOH) is charged with review of healthcare facility infection control plans, development of recommendations and best practices in HAI reduction and screening, and in consultation with the Authority and the Pennsylvania Health Care Cost Containment Council (PHC4) developing methods for determining and assessing the rate of HAIs in healthcare facilities and benchmarking healthcare facilities to measure progress in eliminating HAIs. The information in this report approximates the rates. The DOH issues final rates.

In June 2010, the DOH released an updated Technical Report on 2009 Healthcare-Associated Infections (HAI) in Pennsylvania hospitals.<sup>9</sup> The report details the first full year of information on hospital HAIs and establishes the baseline against which hospitals can be measured for future changes in the rates of HAIs. The DOH reported a 12.5 percent decline in HAIs between 2008 and 2009, translating to 3,695 fewer HAIs. Hospitals across Pennsylvania appear to be reducing HAIs through adherence to evidence-based practices and adoption of newer technologies. Infection preventionists — along with hospital leadership, medical professionals and administrative staff — are working collaboratively to track HAIs and to focus on proven techniques that improve infection control.

The Authority, the DOH and PHC4 worked together in 2010 to continue meeting MCare's HAI-related requirements by:

- Validating and analyzing the infection reports from nursing homes and hospitals.
- Providing facilities with guidance on best practices based on this analysis.
- Publishing the results of this work in the *Pennsylvania Patient Safety Advisory*.
- Developing educational programs and supporting multi-facility collaboratives to encourage cross-institutional learning.

Details of the Authority's accomplishments in 2010 related to HAI prevention are presented in this chapter.

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<sup>8</sup> Hospital & Healthsystem Association of Pennsylvania. HAP summary: Act 52 of 2007: The Health Care-Associated Infection and Prevention Control Act. [Online]. 2007 Jul [Cited 2011 Jan 18]. Available from Internet: [http://www.haponline.org/downloads/HAP\\_Summary\\_Act\\_52\\_of\\_2007\\_07262007.pdf](http://www.haponline.org/downloads/HAP_Summary_Act_52_of_2007_07262007.pdf)

<sup>9</sup> Commonwealth of Pennsylvania Department of Health. 2009 Technical Report: Healthcare-Associated Infections (HAI) in Pennsylvania Hospitals. [Online] June 2010 [cited 2010 Jan 18] Available from Internet: [http://www.portal.state.pa.us/portal/server.pt/community/healthcare\\_associated\\_infections/14234](http://www.portal.state.pa.us/portal/server.pt/community/healthcare_associated_infections/14234)

## Hospital Data

Pennsylvania hospitals have invested substantial effort to comply with the MCare reporting requirements by conducting surveillance for HAIs and reporting them into the CDC's National Healthcare Safety Network (NHSN). The 2009 data forms the baseline period for the purpose of benchmarking declines.

While the rates of HAIs in Pennsylvania fared well when compared to the national data, and some findings indicated rates were substantially lower in some categories, this finding must be cautiously interpreted since Pennsylvania facilities are mandated to report through NHSN while in other parts of the country, reporting is voluntary.

Act 52 requires that all Pennsylvania hospitals conduct continuous surveillance for HAIs in all patient care areas using NHSN for reporting, using all components of the NHSN Patient Safety Module. DOH is responsible for assessing the HAI data in NHSN to ascertain the patterns of HAIs in the Commonwealth, report facility-specific rates of HAIs, to determine HAIs trends by institution, and compare Pennsylvania's rates to those seen elsewhere in the country. Comparisons of Pennsylvania rates to national rates are not yet included in this report as the CDC has not yet published national data on HAIs for 2009. DOH's report will be amended with this information once the national 2009 data are available.<sup>5</sup>

### Statewide Results

The DOH report showed during 2009, a total of 25,914 HAIs were reported by the 250 Pennsylvania hospitals occurring over a total of 10,920,596 patient-days of hospitalization. This produced a statewide crude infection rate of 2.37 HAIs per 1,000 patient-days. The five most commonly reported types were surgical site infections (SSIs) (24.2%), urinary tract infections (UTIs) (23.7%), gastrointestinal infections (GI) (18.7%), blood stream infections (BSI) (12.6%), and pneumonias (11.1%). The majority (64%) of UTIs were associated with a urinary catheter (CAUTI), and 67% of BSIs were associated with a central line (CLABSI). Comprehensive report details are available at:

[http://www.portal.state.pa.us/portal/server.pt/community/healthcare\\_associated\\_infections/14234](http://www.portal.state.pa.us/portal/server.pt/community/healthcare_associated_infections/14234).

**Due to differences in the inclusion and data validation criteria used by the Authority, subsequent tables in this section will show slightly different rates for HAIs in 2009 compared to the DOH report. In this preliminary analysis for 2010, we applied the same criteria to the 2010 and 2009 data available to the Authority to permit more valid comparisons of rates between years for individual infections.**

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<sup>5</sup> Commonwealth of Pennsylvania Department of Health. 2009 Technical Report: Healthcare-Associated Infections (HAI) in Pennsylvania Hospitals. [Online] June 2010 [cited 2010 Jan 18] Available from Internet: [http://www.portal.state.pa.us/portal/server.pt/community/healthcare\\_associated\\_infections/14234](http://www.portal.state.pa.us/portal/server.pt/community/healthcare_associated_infections/14234)

The Authority calculated preliminary rates only from facilities that provided a complete data set for 2010. Of the 243 Pennsylvania hospitals registered in NHSN, we excluded data from those that only provided partial data based on these criteria, as of February 15, 2011:

- 1) Not providing patient days for each of the 12 months of 2010
- 2) Providing zero as a monthly total of patient days for any month of 2010
- 3) Not providing device days related to reported infections of that type for the given month

As of the date of this report, the DOH has been working with hospitals to ensure they include complete data sets for full analysis. The DOH report will include the complete data sets.

As a result of the exclusion criteria noted above, the Authority analyzed reports of 22,019 infections from 213 hospitals representing 9,871,546 patient days for 2010. This results in a crude infection rate<sup>6</sup> of 2.23 infections per 1,000 patient days, a decline of about 6%. Surgical site infections were the most commonly reported type (26.1%), followed by UTIs (23.2%), gastrointestinal infections (17.3%), BSIs (11%), and pneumonia (10.9%). The overall number of HAI in Pennsylvania hospitals was 14.0% lower than in 2009, with a 24.3% decrease in BSIs being the most noteworthy (see Figure 3.1).

Infection Type	2009		2010		% change from 2009
	Number of Infections	% of Total	Number of Infections	% of Total	
Bone and Joint (BJ)	18	0.1%	22	0.1%	22.2%
Blood Stream Infection (BSI)	3,191	12.5%	2,416	11.0%	-24.3%
Central Nervous System (CNS)	77	0.3%	80	0.4%	3.9%
Cardiovascular System (CVS)	94	0.4%	103	0.5%	9.6%
Ear Nose and Throat (EENT)	622	2.4%	647	2.9%	4.0%
Gastrointestinal (GI)	4,792	18.7%	3,808	17.3%	-20.5%
Lower Respiratory Tract (LRI)	845	3.3%	770	3.5%	-8.9%
Pneumonia (PNEU)	2,865	11.2%	2,391	10.9%	-16.5%
Reproductive (REPR)	109	0.4%	99	0.4%	-9.2%
Surgical Site Infection (SSI)	6,233	24.4%	5,756	26.1%	-7.7%
Skin and Soft Tissue (SST)	686	2.7%	813	3.7%	18.5%
Urinary Tract Infection (UTI)	6,053	23.7%	5,108	23.2%	-15.6%
Total	25,590	100%	22,019	100%	-14.0%

Note: Excludes hospitals as noted above; exclusion criteria applied independently to each year, resulting in 216 hospitals reporting in 2009, 223 in 2010

Figure 3.1. Infections Reported by PA Hospitals by Infection Type and Year (2009-2010)

<sup>6</sup> Rates calculated on data available from NHSN as of February 15, 2011. 44 facilities were excluded based on invalid utilization data such as missing patient days and infections reported without associated device days. As such, these rates may not match calculations performed elsewhere on similar data and are intended to provide best estimates for the purpose of illustration of trends. Crude infection rates are calculated as the number of infections/hospital patient days x 1,000.

## **Catheter-Associated Urinary Tract Infections (CAUTI)**

This report includes 2,969 CAUTIs from 185 of the 257 Pennsylvania hospitals registered in NHSN in 2010. This number represents 13.5% of all reported HAIs for the time period. The remaining hospitals either had no CAUTIs, or information was missing on event counts, catheter days, and/or patient days.

CAUTI infection rates were lower than national estimates among all critical care and inpatient units in Pennsylvania other than labor and delivery: post-partum (see Figures 3.2 and 3.3). Over the 2009 through 2010 reporting periods, there was a significant decline in CAUTI rates in Pennsylvania hospitals in the critical care location category. In 2010, Pennsylvania's CAUTI rates decreased from 2009 in trauma, surgical, special medical, medical surgical and medical critical care locations. Ward rates in 2010 for specialty care areas, behavioral, medical, pediatric, rehabilitation, step down and surgical locations were also lower than in 2009 (see Figure 3.4).

Note: In the figures in this section referring to Critical Care and Ward locations, the following abbreviations were used based on the CDC/NHSN location codes ([http://www.cdc.gov/nhsn/PDFs/pscManual/15LocationsDescriptions\\_current.pdf](http://www.cdc.gov/nhsn/PDFs/pscManual/15LocationsDescriptions_current.pdf)):

<b>Critical Care Units</b>	
Burn	Burn Units
CT	Cardio-Thoracic Units
Med	Medical Units
MS	Medical/Surgical Units
Peds	Pediatric Units, including NICU
SpecMed	Specialized Medicine Units
Surgery	General Surgical Units
Trauma	Emergency Units
<b>Inpatient Wards</b>	
Step	Step down Units
SCA	Specialized Care Area Units
w:Behavioral	Behavioral Wards
w:LD:PP	Labor & Delivery and Post-Partum Wards
w:Med	Medical Wards
w:MS	Medical/Surgical Wards
w:Newborn	Nursery & Newborn Wards
w:Ped MS	Pediatric Medical/Surgical Wards
w:Rehab	Rehabilitation Wards
w:Surgery	Non-Critical Care Surgical Wards

Note: After applying exclusionary criteria, number of hospitals reporting CAUTIs by year: 2008 – 197; 2009 – 182; 2010 – 185

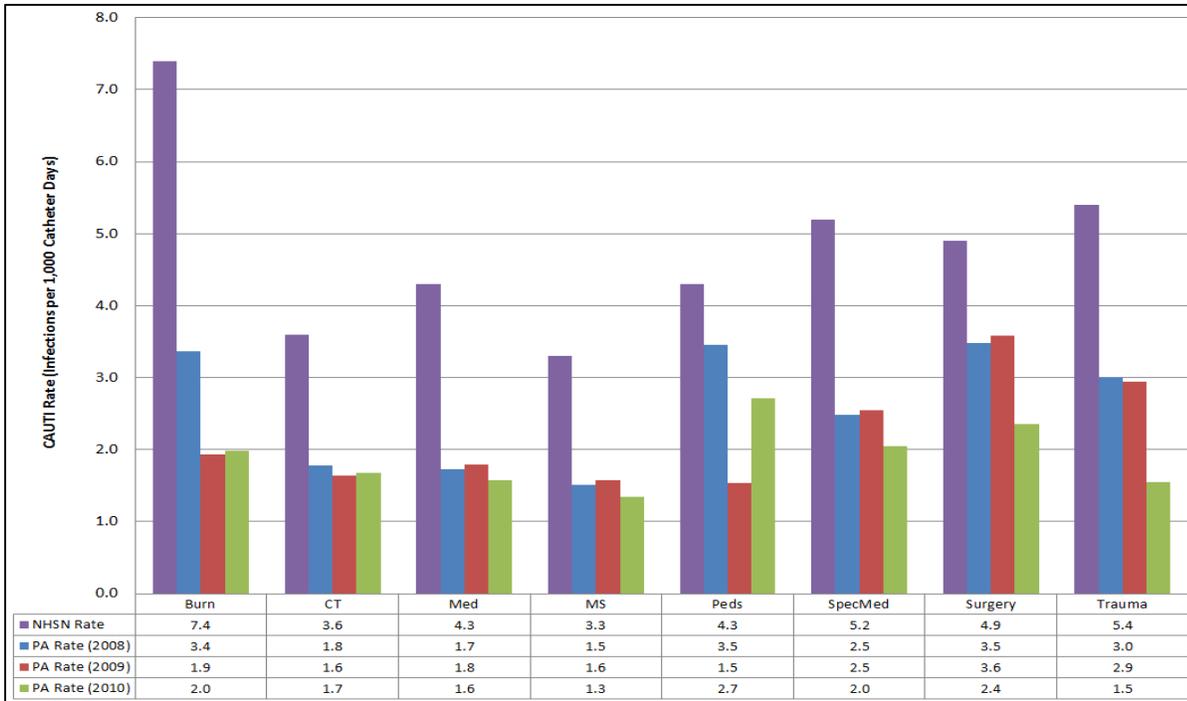


Figure 3.2. Preliminary Comparison of CAUTI Rates in Pennsylvania Hospitals by Selected Critical Care Locations 2008-2010 to Available NHSN from 2006-2008

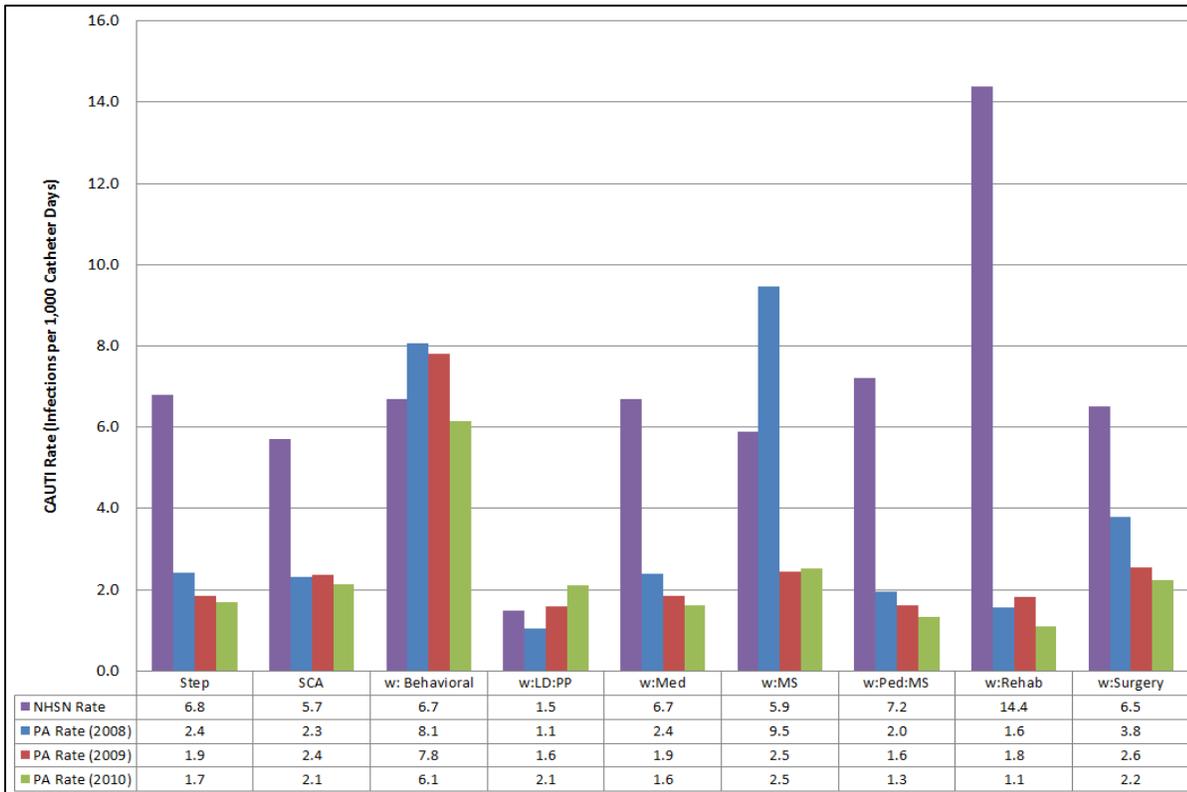


Figure 3.3. Preliminary Comparison of CAUTI Rates in Pennsylvania Hospitals by Selected Ward Locations 2008-2010 to Available NHSN from 2006-2008

	Preliminary Rates - Infections per 1,000 Catheter Days (95% CI)			# Infections
Critical Care	2008	2009	2010	2010
Burn	3.4 (1.0 - 5.7)	1.9 (0.8 - 3.1)	2.0 (0.6 - 3.4)	8
CT	1.8 (1.3 - 2.2)	1.6 (1.3 - 1.9)	1.7 (1.4 - 2.0)	106
Med	1.7 (1.3 - 2.2)	1.8 (1.5 - 2.1)	1.6 (1.3 - 1.8)	136
MS	1.7 (1.3 - 2.1)	1.6 (1.4 - 1.7)	1.3 (1.2 - 1.5)	358
Peds	1.5 (1.3 - 1.7)	1.5 (0.9 - 2.2)	2.7 (1.8 - 3.7)	32
SpecMed	3.5 (2.0 - 4.9)	2.5 (2.1 - 2.9)	2.0 (1.6 - 2.4)	97
Surgery	2.5 (1.9 - 3.0)	3.6 (3.2 - 4.0)	2.4 (2.0 - 2.7)	150
Trauma	3.5 (2.9 - 4.0)	2.9 (2.4 - 3.5)	1.5 (1.2 - 1.9)	59
<b>CC sub-total</b>	<b>2.1 (1.9 - 2.2)</b>	<b>2.1 (2.0 - 2.2)</b>	<b>1.6 (1.5 - 1.7)</b>	<b>946</b>
	Preliminary Rates - Infections per 1,000 Catheter Days (95% CI)			# Infections
Wards	2008	2009	2010	2010
SCA	2.4 (2.0 - 2.8)	1.9 (1.6 - 2.1)	1.7 (1.5 - 1.9)	237
Step	2.3 (2.0 - 2.6)	2.4 (2.1 - 2.6)	2.1 (1.9 - 2.4)	330
W:Behavioral	8.1 (0.0 - 19.2)	7.8 (1.0 - 14.7)	6.1 (0.0 - 13.1)	3
w:LD:PP	1.1 (0.0 - 2.5)	1.6 (0.4 - 2.8)	2.1 (0.9 - 3.4)	11
w:Med	2.4 (2.1 - 2.7)	1.9 (1.7 - 2.0)	1.6 (1.4 - 1.8)	266
w:MS	9.5 (0.0 - 22.6)	2.5 (0.0 - 7.3)	2.5 (0.0 - 7.5)	1
W:Newborn	2.2 (2.0 - 2.4)	1.7 (1.6 - 1.8)	1.6 (1.4 - 1.7)	703
w:Ped:MS	2.0 (1.6 - 2.3)	1.6 (1.4 - 1.8)	1.3 (1.1 - 1.5)	128
W:Rehabilitation	1.6 (0.4 - 2.7)	1.8 (1.0 - 2.7)	1.1 (0.3 - 1.9)	8
W:Surgery	3.8 (3.4 - 4.2)	2.6 (2.3 - 2.8)	2.2 (2.0 - 2.5)	328
<b>Ward sub-total</b>	<b>2.5 (2.3 - 2.6)</b>	<b>1.9 (1.8 - 2.0)</b>	<b>1.7 (1.7 - 1.8)</b>	<b>2015</b>
<b>Total</b>	<b>2.3 (2.2 - 2.3)</b>	<b>2.0 (1.9 - 2.0)</b>	<b>1.7 (1.6 - 1.7)</b>	<b>2969</b>

Figure 3.4. Preliminary Comparison of CAUTI Rates in Pennsylvania Hospitals by Selected Critical Care and Ward Locations 2008-2010

### Central Line-Associated Bloodstream Infections (CLABSI)

This report includes 1,426 CLABSIs from 107 hospitals in 2010, which represents 6.5% of all reported HAIs for that period. The remaining hospitals either had no CLABSI or information was missing on event counts, central line days, and/or patient days. Pennsylvania CLABSI infection rates were lower than national estimates in all critical care units as well as medical, pediatric, newborn, rehabilitation; step down and specialty care area ward locations (see Figures 3.5 and 3.6). Between 2009 and 2010, there was a significant decline in CLABSI rates in Pennsylvania hospitals in both the critical care and ward location categories. Compared to 2009, Pennsylvania's 2010 CLABSI rates decreased in all critical care locations, as well as pediatrics, rehabilitation, step down and specialty care ward locations (see Figure 3.7).

Note: After applying exclusionary criteria, number of hospitals reporting CLABSIs by year: 2008 – 124; 2009 – 123; 2010 – 107

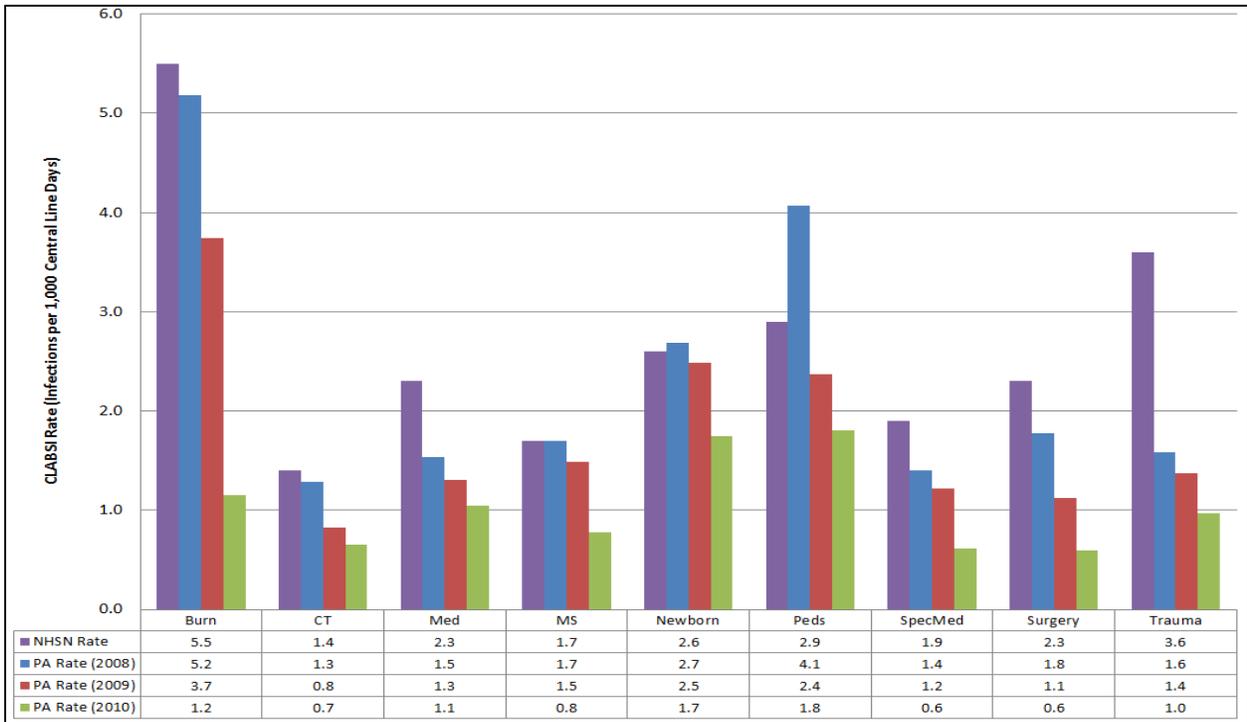


Figure 3.5. Preliminary Comparison of CLABSI Rates in Pennsylvania Hospitals by Selected Critical Care Locations 2008-2010 to Available NHSN from 2006-2008

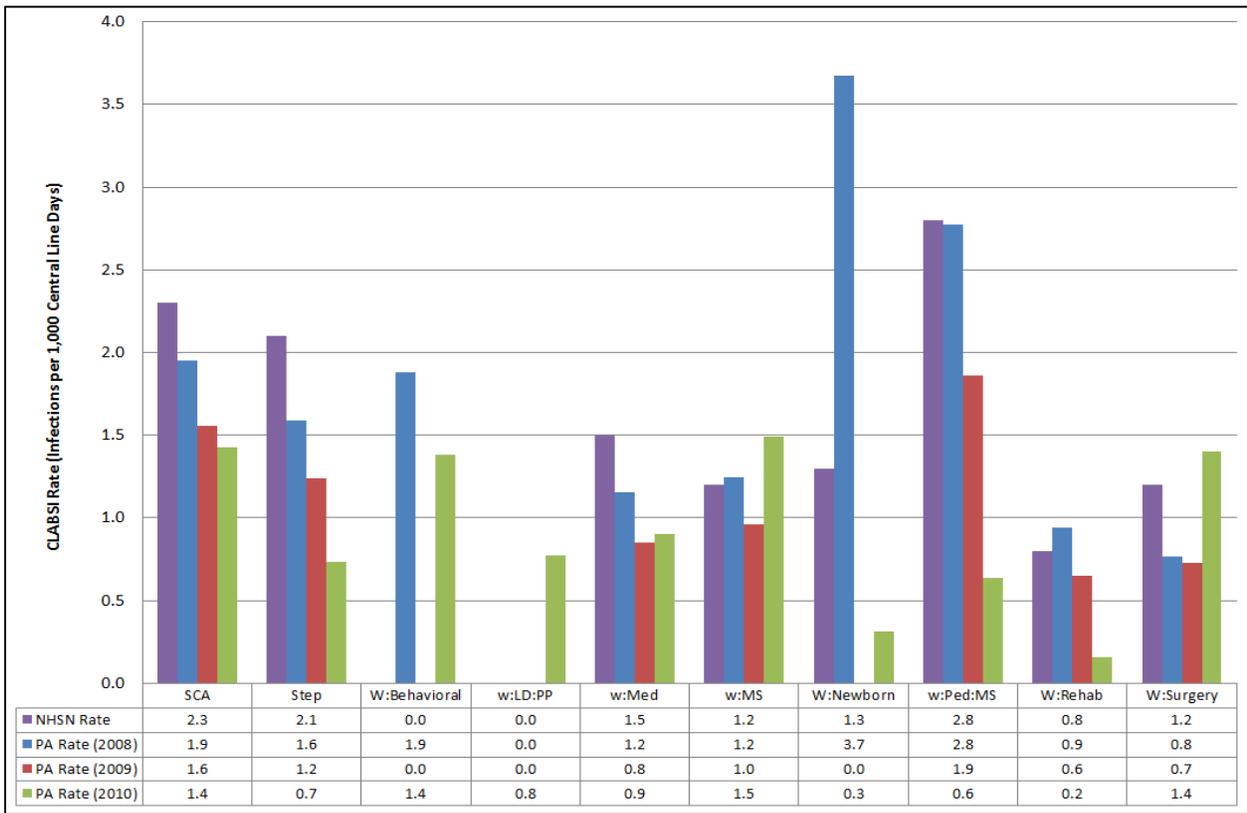


Figure 3.6. Preliminary Comparison of CLABSI Rates in Pennsylvania Hospitals by Selected Ward Locations 2008-2010 to Available NHSN from 2006-2008

	Preliminary Rates - Infections per 1,000 Central Line Days (95% CI)			# Infections
Critical Care	2008	2009	2010	2010
Burn	5.2 (2.4 - 8.0)	3.7 (2.2 - 5.3)	1.2 (0.1 - 2.2)	5
CT	1.3 (0.9 - 1.7)	0.8 (0.6 - 1.0)	0.7 (0.5 - 0.8)	42
Med	1.5 (1.1 - 1.9)	1.3 (1.1 - 1.6)	1.1 (0.8 - 1.3)	78
MS	1.7 (1.4 - 2.0)	1.5 (1.3 - 1.7)	0.8 (0.6 - 0.9)	146
Newborn	2.7 (2.1 - 3.3)	2.5 (2.1 - 2.9)	1.7 (1.4 - 2.1)	100
Peds	4.1 (3.0 - 5.1)	2.4 (1.8 - 2.9)	1.8 (1.3 - 2.3)	54
SpecMed	1.4 (0.9 - 1.9)	1.2 (0.9 - 1.5)	0.6 (0.4 - 0.9)	24
Surgery	1.8 (1.3 - 2.2)	1.1 (0.9 - 1.4)	0.6 (0.4 - 0.8)	33
Trauma	1.6 (1.0 - 2.2)	1.4 (1.0 - 1.8)	1.0 (0.6 - 1.3)	31
<b>CC sub-total</b>	<b>1.9 (1.7 - 2.0)</b>	<b>1.5 (1.4 - 1.6)</b>	<b>0.9 (0.9 - 1.0)</b>	<b>513</b>
	Preliminary Rates - Infections per 1,000 Central Line Days (95% CI)			# Infections
Wards	2008	2009	2010	2010
SCA	1.9 (1.7 - 2.2)	1.6 (1.4 - 1.7)	1.4 (1.3 - 1.6)	375
Step	1.6 (1.2 - 2.0)	1.2 (1.0 - 1.5)	0.7 (0.6 - 0.9)	73
W:Behavioral	1.9 (0.0 - 4.0)	0.0 (0.0 - 0.0)	1.4 (0.0 - 2.7)	4
w:LD:PP	0.0 (0.0 - 0.0)	0.0 (0.0 - 0.0)	0.8 (0.0 - 1.6)	3
w:Med	1.2 (0.9 - 1.4)	0.8 (0.7 - 1.0)	0.9 (0.5 - 1.3)	16
w:MS	1.2 (1.1 - 1.4)	1.0 (0.9 - 1.1)	1.5 (0.7 - 2.3)	14
W:Newborn	3.7 (0.0 - 10.9)	0.0 (0.0 - 0.0)	0.3 (0.0 - 0.7)	2
w:Ped:MS	2.8 (2.0 - 3.6)	1.9 (1.4 - 2.3)	0.6 (0.6 - 0.7)	411
W:Rehabilitation	0.9 (0.5 - 1.4)	0.6 (0.4 - 0.9)	0.2 (0.0 - 0.5)	1
W:Surgery	0.8 (0.5 - 1.0)	0.7 (0.6 - 0.9)	1.4 (0.7 - 2.1)	14
<b>Ward sub-total</b>	<b>1.4 (1.3 - 1.5)</b>	<b>1.1 (1.0 - 1.1)</b>	<b>0.9 (0.8 - 0.9)</b>	<b>913</b>
<b>Total</b>	<b>1.6 (1.5 - 1.6)</b>	<b>1.2 (1.2 - 1.3)</b>	<b>0.9 (0.8 - 0.9)</b>	<b>1426</b>

Figure 3.7. Preliminary Comparison of CLABSI Rates in Pennsylvania Hospitals by Selected Critical Care and Ward Locations 2008-2010

For a detailed table of CLABSI in Pennsylvania Hospitals by Location, Infection Rate and Device Utilization for 2009 – Refer to: Pennsylvania Department of Health. 2008 Report: Healthcare-Associated Infections (HAI) in Pennsylvania Hospitals at [www.doh.state.pa.us](http://www.doh.state.pa.us).

For information on CLABSI risk reduction strategies refer to the March 2010 *Advisory* article “Beyond the Bundle: Reducing the Risk of Central Line-Associated Bloodstream Infections” available at [www.patientsafetyauthority.org](http://www.patientsafetyauthority.org).

### **Ventilator-Associated Pneumonia (VAP)**

This report includes 594 VAPs from 60 Pennsylvania hospitals in 2010. This number represents 2.7% of all reported HAI events for the time period. The remaining hospitals either had no VAP, or

information was missing on event counts, ventilator days, and/or patient days. Several units were not included in the VAP analysis due to a lack of data or a lack of comparable data.

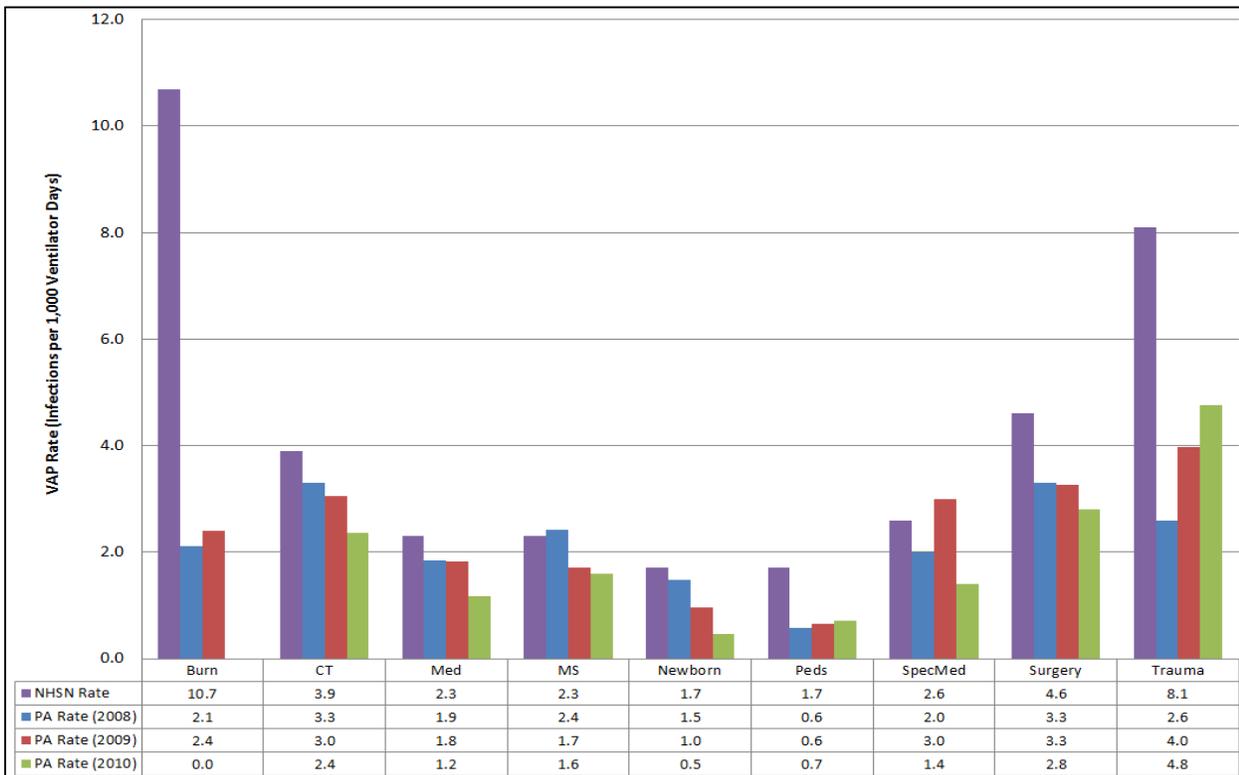
Compared to national estimates Pennsylvania VAP infection rates were lower than national estimates in all critical care and ward types (see Figures 3.8 and 3.9).

Pennsylvania’s 2010 VAP rates decreased from 2009 in all critical care units other than pediatric and trauma locations. The increase in the trauma unit is interesting in that the number of infections remained fairly constant but the number of ventilator days decreased, accounting for the higher rates. This can be further evidenced by the decrease in device utilization (ratio of ventilator days per patient days), dropping from 0.49 in 2009 to 0.46 in 2010.

Ward rates in 2010 for all locations except specialty care area locations were also lower compared to 2009. The overall decline in Pennsylvania hospital VAP rates over the 2008 through 2010 reporting period was significant in the pooled critical care area locations and overall pooled totals (see Figure 3.10).

Of note, two units had rates of 0.0 in 2010: the Burn unit and Medical ward. Although admirable at first glance, the number of infections in the preceding year were not significantly higher; the Burn unit decreased from three and the Medical ward dropped from seven.

**Note:** After applying exclusionary criteria, number of hospitals reporting VAP by year: 2008 – 87; 2009 – 93; 2010 – 60



**Figure 3.8. Preliminary Comparison of VAP Rates in Pennsylvania Hospitals by Selected Critical Care Locations 2008-2010 to Available NHSN from 2006-2008**

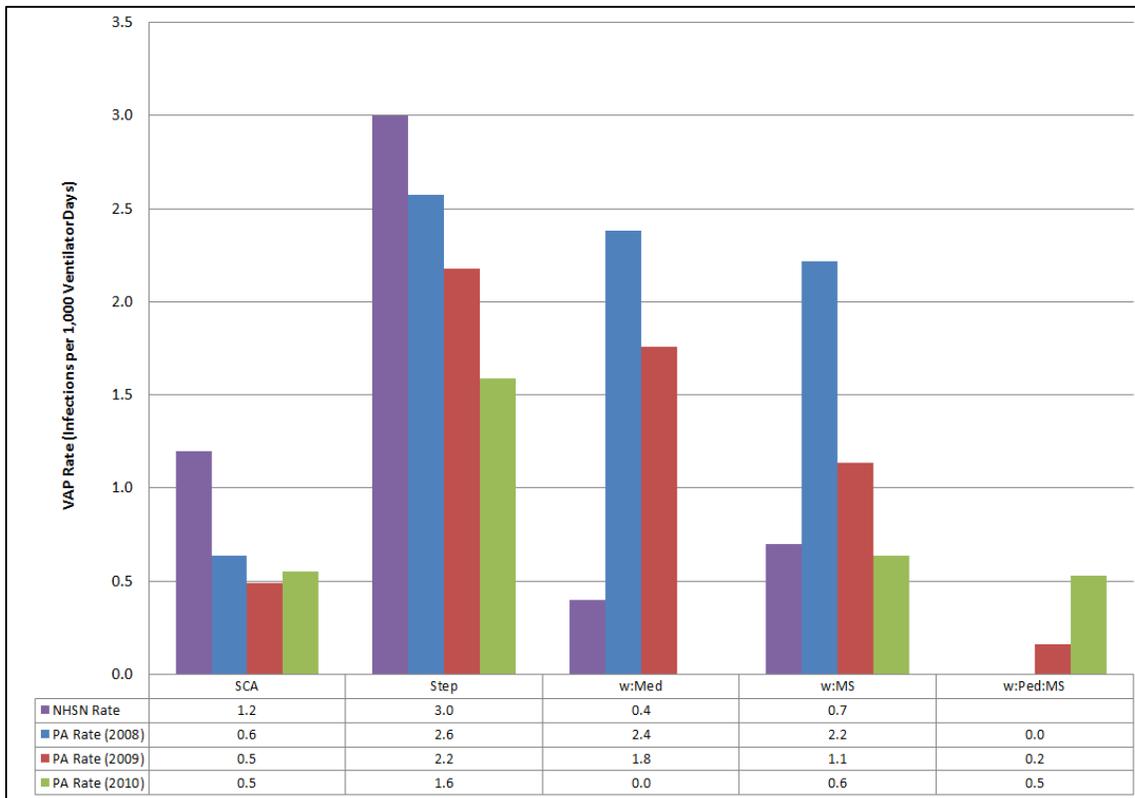


Figure 3.9. Preliminary Comparison of VAP Rates in Pennsylvania Hospitals by Selected Ward Locations 2008-2010 to Available NHSN from 2006-2008 (Note: No NHSN data available for w:Ped MS unit)

Critical Care	Preliminary Rates - Infections per 1,000 Ventilator Days (95% CI)			# Infections
	2008	2009	2010	2010
Burn	2.1 (0.0 - 5.0)	2.4 (0.0 - 5.1)	0.0 (0.0 - 0.0)	0
CT	3.3 (2.5 - 4.1)	3.0 (2.5 - 3.6)	2.4 (1.8 - 2.9)	73
Med	1.9 (1.3 - 2.4)	1.8 (1.5 - 2.2)	1.2 (0.9 - 1.5)	57
MS	2.4 (2.0 - 2.8)	1.7 (1.5 - 1.9)	1.6 (1.4 - 1.8)	186
Newborn	1.5 (0.9 - 2.0)	1.0 (0.6 - 1.3)	0.5 (0.2 - 0.7)	14
Peds	0.6 (0.1 - 1.1)	0.6 (0.3 - 1.0)	0.7 (0.4 - 1.1)	16
SpecMed	2.0 (1.2 - 2.8)	3.0 (2.3 - 3.7)	1.4 (0.9 - 2.0)	26
Surgery	3.3 (2.5 - 4.1)	3.3 (2.7 - 3.8)	2.8 (2.2 - 3.4)	87
Trauma	2.6 (1.6 - 3.6)	4.0 (3.1 - 4.8)	4.8 (3.8 - 5.7)	90
<b>CC sub-total</b>	<b>2.4 (2.1 - 2.6)</b>	<b>2.2 (2.0 - 2.3)</b>	<b>1.8 (1.7 - 2.0)</b>	<b>549</b>
Wards	Preliminary Rates - Infections per 1,000 Ventilator Days (95% CI)			# Infections
	2008	2009	2010	2010
SCA	0.6 (0.3 - 1.0)	0.5 (0.3 - 0.7)	0.5 (0.4 - 0.7)	33
Step	2.6 (1.1 - 4.0)	2.2 (1.2 - 3.1)	1.6 (0.8 - 2.3)	17
w:Med	2.4 (0.0 - 4.7)	1.8 (0.5 - 3.1)	0.0 (0.0 - 0.0)	0
w:MS	2.2 (0.8 - 3.7)	1.1 (0.4 - 1.8)	0.6 (0.1 - 1.2)	5
w:Ped:MS	0.0 (0.0 - 0.0)	0.2 (0.0 - 0.5)	0.5 (0.0 - 1.0)	4
<b>Ward sub-total</b>	<b>1.2 (0.8 - 1.5)</b>	<b>0.9 (0.7 - 1.1)</b>	<b>0.7 (0.5 - 0.9)</b>	<b>59</b>
<b>Total</b>	<b>2.2 (1.9 - 2.4)</b>	<b>2.0 (1.8 - 2.1)</b>	<b>1.6 (1.4 - 1.7)</b>	<b>608</b>

Figure 3.10. Preliminary Comparison of VAP Rates in Pennsylvania Hospitals by Selected Critical Care and Ward Locations 2008-2010

## **Surgical Site Infection Comparison (SSI)**

For the purposes of this report, 1,117 SSIs from 133 Pennsylvania hospitals in 2010 (only for procedure codes CARD, CBGB, CBGC, HPRO, HYST and KPRO)<sup>10</sup> were analyzed. This number represents 5.1% of all reported HAI events for the time period. The remaining hospitals either had no SSI for the named procedure codes, or information was missing on event counts, procedure or risk categories.

The risk of SSI varies by procedure and risk category. The SSI basic risk index is a score used to predict the risk of an SSI by scoring 0-3 for 3 risk factors: a scale of the patient's physical health prior to surgery, a contaminated or dirty/infected surgical site, or the operation lasts longer than it should for those types of procedures.<sup>11</sup>

Overall in 2010, the SSI rates for the six procedures observed in Pennsylvania hospitals were significantly lower than NHSN national estimates.<sup>12</sup> Authority analysis by risk category found Pennsylvania rates significantly lower than NHSN estimates for levels one through 3 individual risk index scores. Analysis by procedure category found Pennsylvania SSI rates significantly lower in the coronary bypass with chest and donor incision category.

Between 2009 and 2010 the decrease in the overall rate of SSIs per 100 cases from 1.4 in 2009 (CI 1.3-1.4) to 1.2 (CI 1.1-1.3) was not statistically significant. The SSI decrease in coronary bypass with chest and donor incision (CBGB) and coronary bypass graft with chest incision (CBGC) procedures over the two year reporting period was also not significant (see Figure 3.11).

These preliminary SSI rates for 2010 should be viewed cautiously, as several of the benchmarked procedures involve implants and resulting infections could be reported for up to one year following the date of the procedure. Therefore, infections resulting from procedures performed in 2010 will continue to be reported in 2011 and could increase the 2010 SSI rates presented here.

**Note:** After applying exclusionary criteria, number of hospitals reporting SSIs by year: 2008 – 121; 2009 – 139; 2010 – 133

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<sup>10</sup> The six procedures listed were chosen for surveillance by the Department of Health and are currently the only ones for which the total number of procedures are gathered from participating facilities, thus making them the only ones for which reliable rates can be calculated.

<sup>11</sup> CDC NNIS System. National Nosocomial Infection Surveillance (NNIS) system report, data summary from January 1992 to June 2004, issued October 2004. Am J Infect Control 2004; 32:470-85.

<sup>12</sup> National Healthcare Safety Network (NHSN) report: Data summary for 2006 through 2008, issued December 2009. Am J Infect Control 2009; 37:783-805.

Preliminary Rates - Infections per 100 Procedures (95% CI)							
	Risk Index Categories						
	0	1	2	3	0,1	2,3	Total
<b>CARD</b>							
PA Rates - 2008	-	-	-	-	1.1 (0.7 - 1.5)	0.8 (0.2 - 1.4)	1.0 (0.7 - 1.4)
PA Rates - 2009	-	-	-	-	1.3 (1.0 - 1.6)	0.9 (0.5 - 1.3)	1.2 (0.9 - 1.4)
PA Rates - 2010	-	-	-	-	1.1 (0.8 - 1.4)	1.0 (0.5 - 1.5)	1.1 (0.8 - 1.3)
NHSN (2006-08)	-	-	-	-	1.1 (1.0 - 1.2)	1.8 (1.5 - 2.2)	1.3 (1.2 - 1.4)
<b>CBGB</b>							
PA Rates - 2008	0.0 (0.0 - 0.0)	2.1 (1.7 - 2.6)	3.3 (2.3 - 4.2)	10.0 (0.0 - 29.6)	-	-	2.4 (2.0 - 2.8)
PA Rates - 2009	1.0 (0.0 - 3.0)	2.1 (1.8 - 2.4)	3.7 (3.0 - 4.5)	0.0 (0.0 - 0.0)	-	-	2.5 (2.2 - 2.8)
PA Rates - 2010	1.8 (0.0 - 5.3)	1.6 (1.3 - 1.9)	2.9 (2.2 - 3.6)	0.0 (0.0 - 0.0)	-	-	1.9 (1.6 - 2.2)
NHSN (2006-08)	0.3 (0.1 - 0.6)	2.5 (2.4 - 2.7)	4.3 (4.0 - 4.5)	8.5 (2.9 - 14.0)	-	-	2.9 (2.8 - 3.0)
<b>CBGC</b>							
PA Rates - 2008	-	-	-	-	1.7 (0.6 - 2.7)	3.2 (0.6 - 5.7)	2.0 (1.0 - 3.0)
PA Rates - 2009	-	-	-	-	1.7 (0.9 - 2.5)	1.9 (0.4 - 3.4)	1.8 (1.0 - 2.5)
PA Rates - 2010	-	-	-	-	1.5 (0.7 - 2.2)	1.3 (0.0 - 2.5)	1.4 (0.8 - 2.0)
NHSN (2006-08)	-	-	-	-	1.4 (1.1 - 1.6)	2.3 (1.7 - 2.8)	1.6 (1.4 - 1.8)
<b>HPRO</b>							
PA Rates - 2008	0.8 (0.5 - 1.1)	1.5 (1.2 - 1.8)	-	-	-	2.4 (1.5 - 3.2)	1.4 (1.2 - 1.6)
PA Rates - 2009	0.8 (0.6 - 1.0)	1.4 (1.2 - 1.6)	-	-	-	3.3 (2.6 - 4.0)	1.4 (1.2 - 1.6)
PA Rates - 2010	0.9 (0.7 - 1.1)	1.4 (1.2 - 1.6)	-	-	-	3.0 (2.4 - 3.7)	1.4 (1.2 - 1.6)
NHSN (2006-08)	0.7 (0.6 - 0.7)	1.4 (1.3 - 1.5)	-	-	-	2.4 (2.2 - 2.6)	1.3 (1.2 - 1.3)
<b>HYST</b>							
PA Rates - 2008	1.1 (0.7 - 1.4)	2.2 (1.6 - 2.8)	-	-	-	3.9 (2.3 - 5.5)	1.7 (1.4 - 2.0)
PA Rates - 2009	0.8 (0.6 - 1.0)	2.3 (1.8 - 2.7)	-	-	-	4.2 (3.1 - 5.4)	1.6 (1.4 - 1.8)
PA Rates - 2010	1.1 (0.8 - 1.3)	1.9 (1.5 - 2.3)	-	-	-	3.0 (2.1 - 3.9)	1.6 (1.4 - 1.8)
NHSN (2006-08)	1.1 (1.0 - 1.2)	2.2 (2.0 - 2.4)	-	-	-	4.0 (3.4 - 4.7)	1.6 (1.5 - 1.8)
<b>KPRO</b>							
PA Rates - 2008	0.4 (0.3 - 0.6)	1.1 (0.9 - 1.3)	-	-	-	1.9 (1.3 - 2.5)	0.9 (0.8 - 1.1)
PA Rates - 2009	0.6 (0.5 - 0.7)	1.0 (0.8 - 1.1)	-	-	-	2.3 (1.8 - 2.8)	0.9 (0.8 - 1.0)
PA Rates - 2010	0.4 (0.3 - 0.5)	0.9 (0.7 - 1.0)	-	-	-	2.1 (1.6 - 2.5)	0.8 (0.7 - 0.9)
NHSN (2006-08)	0.6 (0.5 - 0.6)	1.0 (0.9 - 1.1)	-	-	-	1.6 (1.4 - 1.8)	0.9 (0.8 - 0.9)
<b>Total</b>							
PA Rates - 2008	0.7 (0.6 - 0.8)	1.6 (1.4 - 1.7)	3.3 (2.3 - 4.2)	10.0 (0.0 - 29.6)	1.2 (0.8 - 1.6)	2.1 (1.7 - 2.5)	1.4 (1.3 - 1.5)
PA Rates - 2009	0.7 (0.6 - 0.8)	1.4 (1.3 - 1.6)	3.7 (3.0 - 4.5)	0.0 (0.0 - 0.0)	1.3 (1.0 - 1.6)	2.5 (2.2 - 2.8)	1.4 (1.3 - 1.4)
PA Rates - 2010	0.7 (0.6 - 0.7)	1.3 (1.2 - 1.4)	2.9 (2.2 - 3.6)	0.0 (0.0 - 0.0)	1.2 (0.9 - 1.4)	2.2 (1.9 - 2.5)	1.2 (1.1 - 1.3)
NHSN (2006-08)	0.7 (0.7 - 0.8)	1.7 (1.7 - 1.8)	4.3 (4.0 - 4.5)	8.5 (2.9 - 14)	1.2 (1.1 - 1.3)	2.1 (2.0 - 2.2)	1.6 (1.6 - 1.6)

Figure 3.11. Preliminary Comparison of SSI Rates in Pennsylvania Hospitals by Selected Procedures 2008-2010 to Available NHSN from 2006-2008

**Key for Figure 3.11:**

- CARD = Cardiac procedures;
- CBGB = Coronary artery bypass graft with both chest and donor site incisions;
- CBGC = Coronary artery bypass graft with a chest incision only;
- HPRO = Hip prosthesis;
- HYST = Abdominal hysterectomy;
- KPRO = Knee prosthesis.

## Nursing Home Data

During 2010, the Authority concentrated much of its effort together with guidance and support from the HAI Advisory Panel and the Department of Health on analysis of the first full year of infection reports and assessment of best practices. Nursing homes report HAIs to the Authority via the Pennsylvania Patient Safety Reporting System (PA-PSRS), based on a unique list of infections and criteria developed by the Authority and the HAI Advisory Panel. Nursing homes began reporting HAIs under MCare in June 2009.

The Authority's goals for HAI reporting from nursing homes are to:

- Implement the legal requirements of MCare as modified by Act 52 of 2007, by establishing and maintaining the reporting system and publishing data to allow the assessment of HAI prevention efforts in this care setting.
- Maintain the quality of the data through monthly validation.
- Analyze the data to support *Advisory* articles, educational programs, and the Annual Report.
- Use the data to identify facilities that are successful with their HAI prevention efforts and those that are unsuccessful in implementing best practices and to assist with methods of implementing improvement strategies.

### Analysis

A major focus in 2010 was the analysis of the 27,898 HAI events entered into PA-PSRS by Pennsylvania nursing homes. The following analysis includes 535 of the 714 active facilities (74.9%), spanning five care areas. Analysis was performed only on those nursing homes that met the following validation criteria:

Starting with 714 active Nursing Homes (NHs) as of December 31, 2010, the Authority excluded facilities for analysis based on the following:

- 1) Resident days were not entered for every month of 2010– 104 NHs excluded
- 2) Any month were occupancy was above 100% or below 50% (occupancy calculated by number of resident days divided by the number of beds listed for facility further divided by number of days in month) – 73 further NHs excluded
- 3) Infections reported without accompanying resident days at the unit level – two additional NHs excluded

Catheter-Associated Urinary Tract Infections (CAUTI) without accompanying catheter days – eight NHs were excluded for analysis for this infection type, along with those as detailed above

Figure 3.12 breaks down the number of care areas by type; this breakdown applies to all data to follow, except where specifically noted.

Number of Care Units, by Type	Total 2009	Total 2010
Dementia Unit	165	148
Mixed Unit	222	184
Nursing Unit	238	194
Skilled Nursing/Short-Term Rehabilitation Unit	352	289
Ventilator Dependent Unit	15	12
<b>Total</b>	<b>992</b>	<b>827</b>

Figure 3.12. Number of Care Units, by Type

## Urinary Tract Infections

A total of 3,883 urinary tract infections (UTIs) were reported during the analysis period, with 68.9% reported in residents without indwelling urinary catheters, and the highest rates of non-catheter related UTIs were reported in Mixed Units (0.15 per 1,000 resident days) (see Figure 3.13). Catheter-associated UTIs (CAUTIs) accounted for 31.1% of the total UTIs, with the highest rates reported from Dementia Units (1.62 per 1,000 catheter days). Overall, there was a statistically significant decrease in the rates of both UTIs and CAUTIs between 2009 and 2010.

An important thing nursing homes can do to reduce CAUTIs is to reduce their use of urinary catheters by using them only when medically necessary and removing them as soon as possible when they are no longer needed. At the state level, the device utilization rate (DUR) during the analysis period was 0.05, meaning that on average residents were catheterized about 5% of the time they spent in nursing homes. The DUR was highest in Ventilator Dependent Units (0.26) due to the severity of illness among residents in these units.

Unit Name (n)	2010				2009		Statistically Significant Changes (p≤0.05)
	Number of Infections	Resident Days	Catheter Days (n)	Device Utilization Rate *	Pooled Infection Rate† ‡ (95%C.I.)	Pooled Infection Rate† ‡ (95%C.I.)	
UTI- Resident without indwelling urinary catheter							
Dementia Unit (63)	212	1,896,826			0.11 (0.1 - 0.13)	0.15 (0.13 - 0.17)	
Mixed Unit (116)	935	6,355,253			0.15 (0.14 - 0.16)	0.15 (0.14 - 0.17)	
Nursing Unit (124)	781	6,789,948			0.12 (0.11 - 0.12)	0.14 (0.13 - 0.15)	Lower
SN/STR Unit (156)	738	7,327,296			0.10 (0.09 - 0.11)	0.14 (0.13 - 0.15)	Lower
Vent Unit (3)	8	124,607			0.06 (0.02 - 0.11)	0.06 (0.00 - 0.12)	
Total (353)	2,674	22,493,930			0.12 (0.11 - 0.12)	0.14 (0.14 - 0.15)	Lower
CAUTI- Resident with indwelling urinary catheter							
Dementia Unit (20)	34	1,896,826	21,000 (142)	0.01	1.62 (1.07 - 2.16)	0.75 (0.31 - 1.20)	
Mixed Unit (105)	380	6,355,253	298,682 (181)	0.05	1.27 (1.14 - 1.40)	1.50 (1.33 - 1.67)	
Nursing Unit (92)	323	6,789,948	291,039 (190)	0.04	1.11 (0.99 - 1.23)	1.31 (1.14 - 1.47)	
SN/STR Unit (148)	442	7,327,296	411,529 (285)	0.06	1.07 (0.97 - 1.17)	1.32 (1.18 - 1.46)	Lower
Vent Unit (6)	30	124,607	32,342 (12)	0.26	0.93 (0.60 - 1.26)	1.19 (0.68 - 1.70)	
Total (484)	1,209	22,493,930	1,054,592 (527)	0.05	1.15 (1.08 - 1.21)	1.35 (1.26 - 1.44)	Lower

Figure 3.13. Urinary Tract Infections, Pooled Mean Rates, by Subcategory and Care Unit, 2009-2010

\*Device utilization rate: number of urinary catheter days ÷ number of resident days

†UTI rate calculation: number of UTI ÷ number of resident days x 1000

‡CAUTI rate calculation: number of CAUTI ÷ number of catheter days x 1000

SN/STR Unit = Skilled Nursing/ Short-Term Rehabilitation Unit

Vent Unit = Ventilator Dependent Unit

For CAUTIs, nursing homes are asked to identify the medical justification (Figure 3.14) for why the resident needed a urinary catheter. The most frequently reported reasons for catheter use are that the resident was admitted with the catheter and that the resident had urinary retention (i.e., inability to void).

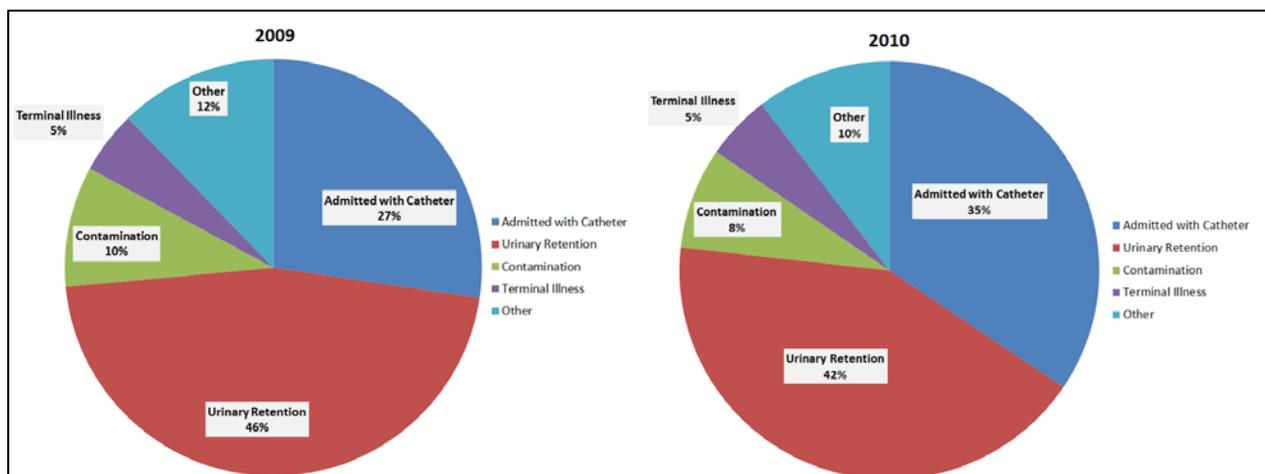


Figure 3.14. Justification of Catheter Use, 2009 - 2010

### Respiratory Tract Infections

Of the 9,929 respiratory tract infections reported, 99.4% were lower respiratory tract infections (LRTI), a subcategory that includes pneumonia, bronchitis, and tracheobronchitis. The highest number of events was reported from the Skilled Nursing/ Short-Term Rehabilitation units, which also reported the highest number of resident days. Rates of respiratory tract infections were highest on the Ventilator Dependent units (0.82 per 1,000 resident days) (see Figure 3.15).

Unit Name(n)	Number of Infections (2010)	Resident Days (2010)	2010 Pooled Infection Rate (12 months) (95% C.I.)	2009 Pooled Infection Rate* (6 months) (95% C.I.)	Statistically Significant Changes (p≤0.05)
<b>Lower respiratory tract infection (pneumonia/ bronchitis/ tracheobronchitis) (LRTI)</b>					
Dementia Unit(117)	687	1,896,826	0.36 (0.34 - 0.39)	0.38 (0.34 - 0.41)	
Mixed Unit (171)	3,034	6,355,253	0.48 (0.46 - 0.49)	0.48 (0.45 - 0.50)	
Nursing Unit (169)	2,956	6,789,948	0.44 (0.42 - 0.45)	0.45 (0.43 - 0.47)	
SN/STR Unit (234)	3,113	7,327,296	0.42 (0.41 - 0.44)	0.44 (0.42 - 0.46)	
Vent Unit (7)	75	124,607	0.60 (0.47 - 0.74)	0.79 (0.58 - 1.00)	
Total (484)	9,865	22,493,930	0.44 (0.43 - 0.45)	0.45 (0.44 - 0.46)	
<b>Influenza-like illness (ILI)</b>					
Dementia Unit (6)	7	1,896,826	0.00 (0.00 - 0.01)	0.01 (0.00 - 0.01)	
Mixed Unit (11)	21	6,355,253	0.00 (0.00 - 0.00)	0.01 (0.00 - 0.01)	
Nursing Unit (16)	20	6,789,948	0.00 (0.00 - 0.00)	0.01 (0.00 - 0.01)	
SN/STR Unit (12)	16	7,327,296	0.00 (0.00 - 0.00)	0.01 (0.01 - 0.01)	
Vent Unit (0)	0	124,607	0.00 (0.00 - 0.00)	0.03 (0.00 - 0.07)	
Total (42)	64	22,493,930	0.00 (0.00 - 0.00)	0.01 (0.01 - 0.01)	Lower
<b>Total Respiratory Tract Infections</b>					
Dementia Unit (117)	694	1,896,826	0.37 (0.34 - 0.39)	0.38 (0.35 - 0.42)	
Mixed Unit (171)	3,055	6,355,253	0.48 (0.46 - 0.50)	0.48 (0.46 - 0.50)	
Nursing Unit (169)	2,976	6,789,948	0.44 (0.42 - 0.45)	0.45 (0.43 - 0.47)	
SN/STR Unit (234)	3,129	7,327,296	0.43 (0.41 - 0.44)	0.45 (0.43 - 0.47)	
Vent Unit (7)	75	124,607	0.60 (0.47 - 0.74)	0.82 (0.60 - 1.03)	
Total (484)	9,929	22,493,930	0.44 (0.43 - 0.45)	0.46 (0.44 - 0.47)	

Figure 3.15. Respiratory Tract Infections, Pooled Mean Rates, by Subcategory and Care Unit, 2009-2010  
\* Rate calculation: number of respiratory tract infections ÷ number of resident days x 1000  
SN/STR Unit = Skilled Nursing/ Short-Term Rehabilitation Unit  
Vent Unit = Ventilator Dependent Unit

The Authority is also able to review various best practices related to selected HAI reports. On a statewide level the majority of residents who had LRTI in the analysis time period had received the influenza and pneumococcal pneumonia vaccines (PPV). Residents with these types of infections were less likely to have their PPV status current than the influenza vaccine (see Figure 3.16). The Centers for Disease Control and Prevention (CDC) Healthy People 2010 goal for vaccinations of elderly individuals is 90%.<sup>13</sup> Strategies to enhance vaccination program success can be found in the 2009 December *Pennsylvania Patient Safety Advisory* article “Increasing Influenza and Pneumonia Vaccination Rates in Long-Term Care” at [www.patientsafetyauthority.org](http://www.patientsafetyauthority.org).

<sup>13</sup> Centers for Disease Control and Prevention. Healthy People 2010: Understanding and Improving Health. November 2000; Vol. 1 Part A. Focus Area 14: 103-106 (cited 2009 Aug 6) .Available from Internet: <http://www.healthypeople.gov/document/tableofcontents.htm>

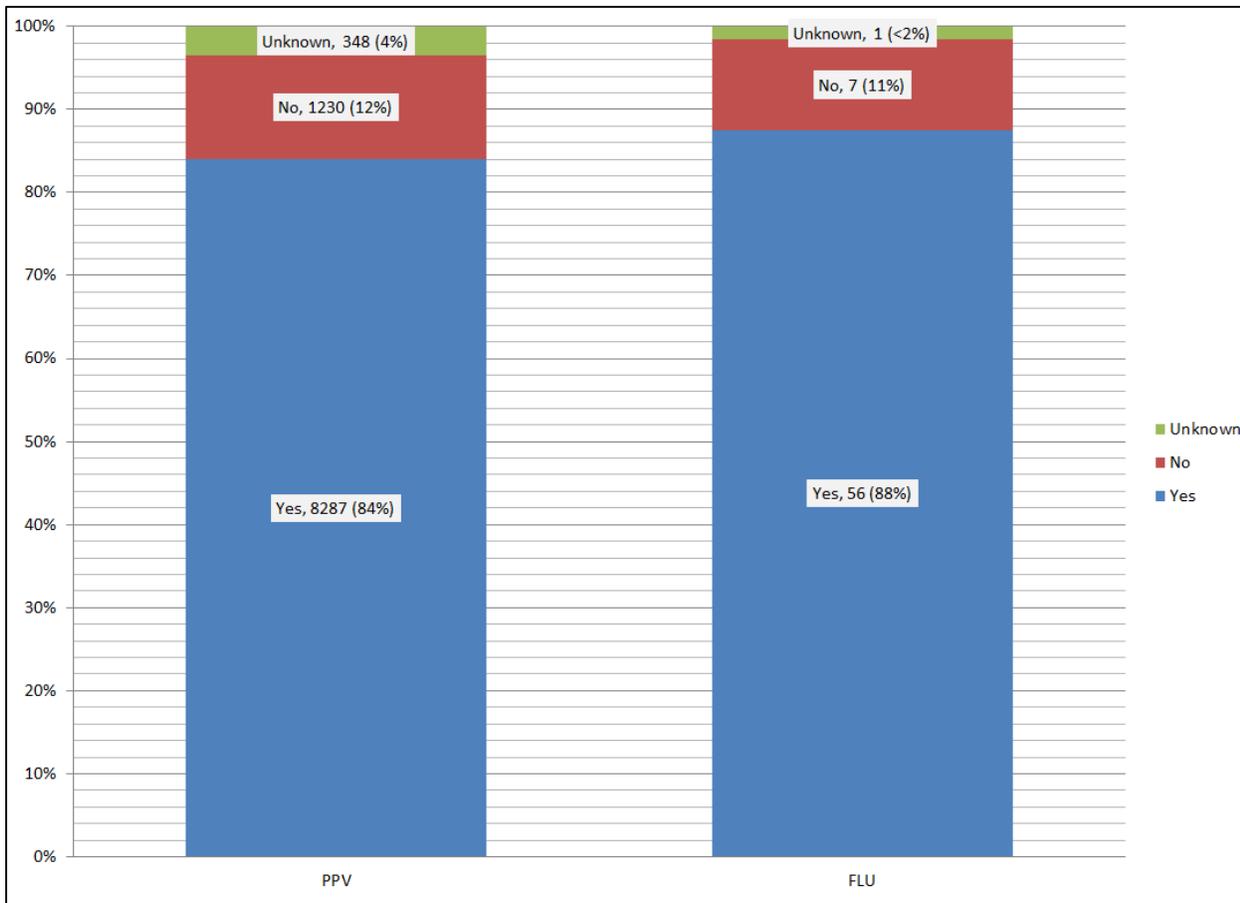


Figure 3.16. Vaccination Status for Residents with Lower Respiratory Tract Infection

Note: Categories are responses to the questions: “Did the resident receive the influenza vaccine for this year’s influenza season?” and “At the time of submitting this report, is the resident’s pneumococcal vaccine status up to date?”

### **Skin and Soft Tissue Infections**

Statewide, nursing homes reported 5,214 skin and soft tissue infections (SSTIs) during the analysis period at a rate of 0.23 per 1,000 resident days (see Figure 3.17). The most commonly reported type of SSTI was Cellulitis; at 2,568 reports, this infection type accounts for 49.3% of all SSTIs. The highest rate of infection in all SSTI subcategories was reported from Mixed Units at 0.27 per 1,000 resident days. Between 2009 and 2010, there was a slight but statistically significant decline in the rate of SSTIs reported, from 0.28 to 0.23 per 1,000 resident days.

Unit Name (n)	Number of Infections (2010)	Resident Days (2010)	2010 Pooled Infection Rate (12 Months) (95%C.I.)	2009 Pooled Infection Rate* (6 months) (95%C.I.)	Statistically Significant Changes (p≤0.05)
<b>Vascular or diabetic ulcer (chronic/non-healing)</b>					
Dementia Unit (6)	6	1,896,826	0.00 (0.00 - 0.01)	0.01 (0.00 - 0.01)	
Mixed Unit (43)	82	6,355,253	0.01 (0.01 - 0.02)	0.01 (0.01 - 0.02)	
Nursing Unit (43)	60	6,789,948	0.01 (0.01 - 0.01)	0.02 (0.01 - 0.02)	
SN/STR Unit (62)	91	7,327,296	0.01 (0.01 - 0.01)	0.01 (0.01 - 0.02)	
Vent Unit (0)	0	124,607	0.00 (0.00 - 0.00)	0.01 (0.00 - 0.04)	
Total (142)	239	22,493,930	0.01 (0.01 - 0.01)	0.01 (0.01 - 0.02)	
<b>Decubitus ulcer (pressure-related)</b>					
Dementia Unit (14)	17	1,896,826	0.01 (0.00 - 0.01)	0.01 (0.01 - 0.02)	
Mixed Unit (63)	121	6,355,253	0.02 (0.02 - 0.02)	0.02 (0.02 - 0.03)	
Nursing Unit (48)	86	6,789,948	0.01 (0.01 - 0.02)	0.02 (0.02 - 0.03)	
SN/STR Unit (71)	136	7,327,296	0.02 (0.02 - 0.02)	0.02 (0.02 - 0.02)	
Vent Unit (2)	3	124,607	0.02 (0.00 - 0.05)	0.01 (0.00 - 0.04)	
Total (175)	363	22,493,930	0.02 (0.01 - 0.02)	0.02 (0.02 - 0.02)	
<b>Burn-associated</b>					
Dementia Unit (1)	1	1,896,826	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
Mixed Unit (1)	1	6,355,253	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
Nursing Unit (0)		6,789,948	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
SN/STR Unit (3)	3	7,327,296	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
Vent Unit (0)		124,607	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
Total (5)	5	22,493,930	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
<b>Device-associated</b>					
Dementia Unit (5)	9	1,896,826	0.00 (0.00 - 0.01)	0.00 (0.00 - 0.01)	
Mixed Unit (43)	56	6,355,253	0.01 (0.01 - 0.01)	0.01 (0.01 - 0.01)	
Nursing Unit (35)	42	6,789,948	0.01 (0.00 - 0.01)	0.01 (0.00 - 0.01)	
SN/STR Unit (47)	56	7,327,296	0.01 (0.01 - 0.01)	0.01 (0.01 - 0.01)	
Vent Unit (3)	4	124,607	0.03 (0.00 - 0.06)	0.04 (0.00 - 0.09)	
Total (104)	167	22,493,930	0.01 (0.01 - 0.01)	0.01 (0.01 - 0.01)	
<b>Cellulitis</b>					
Dementia Unit (77)	205	1,896,826	0.11 (0.09 - 0.12)	0.12 (0.10 - 0.14)	
Mixed Unit (133)	829	6,355,253	0.13 (0.12 - 0.14)	0.14 (0.13 - 0.15)	
Nursing Unit (140)	750	6,789,948	0.11 (0.10 - 0.12)	0.13 (0.12 - 0.14)	
SN/STR Unit (186)	771	7,327,296	0.11 (0.10 - 0.11)	0.13 (0.12 - 0.14)	Lower
Vent Unit (4)	13	124,607	0.10 (0.05 - 0.16)	0.15 (0.06 - 0.24)	
Total (409)	2,568	22,493,930	0.11 (0.11 - 0.12)	0.13 (0.13 - 0.14)	Lower
<b>Other</b>					
Dementia Unit (52)	119	1,896,826	0.06 (0.05 - 0.07)	0.10 (0.08 - 0.12)	Lower
Mixed Unit (119)	614	6,355,253	0.10 (0.09 - 0.10)	0.10 (0.09 - 0.11)	
Nursing Unit (122)	584	6,789,948	0.09 (0.08 - 0.09)	0.11 (0.10 - 0.12)	Lower
SN/STR Unit (163)	544	7,327,296	0.07 (0.07 - 0.08)	0.10 (0.09 - 0.10)	Lower
Vent Unit (8)	11	124,607	0.09 (0.04 - 0.14)	0.13 (0.05 - 0.22)	
Total (361)	1,872	22,493,930	0.08 (0.08 - 0.09)	0.10 (0.10 - 0.11)	Lower
<b>Total Skin and Soft Tissue Infections</b>					
Dementia Unit (155)	357	1,896,826	0.19 (0.17 - 0.21)	0.24 (0.21 - 0.27)	
Mixed Unit (402)	1,703	6,355,253	0.27 (0.26 - 0.28)	0.29 (0.27 - 0.30)	
Nursing Unit (388)	1,522	6,789,948	0.22 (0.21 - 0.24)	0.28 (0.26 - 0.30)	Lower
SN/STR Unit (532)	1,601	7,327,296	0.22 (0.21 - 0.23)	0.27 (0.26 - 0.29)	Lower
Vent Unit (17)	31	124,607	0.25 (0.16 - 0.34)	0.35 (0.21 - 0.49)	
Total (471)	5,214	22,493,930	0.23 (0.23 - 0.24)	0.28 (0.27 - 0.29)	Lower

Figure 3.17. Skin and Soft Tissue Infections, Pooled mean Rates, by Subcategory and Care Unit, 2009-2010

\* Rate calculation: number of skin and soft tissue infections ÷ number of resident days x 1000

SN/STR Unit = Skilled Nursing/ Short-Term Rehabilitation Unit

Vent Unit = Ventilator Dependent Unit

## Gastrointestinal Infections

A total of 8,495 gastrointestinal infections (GIs) were reported statewide (see Figure 3.18). Just under 25% of the GI events were identified as positive for *Clostridium difficile* (*C.diff*). The Skilled Nursing/ Short-Term Rehabilitation Unit reported the most events and the highest rates of GI infections overall. While a few unit types saw a statistically significant decrease in GI rates between 2009 and 2010, the rate for GIs not associated with *C. diff* were three times higher in 2010 than in 2009. This may be due in part to data collection for 2009 began in July of that year, well after the months in which the largest numbers of that infection type were reported in 2010 (January through March).

Unit Name (n)	Number of Infections (2010)	Resident Days (2010)	2010 Pooled Infection Rate (12 months) (95% C.I.)	2009 Pooled Infection Rate* (6 months) (95% C.I.)	Statistically Significant Changes (p≤0.05)
<b>Gastrointestinal Infections Reported with Associated <i>Clostridium difficile</i></b>					
Dementia Unit (35)	60	1,896,826	0.03 (0.02 - 0.04)	0.04 (0.02 - 0.05)	
Mixed Unit (133)	597	6,355,253	0.09 (0.09 - 0.10)	0.10 (0.09 - 0.11)	
Nursing Unit (127)	426	6,789,948	0.06 (0.06 - 0.07)	0.10 (0.09 - 0.11)	Lower
SN/STR Unit (217)	963	7,327,296	0.13 (0.12 - 0.14)	0.14 (0.13 - 0.15)	
Vent Unit (5)	38	124,607	0.30 (0.21 - 0.40)	0.77 (0.56 - 0.98)	Lower
Total (412)	2,084	22,493,930	0.09 (0.09 - 0.10)	0.11 (0.10 - 0.12)	
<b>Gastrointestinal Infections Reported without Associated <i>Clostridium difficile</i></b>					
Dementia Unit (77)	664	1,896,826	0.35 (0.32 - 0.38)	0.16 (0.14 - 0.19)	Higher
Mixed Unit (102)	1834	6,355,253	0.29 (0.28 - 0.30)	0.10 (0.09 - 0.11)	Higher
Nursing Unit (107)	1717	6,789,948	0.25 (0.24 - 0.26)	0.09 (0.08 - 0.10)	Higher
SN/STR Unit (158)	2,192	7,327,296	0.30 (0.29 - 0.31)	0.10 (0.09 - 0.11)	Higher
Vent Unit (1)	4	124,607	0.03 (0.00 - 0.06)	0.06 (0.00 - 0.12)	
Total (315)	6,411	22,493,930	0.29 (0.28 - 0.29)	0.10 (0.10 - 0.11)	Higher
<b>Total Gastrointestinal Infections Reported</b>					
Dementia Unit (95)	724	1,896,826	0.38 (0.35 - 0.41)	0.20 (0.17 - 0.22)	Higher
Mixed Unit (158)	2,431	6,355,253	0.38 (0.37 - 0.40)	0.19 (0.18 - 0.21)	Higher
Nursing Unit (157)	2,143	6,789,948	0.32 (0.30 - 0.33)	0.19 (0.18 - 0.20)	Higher
SN/STR Unit (246)	3,155	7,327,296	0.43 (0.42 - 0.45)	0.24 (0.23 - 0.26)	Higher
Vent Unit (6)	42	124,607	0.34 (0.24 - 0.44)	0.83 (0.62 - 1.05)	Lower
Total (471)	8,495	22,493,930	0.38 (0.37 - 0.39)	0.21 (0.21 - 0.22)	Higher

Figure 3.18. Gastrointestinal Infections, Pooled Mean Rates, by Subcategory and Care Unit, 2009-2010  
 \* Rate calculation: number of gastrointestinal infections ÷ number of resident days x 1000  
 SN/STR Unit = Skilled Nursing/ Short-Term Rehabilitation Unit  
 Vent Unit = Ventilator Dependent Unit

Risk reduction strategies for prevention of *C. diff* and Norovirus can be found in the *Pennsylvania Patient Safety Advisory* articles “*Clostridium Difficile* Infections in Nursing Homes” (March 2010), and “Controlling the Annual Threat of Norovirus Gastroenteritis Outbreaks” (December 2010) at [www.patientsafetyauthority.org](http://www.patientsafetyauthority.org).

## Other Infections

Infections categorized under the “Other” category in the Authority’s reporting system are those that are less frequent in the nursing home population than those discussed above but which are being tracked due to their severity. The most prevalent of these infections was primary bloodstream infection, followed by osteomyelitis and intra-abdominal infections (see Figure 3.19).

Unit Name(n)	Number of Infections (2010)	Resident Days (2010)	2010 Pooled Infection Rate (12 Months) (95%C.I.)	2009 Pooled Infection Rate* (6 months) (95%C.I.)	Statistically Significant Changes (p≤0.05)
<b>Intra-abdominal infection (Peritonitis/deep abscess)</b>					
Dementia Unit (0)		1,896,826	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
Mixed Unit (5)	7	6,355,253	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
Nursing Unit (6)	6	6,789,948	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
SN/STR Unit (4)	4	7,327,296	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
Vent Unit (0)		124,607	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
<b>Total (142)</b>	<b>17</b>	<b>22,493,930</b>	<b>0.00 (0.00 - 0.00)</b>	<b>0.00 (0.00 - 0.00)</b>	
<b>Meningitis</b>					
Dementia Unit (0)		1,896,826	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
Mixed Unit (0)		6,355,253	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
Nursing Unit (1)	1	6,789,948	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
SN/STR Unit (0)		7,327,296	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
Vent Unit (0)		124,607	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
<b>Total (1)</b>	<b>1</b>	<b>22,493,930</b>	<b>0.00 (0.00 - 0.00)</b>	<b>0.00 (0.00 - 0.00)</b>	
<b>Viral hepatitis</b>					
Dementia Unit (0)		1,896,826	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
Mixed Unit (0)		6,355,253	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
Nursing Unit (0)		6,789,948	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
SN/STR Unit (1)	1	7,327,296	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
Vent Unit (0)		124,607	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
<b>Total (1)</b>	<b>1</b>	<b>22,493,930</b>	<b>0.00 (0.00 - 0.00)</b>	<b>0.00 (0.00 - 0.00)</b>	
<b>Osteomyelitis</b>					
Dementia Unit (2)	2	1,896,826	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.01)	
Mixed Unit (19)	20	6,355,253	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.01)	
Nursing Unit (20)	23	6,789,948	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.01)	
SN/STR Unit (26)	29	7,327,296	0.00 (0.00 - 0.01)	0.01 (0.00 - 0.01)	
Vent Unit (0)		124,607	0.00 (0.00 - 0.00)	0.01 (0.00 - 0.04)	
<b>Total (66)</b>	<b>74</b>	<b>22,493,930</b>	<b>0.00 (0.00 - 0.00)</b>	<b>0.00 (0.00 - 0.01)</b>	
<b>Primary bloodstream infection</b>					
Dementia Unit (1)	1	1,896,826	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)	
Mixed Unit (46)	79	6,355,253	0.01 (0.01 - 0.02)	0.01 (0.01 - 0.02)	
Nursing Unit (31)	73	6,789,948	0.01 (0.01 - 0.01)	0.01 (0.01 - 0.01)	
SN/STR Unit (56)	93	7,327,296	0.01 (0.01 - 0.02)	0.02 (0.02 - 0.02)	
Vent Unit (5)	9	124,607	0.07 (0.03 - 0.12)	0.22 (0.11 - 0.33)	
<b>Total (132)</b>	<b>255</b>	<b>22,493,930</b>	<b>0.01 (0.01 - 0.01)</b>	<b>0.01 (0.01 - 0.02)</b>	
<b>Total Other Infections</b>					
Dementia Unit (3)	3	1,896,826	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.01)	
Mixed Unit (70)	106	6,355,253	0.02 (0.01 - 0.02)	0.02 (0.01 - 0.02)	
Nursing Unit (58)	103	6,789,948	0.02 (0.01 - 0.02)	0.02 (0.01 - 0.02)	
SN/STR Unit (87)	127	7,327,296	0.02 (0.01 - 0.02)	0.03 (0.02 - 0.03)	
Vent Unit (5)	9	124,607	0.07 (0.03 - 0.12)	0.23 (0.12 - 0.35)	
<b>Total (183)</b>	<b>348</b>	<b>22,493,930</b>	<b>0.02 (0.01 - 0.02)</b>	<b>0.02 (0.02 - 0.02)</b>	

Figure 3.19. Other Infections, Pooled Mean Rates, by Subcategory and Care Unit, 2009-2010

\*Rate calculation: infection category ÷ total number of resident days x 1000

SN/STR Unit = Skilled Nursing/ Short-Term Rehabilitation Unit

Vent Unit = Ventilator Dependent Unit

While UTIs are generally reported as the most common universal HAI, Pennsylvania’s nursing home data demonstrated a different picture. The set of criteria adopted in Pennsylvania to define UTIs is more stringent than criteria used elsewhere. The criteria were developed to exclude, for example, asymptomatic bacteruria (bacteria in the urine in the absence of symptoms) which accounts for many UTIs in published studies. Pennsylvania’s criteria also do not rely on a physician’s prescribing antibiotics as a sign of infection, because antibiotics are overused and are not reliable indicators of infection.

### Facility response to infection

The facility response to all infections reported is a required field in the Authority’s reporting system. SSTIs were most commonly treated in the facility, while infections in the “other” categories—which tend to be more rare but more severe--were most likely to require transfer to another facility for treatment. GI infections were most likely to receive no treatment (see Figure 3.20).

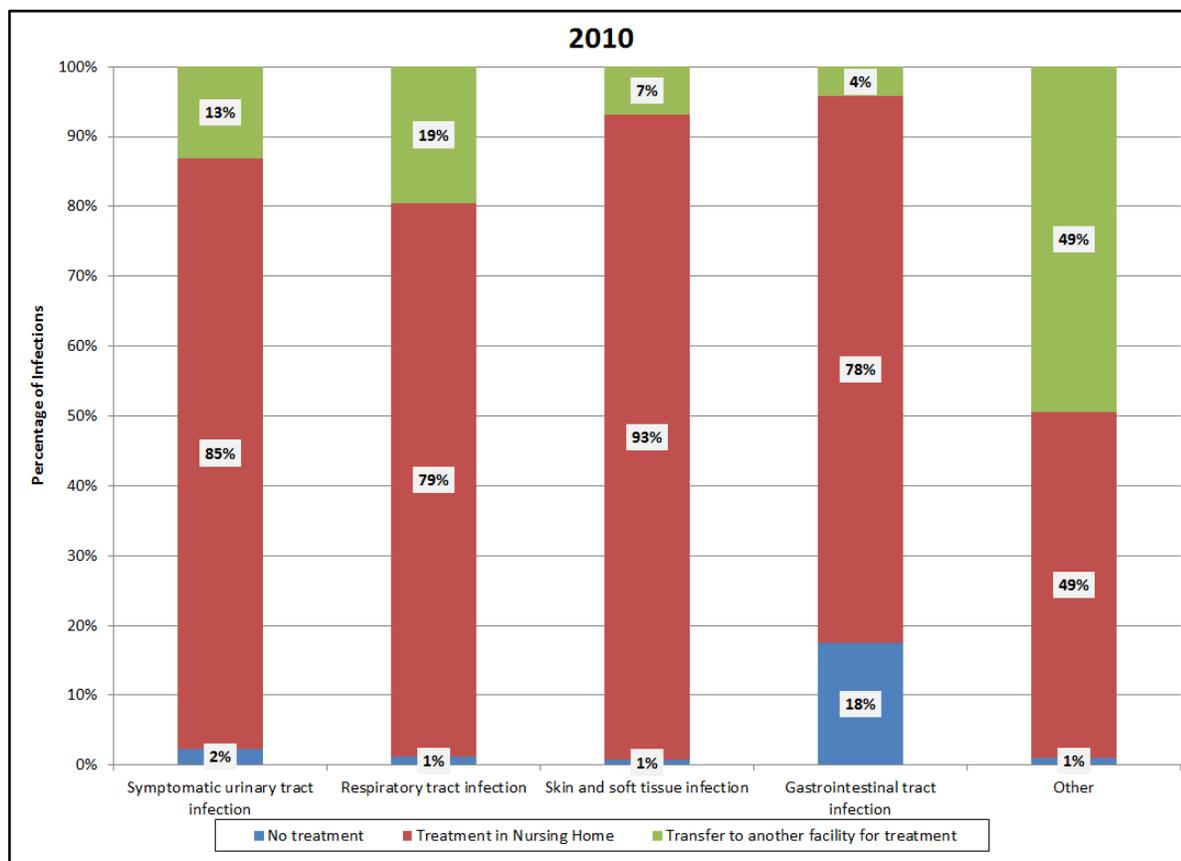


Figure 3.20. Facility Response to Infection by Infection Type, 2010

## Organisms Identified in Laboratory Studies

A secondary required field in all nursing home HAI reports is the listing of specific organisms found during laboratory testing. The most commonly identified organism was *C. diff*, which was reported in 2,096 of all infections (7.5%). This was particularly prevalent in the Ventilator Dependent Units, where 20% of all infections from that unit tested positive for *C. diff* (see Figure 3.21). Nine percent (9%) of the tested infections in the “Other” category tested positive for MRSA, the majority of those categorized as Primary Bloodstream Infections (see Figure 3.22).

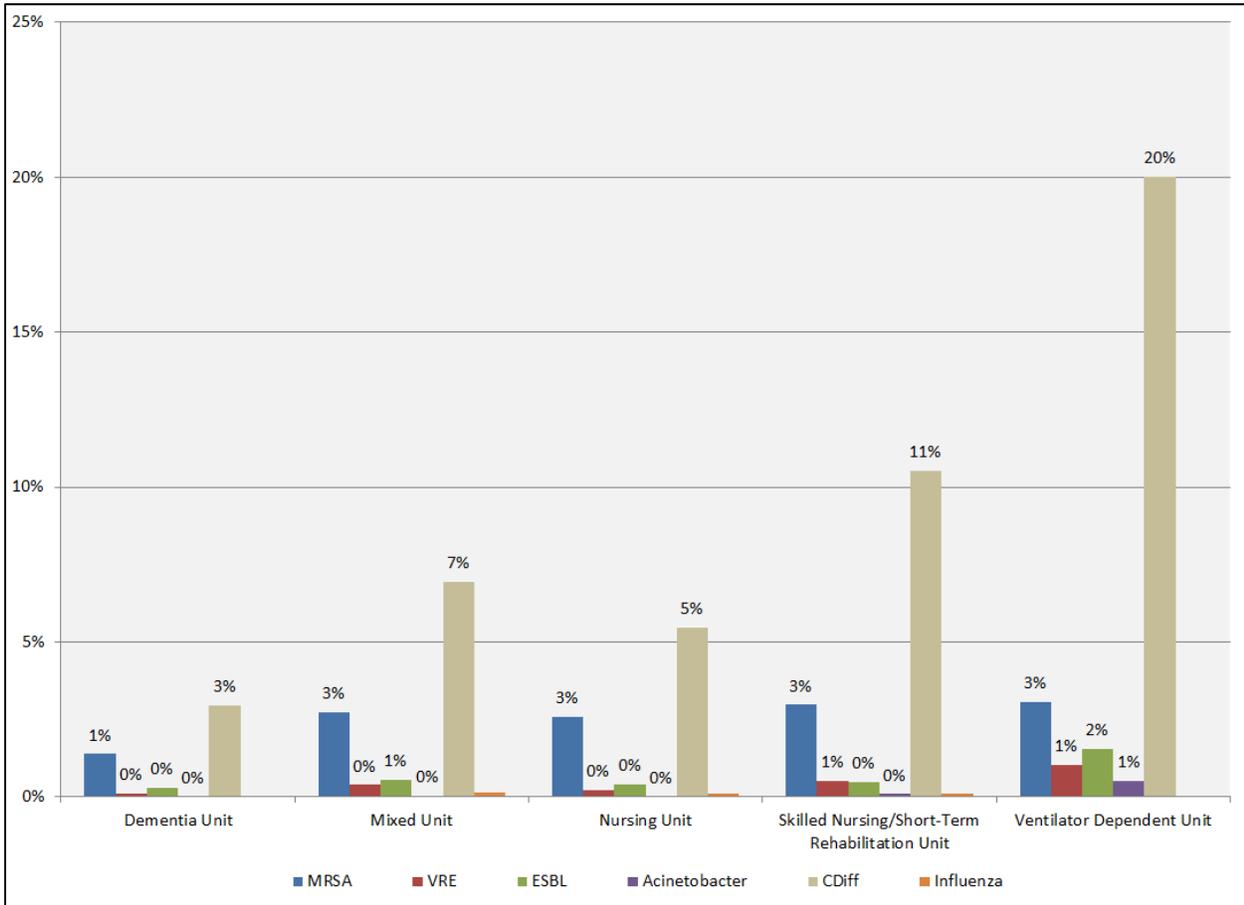


Figure 3.21. Organisms Identified by Laboratory Testing

Infection Type	MRSA		VRE		ESBL		C difficile		Influenza		Negative - Other		Overall
	#	% Tested	#	% Tested	#	% Tested	#	% Tested	#	% Tested	#	% Tested	# Tested
Symptomatic urinary tract infection	107	3%	53	2%	100	3%	4	0%	0	0%	3081	92%	3345
Respiratory tract infection	90	6%	2	0%	9	1%	7	0%	23	2%	1274	91%	1405
Skin and soft tissue infection	496	41%	9	1%	19	2%	1	0%	2	0%	682	56%	1209
Gastrointestinal tract infection	1	0%	32	1%	0	0%	2084	74%	3	0%	702	25%	2822
Other - Intra-abdominal infection	1	0%	1	0%	0	0%	0	0%	0	0%	292	99%	294
Other - Meningitis	0	0%	0	0%	0	0%	0	0%	0	0%	1	100%	1
Other - Viral hepatitis	0	0%	0	0%	0	0%	0	0%	0	0%	1	100%	1
Other - Osteomyelitis	13	45%	1	3%	0	0%	0	0%	0	0%	15	52%	29
Other - Primary bloodstream infection	38	15%	4	2%	5	2%	0	0%	1	0%	207	81%	255
Total Infections	746	8%	102	1%	133	1%	2096	23%	29	0%	5969	66%	9075

**Figure 3.22. Number of Organisms by Infection Type and Percentage of Named Organism Found Through Laboratory Testing on Infection Type**

Notes: Columns display the number of each organism found through laboratory testing (#), the percentage of each organism found through testing relative to all testing for that infection type (% Tested), and the number of laboratory tests done on each infection type (Overall # Tested). Laboratory testing may have occurred on infections reported to PA-PSRS, but results were negative or were positive on organisms not specifically named above.

## **Nursing Home Data Integrity and Validation**

The primary responsibility for the integrity of the nursing home HAI data rests with the nursing homes themselves. The Authority's reporting system assists the facilities in maintaining their data in several ways. For example:

- Built-in logic which forces answers to required questions.
- Validating entries against other information provided by the user, such as requiring the user to specify which infection criteria are met and giving them an error message if the set of criteria they chose is not valid.
- Reminder emails each month to prompt users to enter their utilization data (e.g., resident days and catheter days), which are required for calculating rates.

Further, the system generates facility-specific data each month alerting the Authority and the Department of Health to facilities with potentially missing data. Outlier facilities are contacted by phone or email to assist with utilization data and HAI event reporting.

## Nursing Home Feedback from the Authority’s Annual Survey

In December 2010, the Authority invited our registered primary contacts at healthcare facilities in the Commonwealth to participate in an online survey (see section “The Authority’s Annual Survey of Patient Safety Officers” for results from other participating healthcare facilities). Responses were collected over a 21-day period, with 283 IPDs responding. Survey questions and summaries of the IPDs responses follow.

### HAI Criteria

Infection Type	Responses	Response Ratio
A. Symptomatic urinary tract infection 2. Resident without urinary catheter	63	22.2%
B. Respiratory tract infection 1. Lower respiratory tract infection (pneumonia / bronchitis / tracheobronchitis)	23	8.1%
D. Gastrointestinal tract infection	21	7.4%

Figure 3.23. Top Three Infection Types by Difficulty Applying Criteria for HAI Reporting

Nursing home comments on the challenges to application of the criteria include: residents who have an active infection but cannot express dysuria, urgency or frequency, vague documentation of symptoms, comorbid conditions that have similar symptoms, and difficulty determining non-infectious causes.

### Analytical Data Tools

PA-PSRS has a suite of Analytic Tools to help facilities analyze their own data. Along with pre-defined reports, there are also tools to download data from PA-PSRS for analysis in order to track and improve patient safety performance (see Figure 3.24).

	Very Useful		Somewhat Useful		Not Useful		No Opinion / Never Used	
	2009	2010	2009	2010	2009	2010	2009	2010
Search Submitted Event Reports	62%	43%	26%	33%	2%	3%	9%	21%
Catheter Associated Urinary Tract Infection Rate Report	39%	30%	35%	39%	3%	5%	23%	25%
Catheter Utilization Report	44%	30%	37%	41%	7%	6%	13%	23%
Respiratory Tract Infection Rate Report	42%	27%	31%	41%	2%	4%	25%	27%
Respiratory Tract Infection Vaccination Proportion Report	31%	18%	23%	28%	4%	7%	42%	47%
Respiratory Tract Infection Vaccination Failures Report	28%	16%	21%	27%	5%	8%	46%	48%
Skin and Soft Tissue Infection Rate Report	37%	24%	31%	39%	1%	5%	32%	32%
Gastrointestinal Infection Rate Report	35%	23%	28%	40%	2%	5%	35%	32%
Data Export	20%	14%	15%	28%	3%	6%	62%	52%

Figure 3.24. Usefulness of PA-PSRS Analytic Data Tools

Examples of nursing home comments regarding the analytic data tools include: the reports are used monthly for infection control meetings, helpful for tracking and trends, as well as training purposes, and it would be more useful if it could show rates in comparison to other facilities or the state. Facilities not using the tools comment that they have another electronic system in place.

	<b>Number of Response(s)</b>	<b>Response Ratio</b>
Yes (if so, please specify below)	107	37.8% (44%, excl. "No Responses")
No	136	48.0% (56%, excl. "No Responses")
No Responses	40	14.1%
<b>Total</b>	<b>283</b>	<b>100%</b>

Figure 3.25. Facilities that Report Making Changes as a Result of Reporting Infections into PA-PSRS

As a result of reporting infections into PA-PSRS nursing homes reported changes including: the electronic medical record has been adapted per the HAI criteria, surveillance system more regimented, better nursing staff documentation, staff have an increased awareness of infection criteria, trends for action are identified, less antibiotic use for bacteruria, and improved nursing education.

Additional information on the annual survey responses is addressed in the Authority's Annual Survey section of this report.

## HAI Advisory Panel

Act 52 of 2007 required the Authority to establish an external advisory committee composed of experts in HAIs from throughout the state. Participants on this committee include hospital and nursing home infection preventionists, infectious disease physicians, and geriatricians. The HAI Advisory Panel assists the state agencies in:

- Identifying benchmarking conditions for determining rates of HAIs and for comparing HAI rates between institutions.
- Determining the approach to analyzing and reporting data collected within NHSN.
- Establishing conditions to be monitored in nursing homes for the purposes of HAI reporting.
- Providing input to the state HAI prevention plan required as part of the ARRA stimulus funding received by Pennsylvania.

The HAI Advisory Panel met in June 2010 and reviewed hospital and nursing home infection and best practice data, and provided input for evaluation of the best practice/compliance assessment tools for central lines for hospitals and for nursing homes. The panel was updated on HAI accomplishments and provided recommendations for the plan for the nursing home visits and coaching program.<sup>14</sup>

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<sup>14</sup> Commonwealth of Pennsylvania Department of Health. 2009 Technical Report: Healthcare-Associated Infections (HAI) in Pennsylvania Hospitals. [Online] June 2010 [cited 2010 Jan 18] Available from Internet: [http://www.portal.state.pa.us/portal/server.pt/community/healthcare\\_associated\\_infections/14234](http://www.portal.state.pa.us/portal/server.pt/community/healthcare_associated_infections/14234)

## **HAI Educational Programs and Collaboratives**

The Authority conducted a series of educational programs in 2010 for nursing homes, hospitals, and ambulatory surgical facilities based on needs identified from analysis of HAI reports, collaborative coaching programs, recommendations from the 2009 Annual Survey, and requests from facilities to the Patient Safety Liaisons.

### **Webinars/audio conferences**

The Authority developed and presented several webinars in 2010, which were recorded and posted to the Authority website during 2010.

“A First Look at Data Integrity” webinar presented Pennsylvania nursing homes with an analysis of the first two quarters of HAI data reported to PA-PSRS, as well as instruction on the use of the system’s analytic reports.

The “Nursing Home HAI New User Training” webinar provided Infection Prevention Designees and Facility Systems Administrators with a tutorial on the use of the PA-PSRS system, including reporting mechanisms, surveillance tools and resources.

As part of the Authority’s support of the CDC-funded Comprehensive Unit-based Safety Program (CUSP), which aims to reduce CLABSI by promoting prevention measures that successfully reduced these HAIs at hospitals in Michigan, the Authority presented an analysis of hospitals’ CLABSI reporting in conjunction with the DOH. “Analysis and Reporting of Data Collected Under Act 52,” was presented in an audio-conference for Pennsylvania hospitals sponsored by the Hospital and HealthSystem Association of Pennsylvania (HAP).

The Authority was invited to present “Targeting Zero: Attain and Sustain CLABSI Reduction” for the Catholic Health East (CHE) hospital system’s CLABSI Task Force. This audio conference was attended by clinicians representing 17 hospitals including Infection Preventionists, Quality/Performance Improvement staff, Nurse Practitioners and Critical Care Directors. The conference covered application of the concepts of targeting zero CLABSI and the pillars of HAI elimination by identifying strategies to achieve and maintain CLABSI reduction, and providing tools and methods of designing safe systems and strong, sustainable interventions.

### **Onsite Educational Presentations**

The Authority conducted HAI update programs for the acute and long term care membership of the Association for Professionals in Infection Control and Prevention (APIC) Pittsburgh and South Central Chapters, as well as for the Pennsylvania Medical Directors Association (PMDA) and the Genesis Care Corporation. The presentations reviewed trends in Pennsylvania’s nursing home HAIs and in central line best practice data from hospitals (based on HAI reports submitted to NHSN) and introduced a new comprehensive central line insertion and maintenance assessment and monitoring tool.

A poster demonstrating the “Assessment of a Mandatory Reporting System on Compliance with Evidence-based Practices for Prevention of CLABSI” was presented by the Authority at the national APIC Annual Education Conference. This research poster illustrated statewide statistics about central line-associated bloodstream infections, lessons learned from analysis of these statistics, and ongoing efforts to educate healthcare providers about evidence-based best practices and risk reduction strategies (see Figure 3.26). More information on strategies for CLABSI prevention is available in the *Advisory* section of this report or at [http://patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/mar18\\_7\(suppl1\)/Pages/01.aspx](http://patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/mar18_7(suppl1)/Pages/01.aspx)

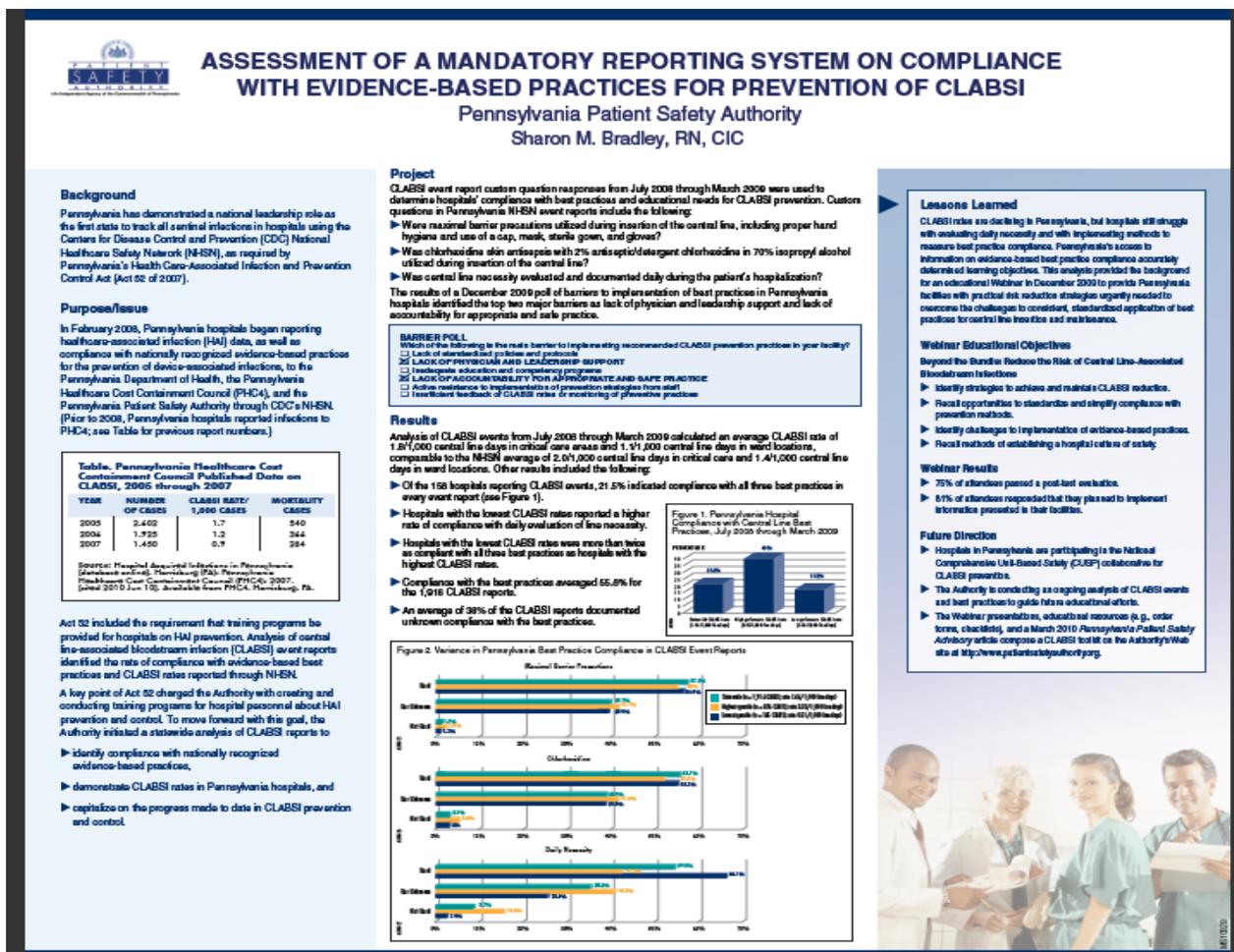


Figure 3.26. Assessment of a Mandatory Reporting System on Compliance with Evidence-based Practices for Prevention of CLABSI

A series of workshops on “Management of Methicillin-Resistant Staphylococcus Aureus” (MRSA) for ambulatory surgery centers was offered in the southeast, south central and southwestern regions focusing on clinical features, risk factors, screening, barrier precautions, and infection control practices. Strategies to prevent MRSA can be found in the June 2010 *Pennsylvania Patient Safety Advisory* “Management of MRSA in Ambulatory Surgical Facilities,” available at [www.patientsafetyauthority.org](http://www.patientsafetyauthority.org).

The September 2010 *Advisory* article “Demonstrating Return on Investment for Infection Prevention and Control” was highlighted at the HAP 2010 Patient Safety & Quality Symposium during the breakout session on “Making the Business Case for Infection Prevention.” The article provides practical methods to engage healthcare executives in evaluating the cost of HAIs in their organization and to dispel common misperceptions about the significance of HAIs, reimbursement, and cost savings associated with effective HAI reduction programs, and is available at [http://patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/Sep7\(3\)/Pages/102.aspx](http://patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/Sep7(3)/Pages/102.aspx)

## International Infection Prevention Week

To help raise awareness of Clostridium Difficile Infection (CDI), the Authority sent posters to all nursing homes, hospitals, ambulatory surgery facilities, birthing centers and certain abortion facilities for display in their clinical care areas and patient waiting room areas. The clinical poster, "Clostridium Difficile Infection Facts and Prevention Strategies" is for display in clinical areas to remind healthcare personnel about the burden of illness from CDI and steps they can take to prevent this infection. The Authority also developed a consumer version of the poster, "*C. diff* Infections: What You Should Know When Taking Antibiotics," for display in waiting rooms and general visiting areas.

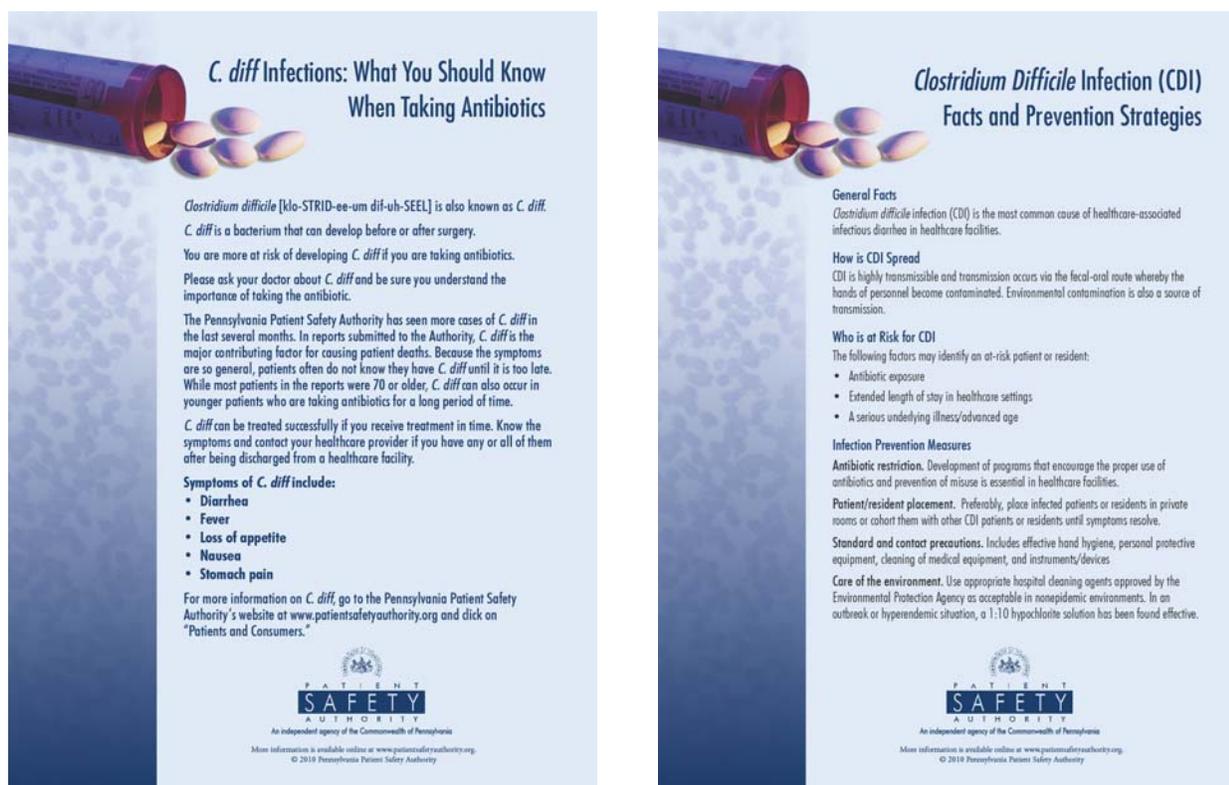


Figure 3.27 Clostridium Difficile Infection Education Posters

## **Nursing Home Visits/Coaching Program**

In 2010, the Authority developed the *Nursing Home Best Practice Assessment Tool* with the goals of identifying effective best practices in facilities that report low HAI rates, and providing feedback to facilities with high HAI rates to help identify and remove barriers to implementation of evidence-based best practices. This program also gives the Authority an opportunity to assess whether facilities with high rates genuinely have more infections, or whether they are conducting higher-quality surveillance. This tool is designed to assess facility strategies and compliance in seven categories:

- Hand hygiene
- Environmental infection control
- Outbreak control
- Urinary tract infections
- Respiratory tract infections
- Skin and soft tissue infections
- Gastrointestinal and multi-drug-resistant organisms.

Subsequent to a pilot of the tool in selected nursing homes, the Authority selected 20 nursing homes with HAI rates as reported to PA-PSRS that fell in the top or bottom quartile of overall HAI rates. All 10 of the facilities with high HAI rates were visited in the third quarter of 2010. The visits entailed review of the facility self-assessment, record review, observational rounds and staff interviews. Each facility received a follow up report detailing positive findings, opportunities for improvement, and suggestions for adjustment to surveillance methods.

Goals for the program in 2011 include:

- Synthesizing findings from visits to high-rated facilities.
- Conducting site visits to facilities with low rates and providing feedback reports.
- Developing outcome and process measures for nursing homes.
- Developing the Nursing Home Coaching Program to share best practices and tools among facilities.
- Summarizing our analysis of the nursing home visits for an article for the *Pennsylvania Patient Safety Advisory* and develop an educational program for other nursing homes based on our findings.
- Conducting re-assessment visits with facilities with high rates to identify improvements.

## **Comprehensive Unit Based Safety Program (CUSP) Initiative**

During 2010, the Authority continued its work with HAP to implement the CUSP project, focusing on reducing central line-associated bloodstream infections (CLABSI) and serving as an educational resource for hospitals involved in the initiative. Presentations for participants in the CUSP project included:

- A summary of the Authority's analysis on compliance in Pennsylvania hospitals with best practices for CLABSI prevention and Pennsylvania Department of Health 2009 analysis of CLABSI data and Standardized Infection Ratio (SIR) methodology.

- The Authority presented “the Central Line Insertion and Maintenance Practice Assessment Tool” onsite at the CUSP Cohort II Conference. This tool complements the CUSP work by assisting hospitals with identifying and learning from the defects in their CLABSI prevention programs, and providing data to support monthly team checkups and executive safety rounds.

### **National Surgical Quality Infection Prevention (NSQIP) Collaborative**

The Authority is working with the Pennsylvania NSQIP Consortium, a group of nine Pennsylvania hospitals participating in the American College of Surgeons National Surgical Quality Improvement Program (NSQIP). The focus of this collaborative is to reduce surgical site infections (SSIs). Hospitals are sharing with the Authority the risk-adjusted outcomes data they receive from the national NSQIP program related to general, vascular, and colorectal surgeries. The Authority will facilitate learning opportunities pairing hospitals that need improvement in certain areas with hospitals that do well in those same areas. The Authority is also providing a dedicated portion of its PassKey portal for use by the PA-NSQIP Consortium to facilitate cross-institutional learning and networking.

### **Western Pennsylvania SSI collaborative**

The Authority is working with the Three Rivers Chapter of the Association of Professionals in Infection Control (TRAPIC), the national APIC, and the Pennsylvania Department of Health to extend the practices advocated in the SSI prevention bundle advocated by the Institute for Healthcare Improvement. The Authority will facilitate data collection of process and outcome measures via a dedicated portion of its PassKey portal and will perform the data analysis for the collaborative.

### **Plans for 2011**

The focus of the Authority’s HAI prevention program in 2011 includes:

- Continuing to provide guidance to healthcare facilities in preventing HAIs through the *Advisory*, based on analysis of data reported by the facilities and evidence-based best practices identified in the clinical literature.
- Supporting the collaboratives launched in 2010 on reduction of CLABSI and SSI.
- Developing a coaching program for nursing homes on HAI reduction that includes adoption of assessment tools to monitor performance improvement.
- Continuing facility educational programs on HAI reduction on CLABSI, norovirus prevention and rapid response, *C. diff.*, and MRSA.
- Highlighting Pennsylvania’s leadership on HAI prevention by presenting the following presentations at the June 2011 International Educational Conference of the Association for Professionals in Infection Control and Epidemiology (APIC), the key professional society for infection preventionists.
- Designing a Norovirus Prevention and Rapid Response Plan--Application of Evidence-Based Guidelines.

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## IV. EDUCATION, OUTREACH AND COLLABORATION

### The Patient Safety Liaison Program – reaching out for conversations to improve patient safety

The Patient Safety Liaison (PSL) program was developed to enable the Authority to work more closely with reporting facilities to improve patient safety. Overseen by the Director of Educational Programs, the non-regulatory PSL program has six consultants who visit Patient Safety Officers (PSOs) in Pennsylvania’s healthcare facilities. The PSL program works to ensure that Patient Safety Officers (PSOs) are aware of the numerous educational resources available to them from the Authority and other patient safety leaders. While acting as a liaison between the Authority and healthcare facilities, the PSL also serves as a link between healthcare facilities within the region. The program includes one PSL in each of the Northeast, Northwest, Southwest, South Central regions, and two PSLs in the Southeast region Delaware Valley North and Delaware Valley South. The PSLs oversee a total of 540 facilities in Pennsylvania including hospitals, ambulatory surgery facilities (ASFs), birthing centers and abortion facilities. The program began with one PSL in the Northeast region in August 2008, and was expanded to include all regions of Pennsylvania in 2010.

“What started as an effort to be in compliance with the law has evolved into a core tenet of our behavior and practice.”

Dr. Charles Wagner, MD, Medical Advisor  
Holy Redeemer Health System,  
Meadowbrook, PA

Each PSL initiates the conversation with their PSOs by scheduling a face-to-face meeting. This first meeting often includes other healthcare personnel, including the CEO or legal counsel. Usually, in

“Above all, my PSL is an amazing source of information. No matter what or how often I email her, she immediately responds with the information or a note saying it will be coming.... As soon as she learned I was the new PSO for the hospital, she immediately called to set up an appointment with me and the rest of my team.”

Pam Neiderer, RN, MSN, Outpatient Surgical Services Administrator  
Surgical Center of York, Endoscopy Center of Memorial Hospital  
York, PA

these first meetings, the PSL ensures the PSO is aware of the latest educational resources available to them through the Authority. These resources include items such as educational toolkits, *Pennsylvania Patient Safety Advisory* articles, consumer tips sheets, brochures and programs available through the Authority for continuing education credits in patient safety. As the relationship develops, topics

discussed during the PSL facility visits are varied but consistent with themes related to patient safety. These conversations include identifying opportunities for improvement, implementation of preventive strategies, successes, barriers and sharing patient safety information. Feedback from PSOs is crucial for PSLs to understand what help the PSOs need from the Authority to improve patient safety in their specific facility.

## PSL Mission: Educating Healthcare Facilities by Collaborating

Throughout 2010, the Patient Safety Liaison Program (PSL) broadened the scope of the regions it covers and enhanced the educational opportunities based upon the recognized needs of the healthcare facilities submitting reports to the Authority. PSLs have all been fully engaged in assisting facilities to identify opportunities for improvement and develop facility specific patient safety initiatives for the healthcare facilities in each of their respective regions.

“I walk away with so much information from the programs. Everyone wants to do the right thing [and] the opportunity to network is invaluable.”

Robin Egbert, RN, Nurse Administrator  
Digestive Disease Institute, Camp Hill, PA

Along with fostering their relationship with each PSO, the PSLs are also helping PSOs to foster relationships with each other in the name of patient safety. The competition between facilities for patients is well known, however the facilities acknowledge when it comes to improving patient

safety in their individual facilities – there is safety in numbers. Also, facility collaboratives will allow more opportunity to measure how much patient safety has improved in those facilities which participate. For example, a recent collaborative in the northeast for reducing blood specimen mislabeling events showed a 37 percent reduction overall in the nine facilities that participated. More about the specimen mislabeling collaborative is discussed later in this section of the Annual Report.

When facilities have a problem, they can now ask their PSL if they know of any other facilities that have had the same problem. Some examples of patient safety issues that have been addressed include product shortages, equipment recalls, color-coded wristbands, infection prevention strategies and medication safety. The Authority developed an electronic forum called the Patient Safety Knowledge Exchange (PassKey) to help PSOs communicate more with each other. Details about PassKey will be given later in this section of the Annual Report.

“The initiation of the PSL Program has planted the seeds of a collaborative relationship between the state and local healthcare facilities.... [Our PSL’s] willingness to share her expertise has been extremely valuable in our efforts to promote a culture of patient safety.”

Donna Miller, RN, Patient Safety Officer  
Aria Health, Philadelphia, PA

## A Complete PSL Program

Each PSL consults with approximately 90 facilities. Figure 4.1 provides more detailed information about the PSLs and the regions by county they represent.

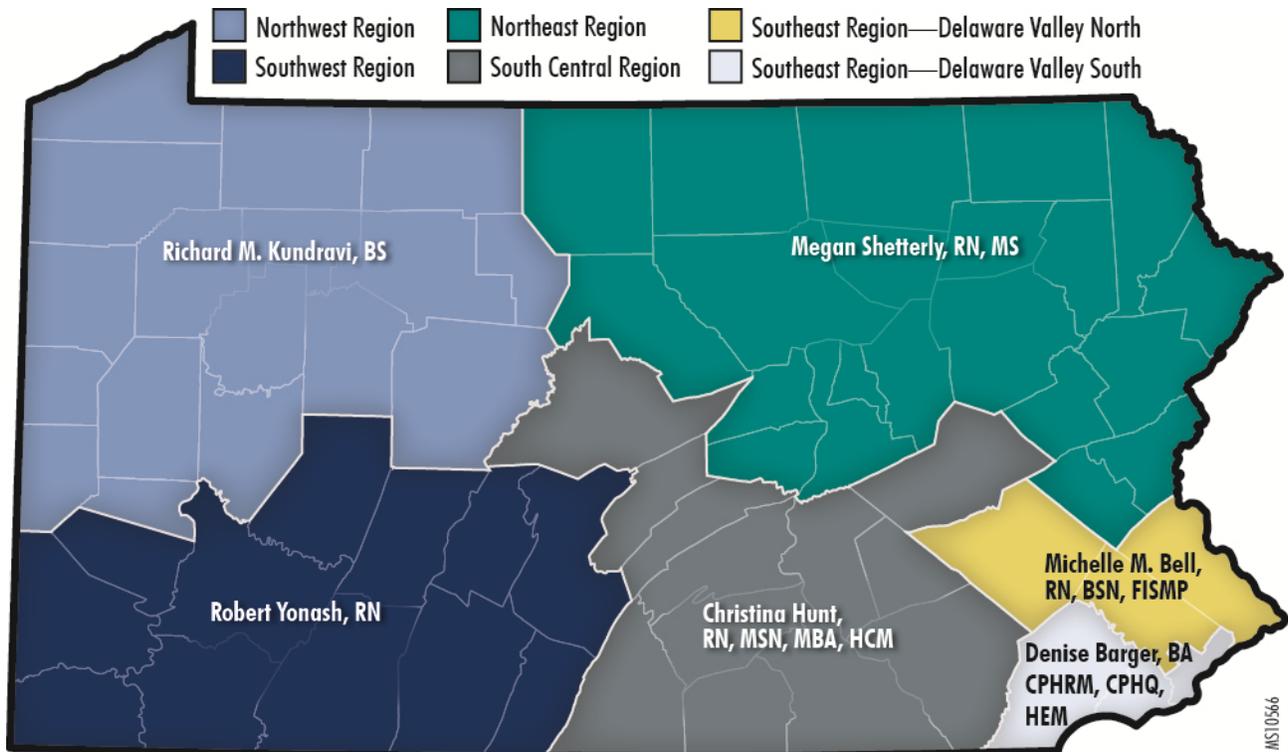


Figure 4.1. Patient Safety Liaison Regional Map

All of the PSLs have healthcare experience. However, what makes the program work so well is each PSL brings a different aspect of healthcare to the program based upon his or her own experience. Their previous experiences range from risk management and patient safety to hospital leadership and quality.

Teamwork is what drives the educational process for the PSLs. PSLs monitor thought leaders, read educational materials, research, and work with Authority analysts and other healthcare organizations to build upon the knowledge of the team. Regular communication between the PSLs, the Pennsylvania healthcare facilities and the Authority analysts ensures all hands are on deck to help solve problems that risk patient safety.

## Strengths and Opportunities

Since May 2010, the PSL program has been fully staffed with six healthcare professionals with backgrounds in nursing, risk management, medication safety, patient safety and quality. The PSLs, the Authority analysts and PSOs work as a team utilizing their various healthcare backgrounds to improve patient safety in Pennsylvania healthcare facilities. The strength of the program in a word is “communication.” Each initiative listed below allows for more communication among healthcare professionals to solve problems everyone encounters on a daily basis within the healthcare system.

“We were excited when the [Authority] announced the creation of the PSL positions. It was an even bigger relief to see that the people filling these positions were experienced, consultative individuals who wanted to engage you in the patient safety ‘big picture’...It’s been like having our own consultant..Not to sound too theatrical, but this really has been a game-changer.”

Matthew Davis, Administrator  
West Chester Gastrointestinal Group  
West Chester, PA

### **Building Relationships to Improve Patient Safety**

The primary strength of the PSL program is its ability to converse with individual facilities on a regular basis. The feedback given by the PSOs gives the Authority the information it needs to provide the communication vehicles and additional resources for PSOs to work with each other to improve patient safety. Pennsylvania’s PSL program is unique within the United States. The PSL’s have the opportunity through facility visits, networking and educational sessions to bring together multiple Patient Safety Officers and their respective staff members to collaborate and build more relationships.

“I would like to highly commend the PSL program. It has been very beneficial for me and my staff. We enjoy doing the teamwork exercises and the education programs that are very detailed and informative.”

Laura Nichi, RN, CNOR, Clinical Director  
Surgery Center of Edgeworth Commons  
Sewickley, PA

### **Educational Sessions**

In 2010, the PSL’s presented 76 programs to facilities educating over 1700 staff members on a wide range of patient safety topics including Just Culture™, human factors, wrong-site surgery, retained foreign bodies, mislabeling specimens, operating room safety, radiation safety, crew resource management, infection control and other issues. It is through these interactive educational sessions that walls are torn down and PSOs are able to learn while also building a network of support unique to Pennsylvania.

“[Our PSL] has provided our hospital with solid, concrete assistance....She especially had a good rapport with staff members, who were eager to share their experiences....[Her] analysis did not stop at work processes, but included the culture around medication administration. We have used her ideas in developing our improvement team’s aims and strategies.”

Pat Witek  
Director, Quality Initiatives  
Patient Safety Officer  
Doylestown Hospital, Doylestown, PA

## **Patient Safety Knowledge Exchange (PassKey)**

PassKey helps foster the networking relationship among Pennsylvania PSOs and allows them to continue the communication with each other after the visits, educational sessions and collaboratives are over. The PSLs encourage PSOs to utilize PassKey as much as possible. The site is another unique forum for Pennsylvania PSOs to connect to each other, overcoming obstacles that hinder patient safety advancement within facilities.

“I think PassKey is a great tool....PassKey is very easy to use and a great resource for discussion with other PSOs.”

Robin Egbert, RN, Nurse Administrator  
Digestive Disease Institute, Camp Hill, PA

## **Collaborations**

The PSL program has also been instrumental in bringing PSOs together in applying their knowledge and experience to work to improve patient safety in certain areas of the facility. Recently, healthcare facilities in the northeast reduced phlebotomy mislabeling of blood specimens by 37 percent overall. One facility saw an 84 percent reduction of mislabeling mishaps in their lab area alone. The Authority believes collaboratives like this will allow facilities to measure how patient safety is improving in Pennsylvania.

Other ongoing collaboratives which have been initiated by PSLs include wrong-site surgery, falls and surgical site infections. Within the collaboratives, PSLs encourage teamwork not only among the leaders of the individual facilities but also among staff within the facilities. Teamwork is cited by the PSOs as a challenge within individual healthcare facilities in getting staff to understand patient safety involves everyone in the facility. The results and best practices of the collaboratives are published in the *Pennsylvania Patient Safety Advisory* so all PSOs can benefit from the study.

“We have learned from our own experiences and have also benefitted from learning from the experiences of others, especially when those experiences are developed into a comprehensive issue review by the [Authority]...and are published in the PA Patient Safety Advisory.”

Dr. Charles Wagner, MD, Medical Advisor  
Holy Redeemer Health System  
Meadowbrook, PA

The PSL program is seizing the opportunity it has with each PSO to continuously increase the level of awareness of patient safety. In the short time the PSL program has been in place, many patient safety initiatives have been developed and communication has improved immensely.

But some challenges still remain -

## PSL Program Challenges

Based on the input received from the Patient Safety Authority's Annual Survey of Patient Safety Officers, the Patient Safety Liaison Program has consistently achieved high ratings from the PSOs in each region of the state. However, there are several continuing challenges the PSL program has identified. These include competing priorities, organizational structure, and reporting inconsistencies that produce impediments to the development of a culture of safety and proactive risk reduction in Pennsylvania's healthcare facilities.

### **Some Facilities Still Resistant to Meeting with their PSL**

Although the vast majority of facilities have been very receptive to the Patient Safety Liaison site visits, some facilities are still resistant to meeting with their PSL and taking advantage of the educational opportunities that exist within their region.

The PSLs have begun exploring various ways to increase the level of involvement of the less engaged facilities. Regional networking sessions and facility specific education programs have helped increase the level of engagement for a core group of facilities. The first networking sessions held during the second quarter of 2010 were instrumental in identifying topics of interest. More networking sessions must be held on a regular basis to be effective. Because these sessions are costly and labor intensive, the Authority must balance its resources to provide these networking sessions along with the established educational courses on which other, more programmatically active facilities have come to depend.

### **PSOs Wearing Multiple Hats Have Limited Time**

Another notable challenge to PSLs is the limited time PSOs have to participate in additional meetings and programs due to competing priorities and facility staff turnover. Various tools and resources are available through the Authority and PA-PSRS websites to help Patient Safety Officers access information that can be utilized to enhance their facility patient safety initiatives. However, more work needs to be done to ensure PSOs utilize the full range of information available to them. The facility site visits help to significantly increase awareness of these tools and resources, but the Authority website toolkits and PassKey remain underutilized.

"The PSO in an ASF typically wears many hats and most of us have not had experience with this role in our previous work positions. The programs and educational in-services sponsored by the PSLs have helped me better understand my responsibilities in this role and have provided the many tools and resources to carry out these functions."

Mary E. Douth, RN, Director  
East Side Surgery Center  
Pittsburgh, PA

## **Working as a Team to Improve Patient Safety is Difficult for Many Facilities**

Facilities also seem to have problems working as a team. Often, individuals in a facility are expected to solely carry the load in terms of patient safety, rather than the entire facility recognizing patient safety as a team effort. Organizations having one individual designated to coordinate the regulatory requirements of Act 13 of 2002 (MCare) risk creating a communication gap. If that person leaves, there is a gap until the new person gets acquainted with the state's regulatory agency, the Pennsylvania Department of Health, and the educational resources provided by the Authority. In most cases, PSLs have seen momentum for improving patient safety delayed or abruptly stopped when a PSO leaves an organization. When the next PSO comes on board, the PSLs must begin anew familiarizing the new PSO with Act 13 and the Authority's resources.

## **Patient Safety Knowledge Exchange (PassKey) – Providing an Opportunity to Converse with Peers**

The Patient Safety Knowledge Exchange was introduced to Pennsylvania Patient Safety Officers (PSOs) at the end of June 2010. PassKey is a secured website created to share patient safety information, ideas and solutions among Patient Safety Officers within the state. PassKey allows the PSO and two delegates from each facility to access patient safety information. Patient safety issues can then be posted and developed into discussion topics; improving patient safety knowledge through sharing lessons learned from multiple facilities.

Since PassKey began, the development team has added two new areas: a Facility Spotlight and the Patient Safety Liaison (PSL) Blog. The Spotlight highlights a patient safety project that a Pennsylvania facility has addressed and shares that knowledge and success with other facilities. These Spotlights are meant to create discussion and networking between facilities. The PSL Blog affords a broad opportunity to communicate with the PSOs and their delegates.

The Knowledge Center contains two featured areas: the Knowledge Exchange and the Knowledge Library. The Knowledge Exchange is the discussion board on PassKey. This is where the PSOs can pose questions to their peers, share new processes that have been successful, and network on common topics in healthcare. There have been approximately 64 discussion topics started since PassKey was introduced. The Knowledge Library allows a PSO or delegate to share documents. There have been approximately 29 documents uploaded to the Knowledge Library thus far, in addition to documents attached to discussion threads in the Knowledge Exchange.

"The PassKey website...is a great opportunity to be able to interact with other PSOs and PSLs throughout the state, sharing knowledge and ideas."

Mary E. Doult, RN, Director  
East Side Surgery Center  
Pittsburgh, PA

The PassKey site also helps foster discussion within the collaboratives. These collaboratives include, but are not limited to: Phlebotomy Specimen Mislabeling, Wrong-Site Surgery, and Surgical Site Infections. Each collaborative has its own secure site on PassKey which enables private communication among collaborative members and the ability to share resources. As of January 2011, there have been a total of 156 collaborative members that have participated in 28 discussion threads. There have been 95 documents uploaded to the different collaborative sites which can be used as resources for the members of these collaborative groups.

The PassKey site gives PSOs a tremendous opportunity to network with facilities around the state. Many other states do not have this capability. The Authority encourages PSOs to approach their regional PSL for help to become comfortable in using the site. PassKey provides PSOs with a rare opportunity to communicate across organizational boundaries with peers familiar with the issues and obstacles they are facing.

The Authority through the PSL program seeks to educate and bridge the gaps that exist between healthcare facilities and their staff, healthcare facilities within each PSL's region, and healthcare facilities across the state, by sharing information learned from *Pennsylvania Patient Safety Advisories* and through networking. With the PSL program in full throttle and the PassKey website up and running since June 2010, these gaps should narrow with the information and communication provided through these two venues.

## Educational Courses – Educating for Process Change

In 2010, over 1700 PSOs and healthcare staff attended the Authority's formal educational courses. Some of these courses offer patient safety and professional credits, and are included in the descriptions detailed below.

### Basic Foundation Course

The Authority developed a basic patient safety program called the "Patient Safety Officer Basic Foundation Course" to discuss the specifics behind patient safety and Act 13 of 2002 and what it means to be a PSO. Specific objectives include:

"When our facility requested education for our executive staff, [the PSLs] facilitated an excellent educational program...which our executive staff is still talking about!"

Christine Cepullio, RN, BSN  
Patient Safety Officer  
Children's Hospital of Pittsburgh of UPMC

providing a historical prospective of patient safety; applying Act 13 of 2002 and Act 52 of 2007 in the culture of safety; examining the importance of infrastructure in patient safety; recognizing the importance of communication in patient safety; and examining patient safety concepts. Hospital staff attending the basic program included CEOs, facility leadership, management staff and PSOs from hospitals, ambulatory surgical facilities, birthing centers

and abortion facilities. The program helps new PSOs and employees understand the concept behind Act 13 and why reporting matters for patient safety. Feedback from the course is very positive with numerous requests for additional educational sessions. In 2010, the Patient Safety Officer Basic Foundation Course was offered six times with over 200 people attending these sessions. All participants who completed an evaluation of the basic foundation course agreed they learned something new as a result of this program.

## Beyond the Basics – Two-Day Program

The course “Beyond the Basics” was added to elaborate on issues important for improving patient safety such as disclosure, root cause analysis (RCA), human factors, crew resource management, TeamSTEPPS™ and Just Culture™. The first day of this two-day course is instructive lecture. The second day is a case study workshop with demonstrations of human factors, Just Culture, Root Cause Analysis (RCA), and disclosure. Course objectives include: explore the culture that enhances event reporting; discuss the PSOs role in process change; apply tools for proactive and reactive system change; and review and apply human factor principles. Feedback on the course has been excellent and participants have stated they enjoyed the case study and application of newly acquired and enhanced knowledge. Over 100 people attended three offerings of the Beyond the Basics Course. Ninety-eight percent of participants who completed an evaluation agreed they learned something new as a result of the program.

“My director also attended the Beyond the Basics course and found it as beneficial as I did.”

Christine Cepullio, RN, BSN  
Patient Safety Officer  
Children’s Hospital of Pittsburgh of UPMC

## MRSA Program

At the request of ambulatory surgery facilities, the Authority developed a program to educate providers about methicillin-resistant *Staphylococcus aureus* (MRSA). MRSA is a type of bacteria resistant to certain antibiotics. The objectives of this program are as follows: discuss the clinical

“The education program on MRSA was especially informative for ASC’s. This seminar helped us re-write our MRSA policy and became our standard.”

Laura Nichi, RN, CNOR, Clinical Director  
Surgery Center of Edgeworth Commons  
Sewickley, PA

features of MRSA; understand the mode of transmission; learn infection prevention strategies; recognize high risk patients; identify surveillance measures; and review general care guidelines. The MRSA program was held three times in 2010 with over 100 attendees. All participants who completed an evaluation of the program said they would implement the information in their facility and they learned something new as a result of the program.

In addition to the curriculum offerings discussed above, 64 additional programs were held across the state in 2010. These offerings were requested by the facility, and included presentations to patient safety committees, facility boards, and frontline staff. Over 900 people attended these individual events. Topics of these educational sessions include but are not limited to patient safety leadership and insights, human factors, highly reliable organizations (HRO), Just Culture, disclosure, higher education patient safety, crew management and proactive risk reduction strategies (FMEA). (See Figure 4.2).

## Why Reporting Matters

This course is similar to the new user training course in that it explains to PSOs and their delegates the provisions of the MCare Act and clarifies the Authority's role and mission. Objectives of the course are to ensure healthcare workers understand the meaning behind the MCare Act and the

necessity of reporting. It is

important for all healthcare staff from the CEO to housekeeping personnel to understand the importance of reporting patient safety events—that is to learn from both Serious Events and Incidents (near misses) so facilities can change their processes and not make the same mistakes again. Healthcare facility staffs are also shown how the Authority collects and analyzes the reports, so they know the data is not going into a black hole.

“A long-standing concern about reports...has been the variability in institutions' interpretation of what should be reported as a serious event. The communication and education skills of the liaisons have created discussions which should help to narrow this variability...result in better acceptance of the data and eventually more concerted and cooperative efforts to improve patient safety across the Commonwealth.

Dr. Charles Wagner, MD, Medical Advisor  
Holy Redeemer Health System, Meadowbrook, PA

## Pennsylvania Patient Safety Reporting System (PA-PSRS) User Training

Each year the Authority offers new user training for PSOs and their delegates submitting reports into the Pennsylvania Patient Safety Reporting System (PA-PSRS). Since reporting began, the Authority has ensured this course is offered through a webinar yearly for those who want personal instruction. A training tutorial is also available under the Resources tab on the PA-PSRS website. Objectives of the course include: introducing new users to patient safety and a culture of learning; explaining the reporting requirements of the MCare Act; explaining what the PA-PSRS system does with the reports; and demonstrating how users submit a report and the analytical tools that are available through PA-PSRS.

Collectively, the Authority has educated over 1700 PSOs and patient safety leaders through these various courses aimed at improving patient safety. The programs (except the new user training program) will be offered repeatedly throughout the year. New educational programs will be developed as the program continues to grow. A chart showing the regions, number of programs, and attendance figures for the Authority's educational programs offered from January 1, 2010 through December 31, 2010 is shown in Figure 4.2:

Region	PSO Basics Curriculum		Beyond Basics		MRSA (ASF Only)		Other	
	Offerings	Attendance	Offerings	Attendance	Offerings	Attendance	Offerings	Attendance
NE	2	83	1	42	0	0	17	298
NW	0	0	1	39	0	0	9	193
NW / SW Combined	1	21	0	0	0	0	6	176
SW	1	36	1	36	1	34	9	262
SC	1	36	1	23	1	35	14	305
DVN/DVS combined	1	55	0	0	1	35	0	0
DVN	0	0	0	0	0	0	4	65
DVS	0	0	0	0	0	0	5	n/a
<b>Total</b>	<b>6</b>	<b>231</b>	<b>3</b>	<b>101</b>	<b>3</b>	<b>104</b>	<b>64</b>	<b>1299</b>
<b>GRAND TOTALS</b>		<b>Educational Offerings = 76</b>					<b>Total Attendance = 1735</b>	

Figure 4.2.

## Using Collaboratives to Improve Safety

As the PSL program has grown, so have the opportunities for broadening how facilities learn from Serious Events and Incidents. The *Pennsylvania Patient Safety Advisory* has provided facilities with analysis and guidance so they can learn from the data they submit. However, through the PSL program the Authority can take that information to the next level and help facilities work together to improve patient safety in a specific area. The collaboratives listed below show how Pennsylvania healthcare facilities are doing just that to prevent infections, wrong-site surgeries, harmful falls and mislabeling blood specimen mishaps. The collaboratives help the Authority gauge how much patient safety is improving in a specific area.

"I think the collaborative was a wonderful thing. All of the groups were there to fix the same problem which was nice to have a common goal."

Barbara Booth, Lab Service Improvement Coordinator  
Geisinger Wyoming Medical Center  
Wilkes Barre, PA

## CUSP/CLABSI Collaborative

In 2010, the Authority continued working with the Hospital and Healthsystem Association of Pennsylvania (HAP) on an initiative to reduce central line-associated bloodstream infections in conjunction with the Agency for Healthcare Research and Quality (AHRQ). This project goal is to implement the comprehensive unit-based safety program (CUSP) within 10 hospitals that will focus on reducing central line-associated blood stream infections (CLABSI) in intensive care units.

For this collaborative, the Authority provides data which will be used to develop further educational initiatives and prevention strategies for Pennsylvania's healthcare facilities. The Authority also serves as an educational resource and provides educational webinars for the participating hospitals. The Authority and HAP visited the participating facilities in 2010 to discuss successes, opportunities and barriers that they are currently experiencing. In 2010, the Authority also participated in the CUSP/CLABSI Coaching Calls as a presenter and as a participant. These calls were geared toward steering the facilities in the right direction during the collaborative. The Authority and HAP will also bring facilities together for networking and shared learning throughout this collaborative with results published in the *Pennsylvania Patient Safety Advisory*.

## Falls Collaboration

Patient falls present a serious and difficult problem for most healthcare organizations. Falls are among the four most frequently reported patient safety events in PA-PSRS and often result in serious or fatal injuries especially in elderly patients.

In 2008, the Patient Safety Authority began collaborating with the Philadelphia-based Healthcare Improvement Foundation (HCIF) to enlist regional hospitals in an initiative focused on reducing inpatient falls. Twenty-nine hospitals in southeastern Pennsylvania agreed to a common definition of falls and the harm caused by them. Falls were tracked through the PA-PSRS reporting system and the data was then aggregated and reported back to the participating facilities on a quarterly basis. This allowed the participating hospitals to monitor their own progress and benchmark their individual performance against other regional facilities. Coincidentally, the Joint Commission underscored the seriousness of this issue in hospitals by making fall risk assessment a National Patient Safety Goal. Recent federal mandates have further emphasized the significance of this safety issue and the need to reduce or eliminate falls by identifying them as a reason for penalizing hospitals when a fall occurs that results in harm, hospital acquired conditions.

Data from the Authority helped initiate this project. In 2009, falls represented 15% of all PA-PSRS events with more than 35,000 reported across Pennsylvania. Sixteen percent of all serious injuries reported in the state are related to falls. In 2010, these numbers increased calling for a continued vigilance to focus attention on this safety issue. Last year, falls represented 16% of all PA-PSRS events with more than 36,000 reported across Pennsylvania. In 2010, that number has dropped to 13%.

With those factors as a backdrop, many of the participating hospitals used the reporting initiative as a springboard to work on fall reduction programs within their own facility. Hospitals tackled this seemingly intractable patient safety problem using whatever tools and techniques they selected.

There has been a marked improvement within the collaborative after 18 months of reporting. Many hospitals have seen significant improvement in their rate of falls and falls resulting in harm. Several hospitals have been recognized at local and national levels for the work they have done to reduce falls. As such, patients have been the beneficiaries of safer hospital visits when their risk of falling is reduced or eliminated.

Now the Authority's challenge is to share the lessons learned by a few hospitals with the region at large. The Authority has begun a collaborative effort in the region with the participating hospitals to foster and expand this process.

As reporting and benchmarking work continues, in late spring 2011, the Authority will work with the region's hospitals to present a workshop that will highlight successful approaches to the problem of falls. Through the process of shared learning and collaboration, the Authority's goal is to foster and accelerate region-wide improvement in the rate of falls and reduce the number of serious injuries related to falls.

## **Collaborative to Reduce Surgical Site Infections**

The Authority is working with the Pennsylvania NSQIP Consortium, a group of nine central and eastern Pennsylvania hospitals participating in the American College of Surgeons National Surgical Quality Improvement Program (NSQIP). The focus of this collaborative is to reduce surgical site infections. Hospitals are sharing with the Authority the risk-adjusted outcomes data they receive from the national NSQIP program related to general, vascular, and colorectal surgeries, and the Authority will facilitate learning opportunities that pair hospitals that need improvement in certain areas with hospitals that do well in those same areas. The Authority is also providing a dedicated portion of its PassKey portal for use by the PA-NSQIP Consortium to facilitate cross-institutional learning and networking.

The Authority is working with the Three Rivers Chapter of the Association of Professionals in Infection Control (TRAPIC), the national APIC, and the Pennsylvania Department of Health to extend the practices advocated in the SSI prevention bundle advocated by the Institute for Healthcare Improvement. The Authority will facilitate data collection of process and outcome measures via a dedicated portion of its PassKey portal and will perform the data analysis for the collaborative.

## **Phlebotomy Specimen Labeling Collaborative**

### **Relevancy**

Clinical laboratory services play a vital role in the delivery of health care. Seventy percent of all information used by clinicians to diagnose conditions and treat patients comes from the laboratory.<sup>15</sup> According to Lippe, et al (2009), misidentification of general laboratory specimens is around one

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<sup>15</sup> Dock B. Improving the Accuracy of Specimen Labeling. *Clinical Laboratory Science* 2005 18(4):210.

percent.<sup>16</sup> The devastation of adverse events due to mislabeling of phlebotomy specimens can be insurmountable in terms of physical, financial and emotional costs for patients, their families and the clinicians who care for them.

### **Cutting Edge**

In 2007, The Centers for Disease Control and Prevention (CDC) and the Department of Health and Human Services (HHS) commissioned a workgroup of experts in laboratory medicine to review available literature on laboratory medicine best practices. It was a three phase project. Phase I revealed limited availability of peer reviewed published and accessible evidence for laboratory medicine best practices. Phase II involved a refined process with investigational features. Phase III, identified evidence-based results for patient identification best practices. Just released in 2010, the best practices were identified at the pinnacle of Pennsylvania's collaborative effort in which they were also recognizing successful interventions to improve phlebotomy specimen labeling. In fact, one of the facilities, amongst approximately 16 other national health care institutions that participated in Phase III of this CDC project, also participated in the Authority's Phlebotomy Labeling Collaborative.

### **Pennsylvania's Story**

At the same time these nationally recognized credible agencies were pursuing answers to laboratory medicine best practices, the Pennsylvania Patient Safety Authority facilitated a collaborative effort amongst nine hospitals in the northeastern part of the state whose mission was to improve patient safety by decreasing the potential for mislabeling events to occur. This initiative was developed and implemented through an educational course and series of workshops that provided education, tools, technical assistance, resources, and an interactive forum. The success of this joint collaboration required a moderate level of commitment, funding and cooperation from the senior management and leaders at each participating facility. Project managers from each site worked closely with the Authority's Patient Safety Liaison who was responsible for coordinating and facilitating this project.

The mantra of the collaborative was "The right blood specimen is correctly labeled for the right patient every time." Process improvement measures took many shapes and forms depending upon the organization's event investigation findings and overall trending. They ranged from education and training, to redundancy in processes, to introduction of engineering controls and forcing functions.

Challenges were present along the way, but the group supported each other and the synergy it created was powerful in terms of developing innovative and creative strategies. One of the members came up with a slogan for the group (picture below) in which patients were part of the strategy in ensuring proper identification.

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<sup>16</sup> Lippe G, Blanckaert N, Bonini P, et al. Causes, consequences, detection, and prevention of identification errors in laboratory diagnostics. *Clinical Chemistry and Laboratory Medicine* 2009 47(2):143-153



With passion for providing safe patient-centered care and a commitment to achieving the goals of this program, the facilities involved in this collaborative experienced a cumulative decrease of 37% (statistically significant) in the number of mislabeled specimens within an 18-month period. In other words, all participating facilities experience at least three less mislabeling specimen events out of eight since the collaborative. Some facilities experienced zero events in more than two months of data collection.

This collaborative was a journey down “a road less traveled.” Not many credible literary resources were out there to draw upon. But, the nine health care institutions involved in this collaborative were persistent in their efforts and through hard work and creativity they were able identify and address areas for change and ultimately show a successful outcome. There were many lessons learned and multiple tools/forms developed to assist others in their quest to reduce phlebotomy specimen mislabeling. In fact, the organizations involved in the collaborative are now applying what

“Because the Authority was behind the collaborative, the other departments listened when we told them we have to make some process changes in order to avoid mislabeling errors.”

Barbara Booth, Lab Service Improvement Coordinator  
Geisinger Wyoming Medical Center  
Wilkes Barre, PA

they’ve learned to other specimen types as well as to other care areas in their organization. The Authority and the Mentor Hospitals from this collaborative are now responding to inquiries by Pennsylvania hospitals as well as others outside of our state, who are interested in learning our best practices and what would work best for

their respective organization. More detailed information about the work performed by this collaborative is available in a preprint of an *Advisory* article that will be published in June. Go to [www.patientsafetyauthority.org](http://www.patientsafetyauthority.org) and click on “*Patient Safety Advisories*” for the preprinted copy.

## Patient Safety Training for Executives and Boards of Trustees

In 2010, the Authority and the Hospital and Healthsystem Association of Pennsylvania (HAP) moved beyond the pilot program to educate hospital executives and boards of trustees begun in 2009 and began putting the pieces in place to train education consultants who will then educate facilities across the state. The education consultants are needed to fully implement the program statewide.

The pilot program to educate executive management and boards of trustees in relation to their role in improving patient safety is an initiative designed to raise awareness and increase responsibility for patient safety by bringing it to the board of trustee level.

The Patient Safety Authority partnered with the Hospital and Healthsystem Association of Pennsylvania (HAP) and the American Hospital Association (AHA) to develop and execute the pilot program. An advisory panel composed of executive leaders and trustees from hospitals and health systems assisted the Patient Safety Authority and HAP in developing the customized educational program that would help foster the kind of senior level and board engagement needed for improved patient safety.

A business model was developed and the Authority provided the funding needed to host training sessions in which 13 hospitals and approximately 300 persons participated. The feedback from the sessions was positive overall with some suggestions for improvement given before rolling the program out statewide.

One attendee remarked:

*“This conference provided the material and motivation necessary to complete a thorough review of our trustees’ role in quality and safety. I fully endorse the program for all hospital and health system trustees charged with or interested in quality and safety of the services their organizations provide...Susquehanna Health anticipates using a modified version of this curriculum for future programmatic evaluation and strategic planning. We are grateful that this program helped stimulate our thinking and provided us with the motivation to make these changes.”*

*Steven P. Johnson, FACHE, President and CEO, Susquehanna Health*

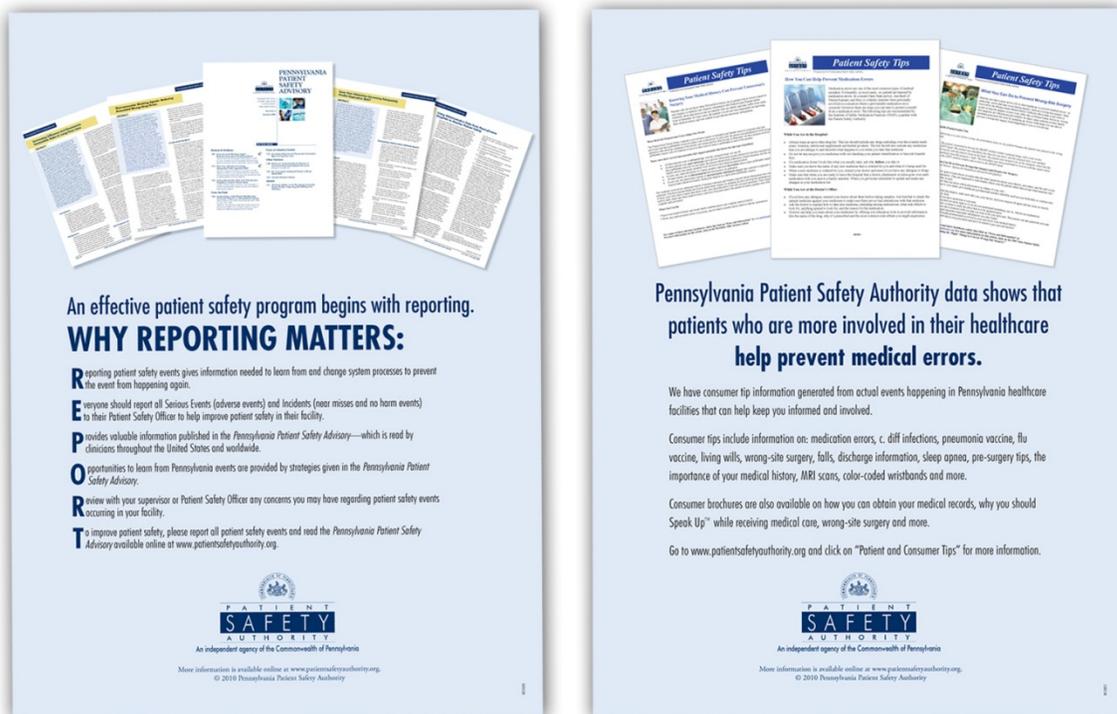
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Training for the education consultants is expected to be complete in late January 2011. The Authority and HAP are also working to develop additional funding sources. Through this collaboration, the Authority and HAP hope to train 100 additional facilities’ boards of trustees and executives over the next three years.

## Awareness Campaigns to Increase Patient Safety

In 2010, the Authority developed various awareness campaigns to increase patient safety. The first campaign coincided with national Patient Safety Awareness Week, March 7-13, sponsored by the National Patient Safety Foundation. Through its PSLs, the Authority recognized a need to encourage PSOs to reach out to staff and promote reporting and the *Patient Safety Advisories*. The Authority developed posters for the campaign that were sent to all hospitals and ambulatory surgical facilities. One poster entitled “Why Reporting Matters” highlighted the reasons staff should report Serious Events and Incidents. The *Patient Safety Advisories* were pictured on the poster to show staff what the *Advisory* looks like and to let them know the information they provide is not going into a black hole. The information is analyzed and guidance is developed to allow all facilities to learn from each other’s mistakes and near misses. PSOs were encouraged to hang the “Why Reporting Matters” posters in clinical staff areas.

A second poster promoting the Authority’s consumer tips was developed for the Patient Safety Awareness Week campaign as well. The poster highlighted the various consumer tips available for download and distribution on the Authority’s website. Business cards with the Authority’s website were also provided to facilities so they could be placed next to the consumer posters for patients and their families to take with them as a reminder. PSOs were encouraged to hang these posters in patient waiting room areas. All hospitals and ambulatory surgical facilities received several of the consumer tips posters and take-away cards.



A second campaign in 2010 during International Infection Prevention Week, October 17-23, was done to raise awareness of *Clostridium difficile* (*C. diff*), a potentially deadly bacterium that causes infection and is increasing significantly throughout the nation and worldwide. The Authority data confirmed national and international statistics showing *C. diff* cases rising at significant rates, particularly in Pennsylvania nursing homes. The Authority published the data and guidance for

preventing and eliminating *C. diff* in its 2010 March *Patient Safety Advisory*. The Authority also developed clinical posters on *C. diff* with guidance for prevention. *C. diff* consumer tips posters were also developed to help patients and their families recognize the symptoms. All hospitals, ambulatory surgical facilities, abortion facilities, birthing centers and nursing homes received the posters which can be viewed in the HAI section of this Annual Report. The Authority will continue to develop patient safety issue campaigns to raise awareness.

## Consumer Tips and Brochures

In 2010, the Patient Safety Authority continued to develop and distribute consumer tips sheets with selected *Advisory* articles. These tips provide patients with more knowledge about specific healthcare topics. They include: medication errors, wrong-site surgery, color-coded wristbands, falls, MRSA, the risks for sleep apnea patients and the importance of knowing your medical history. There are many opportunities for patients and their loved ones to become involved in their healthcare, from making decisions about treatment protocols to assuring that providers are adhering to safe practices such as hand washing and verifying medications before administering them. The consumer tips sheets are another educational tool the Authority uses to reach out to the facilities and their patients. The Authority expects to offer its consumer tips in Spanish in 2011. A complete guide of the consumer tips is also available for print on the Authority's website at [www.patientsafetyauthority.org](http://www.patientsafetyauthority.org).

***Specific tips and brochure topics include but are not limited to:***

### General Patient Safety Tips

What is the Patient Safety Authority?  
Know How to Choose the Best Facility for Your Healthcare Needs  
Help Your Doctor Diagnose You Correctly  
Leaving the Hospital? Don't Go Home Without Important Information  
What You Need to Know Before Having an MRI Scan  
Patients and Families Should Obey Rules to Prevent Choking Deaths  
Color-Coded Wristband Consumer Tips

### Infection Prevention Tips

Protect Yourself from Norovirus and Other Gastrointestinal Illnesses  
What You Need to Know About Central Line-Associated Bloodstream Infections (CLABSIs)  
C.Diff Infections: What You Should Know When Taking Antibiotics  
MRSA and Other Healthcare-Associated Infections

### Medication Related Tips

How You Can Help Prevent Medication Errors  
What You Need to Know About Insulin  
What You Should Know If You Are Receiving Dialysis

## **Obstetric Tips**

Why A Thorough Medical History is Important If You Are Pregnant  
Pregnancy and Diagnostic X-Rays: What You Should Know

## **Senior Tips**

Know Your Medical History  
What You Need to Know About Living Wills and DNR (Do Not Resuscitate) Orders  
How to Reduce Your Risk of Falling

## **Surgery and Anesthesia Tips**

Wrong-Site Surgery Consumer Tips  
What You Need to Know Before Surgery in an Ambulatory Surgical Facility  
Obstructive Sleep Apnea Consumer Tips

## **Vaccination Tips**

Why You Should Get the Pneumonia Vaccine  
Why You Should Get the Flu Vaccine

## **Brochures**

Speak Up™ (English and Spanish)  
Wrong-Site Surgery  
What You Need to Know About Your Medical Records  
Patient Safety Authority –Who We Are  
Pennsylvania Patient Safety Authority-The Facts

## **Help Desk Inquiries**

During 2010, the PA-PSRS Help Desk received nearly 1,900 inquiries from PA-PSRS users. Comments from the 2010 annual survey from nursing homes on satisfaction with the assistance received from the Help Desk included that the concerns were addressed immediately, a thorough explanation was provided, and the help desk staff are supportive. Among survey respondents who report using the Help Desk, 98% report that they were very or somewhat satisfied with the assistance they received.

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## **V. INTERVIEWS WITH HEALTHCARE STAFF ABOUT THE PATIENT SAFETY LIAISON PROGRAM**

In September 2010, the Authority invited Patient Safety Officers and other healthcare staff to its quarterly public board meeting to discuss the PSL program and how it was working for them. No remarks were scripted. The attendees were told to speak frankly. The interviews below were conducted after the board meeting, but give insight into what was said in the public forum. The minutes of the board meeting are available on the Authority's website at [www.patientsafetyauthority.org](http://www.patientsafetyauthority.org) for those who would like verbatim remarks.

**Anne S. Hast, RN, MSN, Chief Nursing Officer,  
Advanced Surgical Hospital, Washington, PA**  
*Authority and PSL Help Develop Patient Safety Program in New Facility*

Anne Hast was formerly vice president of Patient Care Services of a larger organization before becoming the Chief Nursing Officer at Advanced Surgical Hospital—a 14-bed for-profit, physician owned orthopedic specialty hospital. Anne helped open the doors on the new facility as its Patient Safety Officer. In her previous position, Anne had worked on patient safety for the organization as part of a group. At Advanced Surgical Hospital she is responsible for the entire patient safety program. Anne said she knew about the MCare Act and wrote the organization's patient safety plan for the Department of Health (DOH), but did not know about the Authority's Patient Safety Liaison program. The DOH surveyor for the facility suggested she give her PSL a call. She did and was advised by her PSL to sign up for two educational programs provided by the Authority called "Basics Foundation Course" and "Beyond the Basics." Anne also brought along her second in command to learn about the Authority.

"We attended each session and gained an appreciation for the wealth of information that is available to us," Hast said. "Between the website, the *Advisories* and educational programs the Authority has given us the tools we need to promote patient safety."

"[Our PSL's] personal contact is tremendous. He gave us a personal demonstration of what's available on the website and he also came to our Patient Safety Committee meeting to give an orientation and spoke to our four community members to make sure they knew about the consumer information available on the site as well," Hast added.

During the Patient Safety Committee meeting, Hast said her PSL also helped the facility come up with a game plan and goals for the year and helped plot them out.

Anne said for the meeting she used *Advisory* articles on MRI safety and Phenergen [medication that if administered incorrectly can cause gangrene to patients' fingers] and presented the findings and best practices to the committee members. She said the Authority's page on wrong-site surgery was placed high on the list for resource materials because the facility is an orthopedic facility. Anne said she also used their PSL to help with some additional training on Failure Mode and Effects Analysis (FMEA) and Root Cause Analysis (RCA) when an event occurred.

“Our PSL has been a tremendous help. He’s visited us four times and is always quick to answer my call with any question or problem I might have. He is always so responsive,” Hast said.

Anne said she also formulated questions from the Authority’s leadership series of articles in the *Advisories*. The articles help facilities engage their CEOs, boards of trustees and leaders within the facility by walking with them throughout various departments of the facility and allowing them to see first-hand how the department works. The series of articles shows facilities how engaging leadership in patient safety issues helps strengthen the organization and improve cooperation among staff.

The Authority also makes analytical tools available so each facility can gauge where they should focus their patient safety efforts.

“I had no idea the analytical tools were available. [My PSL] sat down with me and showed me how to use them,” Hast said. “He showed me how to break reports down into different categories like harm score and event types. We then took those reports and shared them with our pharmacy staff for medication errors and falls.

“I realized after the demonstration of the analytical tools that I didn’t have to manually tabulate reports,” Hast added.

Anne became Patient Safety Officer of the Advanced Surgical Hospital in May 2009. Her PSL joined the Authority in December 2009. She is grateful for the good timing.

“The PSL puts a face to your organization. [He’s] such a great ambassador. [His] involvement has made us a stronger organization and his information has given us a strong foundation for building a new facility around patient safety,” Hast said. “Our PSL has grounded us and helped us learn from the wealth of information.”

**Barbara Booth, Lab Service Improvement Coordinator,  
Geisinger Wyoming Medical Center, Wilkes-Barre, PA**

*Authority Collaborative Helps Facilities Work Together and Develop New Best Practices*

Before January 2010, Barbara Booth, a lab service improvement coordinator at Geisinger Medical Center, knew little about the Patient Safety Authority. She knew she had to report any Serious Events and Incidents (near-misses) to risk management. She knew the Patient Safety Authority collected the data but she didn’t know what was done with the data. That is until the Phlebotomy Specimen Mislabeling Collaborative began in January 2010.

Barbara received a note from the risk manager at Geisinger saying the Authority was trying to get a group together that would be willing to do a collaborative on blood specimen mislabeling. Barbara went to a meeting with her director and the Authority to discuss the objectives of the collaborative.

“The Authority began the meeting by showing us a number of facilities and each facility’s events related to mislabeling of specimens,” Booth said. “We remarked to one another in my group about a particular facility that had many more events than the rest of the facilities. We thought to ourselves that facility must have many problems and be unsafe. But we learned from the Authority that it meant that facility was probably safer because staff reported so many events.

“We acknowledged that time often posed a problem for us to report every single incident that occurred in the laboratory so we decided to work with the collaborative because we all agreed we could do better with just culture, improving our processes, observations and investigations of events,” Booth said.

The project met via conference call weekly in the beginning then, bi-weekly. Overall nine facilities from the Northeast region participated with a promise to each other that everything would be reported. Barb was the team facilitator for Geisinger.

Overall the collaborative saw a 37 percent drop in blood specimen mislabeling events. Gesinger saw a more significant drop individually in their intensive care unit which was the only area they concentrated on for the collaborative. Barbara said they are going to take what they learned in the collaborative and implement it in the other areas taking into account that each area may function a little differently.

“The collaborative was quite beneficial,” Booth said. “The weight of the Authority behind the project helped me get my other departments on board in the facility. Usually when an event occurred regarding a lab specimen, other staff would just brush it off as ‘a lab issue’ when it really involves many other departments.

“Because the Authority was behind the collaborative, the other departments listened when we told them we have to make some process changes in order to avoid mislabeling errors,” Booth added.

The phlebotomy blood specimen mislabeling collaborative was initially going to be a 12-month project, but was extended to 18 months because facilities were finding the longer the program went the more opportunities they found for improving their process changes and forming best practices. The project began in July 2009 and ended in December 2010.

When researching for best practices for the collaborative, the Northeastern PSL found there wasn’t much done in regard to best practices. She found the Centers for Disease Control and Prevention (CDC) and the Department of Health and Human Services (HHS) commissioned a workgroup of experts in laboratory medicine in 2007 to review available literature on laboratory medicine best practices. The three-phase project ended in 2010 and showed what the Authority also found in its collaborative. The best practices were just identified in these projects spearheaded by the national groups and the Authority.

In fact, one of the facilities that participated in Phase III of this CDC project also participated in the Authority’s Phlebotomy Specimen Mislabeling Collaborative.

“Overall, I think the collaborative was a wonderful thing,” Booth said. “All of the groups were there to fix the same problem which was nice to have a common goal. Before this collaborative, we were competing for different reasons, it was nice to come together and discuss our common problems. Now I have connections with people in nearby facilities that I feel I can call if I have an issue I need to resolve.

“Through this collaborative I was able to show others in the facility that specimen mislabeling is a problem for everyone, not just those working in laboratories,” Booth added. “This collaborative led by the PSL and the Authority helped me show that it’s not just about collecting data. It’s about working together to improve patient safety and reduce medical errors.”

**Denise McCloy, Patient Safety Officer,  
Highlands Hospital, Connellsville, PA**

*Small Facilities Look to the Authority and PSL Program for Help from the “Experts”*

Denise McCloy is the Patient Safety Officer at Highlands Hospital in Connellsville, Pennsylvania. The 71-bed acute care facility is a small facility that utilizes the Authority and its PSL as much as possible. Below are her comments on different programs and educational initiatives the Authority offers.

### **The PSL Program**

“We’re a very small hospital so let me just say we are very appreciative of any help we can get from the experts, and we consider the Authority, as experts,” McCloy said. “As a PSO I have to wear many hats so the Authority and PSL program has been a great help to me in filtering the wealth of information that comes not only from the Authority [data] but from other national organizations as well.

“We know we’re getting the best of the best from our PSL,” McCloy added.

### **The Pennsylvania Patient Safety Advisories and Website**

“I love them and all of my department heads love them. They have helped me redefine my standard operating procedures. We’ve initiated PI studies from them as well. We’re thankful that we have the *Advisory* as a resource. I have ensured that all of my department heads have signed up to receive the *Advisory* directly in their email as soon as they are released. I also send them a copy to make sure they have seen them.”

“I take the *Advisory* articles and go over them with our Patient Safety Committee and also review our own event reports,” McCloy added. “Right now, we’re concentrating on falls and medication errors. I am looking to my PSL for help in this area to make sure I’m doing everything I can [to prevent medical errors].

“I’ve also linked the Authority website to our website so anyone going onto our website knows what a resource the Authority is,” McCloy added.

### **Educational Courses**

“The basic foundation course and advanced course are wonderful. I hope they continue,” McCloy said. “I’ve taken some of the information from the courses and educated our patient safety committee. The Just Culture information is also very helpful. We have a journey getting to a Just Culture, but we’re working on it,” McCloy said. “I’m hoping the Authority helps with more educational courses in Just Culture.”

*[The Authority Director of Educational Programs and Northeast PSL became certified in Just Culture education in March 2011. More courses will be developed from the information they’ve learned through the certification process.]*

## Collaborations

“Our infection control practitioner is working on the ventilator-associated pneumonia collaboration with the Authority. We hope to do more. When it comes to patient safety, I think we all appreciate the opportunity to work together,” McCloy added.

*[More on the ventilator-associated pneumonia (VAP) collaboration is detailed on page 54 of this Annual Report.]*

### **Kristie Lowery, Patient Safety Officer, Lehigh Valley Health Network, Allentown, PA**

#### *Authority’s Advisory Article Helps Make Culture Change and Collaborative Brings New Focus with Dramatic Results*

Kristie Lowery has been the Patient Safety Officer with the Lehigh Valley Health Network since 2005. Prior to that role, she worked in risk management and long-term care. Kristie said when the Authority was created through the MCare Act in 2002 there was a general concern that the facility would be reporting so much more than it was required to report under Chapter 51.

The MCare Act called for mandatory reporting of not only events that harmed the patient but also those that did not harm the patient called near-misses. Under the MCare Act, the Department of Health receives Serious Events and Infrastructure Failures for its regulatory purposes, while the Authority receives Serious Events and Incidents or near-misses for its educational purposes.

However, Kristie says the information developed by the Authority has proven useful.

“I send out *Advisory* articles to the departments they pertain to,” Lowery said. “I also refer back to *Advisory* articles if we have an event and I like to use the toolkits too.”

Some of the *Advisory* articles Kristie has used to spur change at Lehigh include but are not limited to: standardizing color-coded wristbands, preventing wrong-site surgery, preventing skin tears and monitoring IV infiltrations.

The move to standardize color-coded wristbands began in northeastern Pennsylvania when clinicians almost failed to rescue a patient who suffered a heart attack because the patient had been incorrectly designated as a DNR (do not resuscitate) patient. Fortunately, another clinician remembered the patient was not a DNR and the patient was resuscitated. At the facility’s request where the incident occurred, the Authority surveyed PSOs in Pennsylvania to determine how many colors were used in each facility and to communicate which meaning. The survey showed a wide variation of colors used to communicate different meanings. This near-miss began a movement to standardize color-coded wristbands, not only in Pennsylvania but across the United States. To date, 40 states have done some form of standardization of color-coded wristbands.

Lehigh Valley Health Network participated in the movement begun in the northeast through the Color of Safety Task Force. Comprised of 11 healthcare facilities in the northeast and central Pennsylvania, the task force established a standardization and implementation manual which was quickly used as a resource by other states.

Along with standardizing their color-coded wristbands, Lehigh Valley also made a culture change within their organization to emboss or pre-print text onto the color-coded wristbands instead of using handwriting to denote characteristics of a patient. The handwriting method poses risks to the patient because it is not reliable, the information fades, multiple characteristics don't fit on one wristband and sometimes information is not current. Facilities are advised to not rely on color-coded wristbands to provide every piece of information about the patient. This guidance was given in the color-coded wristband standardization manual but proved challenging for Kristie to persuade staff at Lehigh to make the change.

"It took a lot of effort to make the change because it was a culture change," Lowery said. "It took about a year for everyone to get on board. It took time to convince those using the handwriting method that it was not reliable and a patient safety risk.

Kristie said the change also was made more difficult because they realized not everyone had access to patients allergies listed on the computer.

"We had to have one central location where staff could go to find out what allergies a patient had," Lowery added.

Lehigh Valley also participated in the phlebotomy specimen mislabeling collaborative. Kristie said the facility was hesitant to join the mislabeling collaborative because the facility had already been tackling the problem for years.

"We took a look at our inpatient units and saw that we had a high number of mislabeling lab specimen events so we embarked on this journey with the Authority," Lowery said. "We pulled a team of employees and drove full force by involving several different representatives from different areas who took part in the entire process.

"That inpatient unit decreased by sixty-seven percent, we are now taking what we learned from the collaborative and implementing it in other units. I don't know that we would have focused on that area given everything we were already doing if it hadn't been for the Authority's collaborative," Lowery added.

## **VI. THE AUTHORITY'S ANNUAL SURVEY OF PATIENT SAFETY OFFICERS**

In December 2010, the Authority invited our registered primary contacts at healthcare facilities in the Commonwealth to participate in an online survey. Those contacts at hospitals and other acute care facilities are Patient Safety Officers (PSOs), and at nursing homes are Infection Prevention Designees (IPDs). The intent of the survey was to solicit their feedback on the Authority's activities and the performance of the Pennsylvania Patient Safety Reporting System (PA-PSRS). The survey also solicited their opinions on topics that would influence the Authority's direction and focus over the coming year, such as:

- Their opinion of the quality of the *Pennsylvania Patient Safety Advisory*.
- Their impression of the Patient Safety Liaisons program.
- Their use of the online analytic data tools available in PA-PSRS.

Responses were collected over a 21-day period. Of the 1,252 invitees, PSOs and IPDs from 84 hospitals (HSPs), 81 ambulatory surgery facilities (ASFs), two birthing centers (BCs), four abortion facilities (ABFs) and 283 nursing homes (NHs) responded, resulting in a 36.3% response rate. For purposes of data analysis, the birthing centers and abortion facilities were grouped with the ASFs when comparing responses from different types of facilities.

## Pennsylvania Patient Safety Advisory

As in previous surveys, PSOs and IPDs collectively gave the *Pennsylvania Patient Safety Advisory* high marks on usefulness (97.6%), relevance (98.1%), readability (99.5%), scientific quality (99.7%) and educational value (98.4%) among those responding. These percentages combine the positive response ratings (i.e., very and somewhat useful) to contrast negative response ratings (i.e., not useful at all). Figure 6.1 breaks out the response ratings in detail.

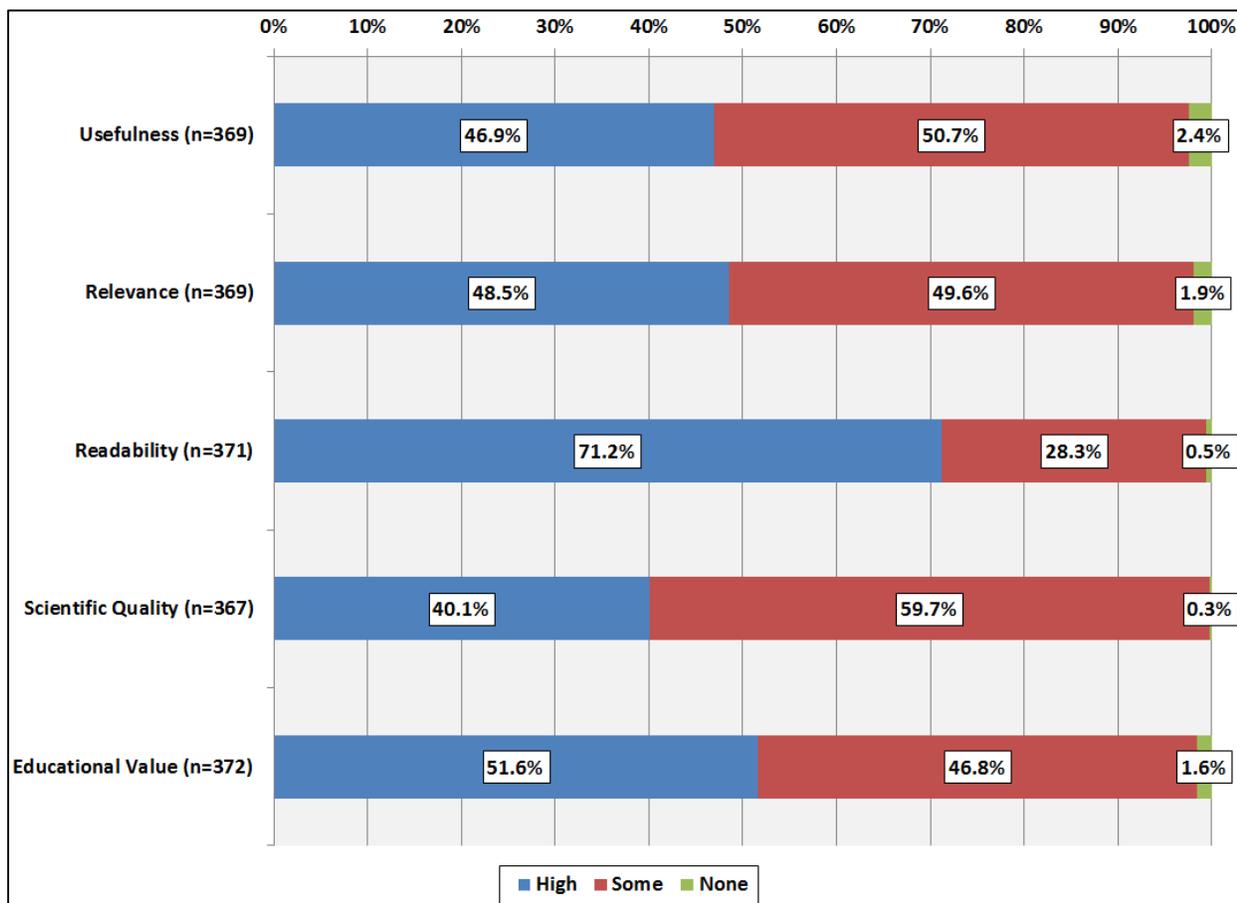


Figure 6.1. Responses by percentage in quality categories of the *Pennsylvania Patient Safety Advisory* (n = number of responses).

Comparing against last year’s marks, the percentage of responses rating each characteristic “Very” or “High” increase in three out of five cases: usefulness went from 44.6% to 46.9%; relevance, 43.1% to 48.5%; readability, 73.5% to 71.2%; scientific quality, 41.8% to 40.1%; educational value, 49% to 51.6%. To delve into these numbers further, we see that acute care facilities had a relatively more positive view of the *Advisory* than nursing homes (Figure 6.2). This may be because the *Advisory* contains more articles on a broader variety of topics pertaining to acute care, based on the reports the Authority receives from facilities. Nursing homes are only required to report healthcare-associated infections (HAIs), limiting the scope of topics somewhat. However, the *Advisory* does contain articles on topics other than HAI that may be of interest to nursing homes.

	Acute Facilities				Nursing Homes			
	n	High	Some	None	n	High	Some	None
Usefulness	136	55.1%	44.1%	0.7%	233	42.1%	54.5%	3.4%
Relevance	135	60.0%	40.0%	0.0%	234	41.9%	55.1%	3.0%
Readability	135	85.2%	14.8%	0.0%	236	63.1%	36.0%	0.8%
Scientific Quality	135	48.1%	51.9%	0.0%	232	35.3%	64.2%	0.4%
Educational Value	136	63.2%	36.8%	0.0%	236	44.9%	52.5%	2.5%

Figure 6.2. Comparison of response percentages related to the *Pennsylvania Patient Safety Advisory*

Another line of questioning regarding the *Advisory* focused on the new email format. A majority (69%) of those who responded to the question thought the new features accompanying this format were at least somewhat better than the old format. Among the comments made were that it was easier to access the *Advisory* through the email and it was easier to disseminate it to staff and peers. Here are a few comments from the survey that capture the propagation of the *Advisory* that the Authority is pleased to see:

*“A link to the Advisory is placed in the shared file and an e-mail goes out that the new Advisory is available. Specific articles are forwarded each month to a specific manager when appropriate.”*

*“We send the Advisories to all clinical areas and also post it on our internal internet for 24/7 access by staff. The Advisory helps us evaluate our current methods and alerts us to possible problems other hospitals have experienced, which allows us to proactively prevent incidents.”*

*“We review the Advisory each quarter, send to appropriate manager, and when opportunities for improvement are identified, then actions to change are made.”*

*“I have based many in-services off of the Advisory articles. I find them useful and have passed along information monthly in the infection control meetings. All information in the Advisory is very welcomed. It is a great resource for education and knowledge.”*

*“I use the Advisories for topics at my resident unit based meetings. Keeping long-term residents knowledgeable about current issues has a great impact in keeping our infection rates down. They are willing and attentive to learning, and staying healthy is quite important to them.”*

## The Patient Safety Authority Strives to Promote Change

Among PSOs responding to the survey, 63% report making or planning to make changes based on one or more *Patient Safety Advisory* articles. This suggests that the Authority continues to achieve one of its' original objectives of providing healthcare facilities across the state with useful feedback through the *Advisory*. This result is likely due in part to *Advisory* articles' inclusion of specific suggestions for improvement. The 171 PSO participants of the survey reported making 346 changes in their facilities as a result of specific *Advisory* articles, as seen in Figure 6.3.

Examples of the kinds of improvements reportedly made by facilities as a result of *Advisory* articles include:

- *“Staff used the Wrong Site tool to monitor time outs in OR. We also changed the way we read forms to the surgeon, the anesthesiologist and the patient.”*  
*“We are very cognizant of how all parameters of the site identification by all staff members and physicians must be met and re-met during time-out to keep wrong-site surgeries from taking place.”*  
*“For the time out, we posted several different scripts and the staff identified one format that everyone is to use. Now all the team members are saying the same thing.”*  
([Quarterly Advisory articles and toolkits associated with Preventing Wrong-site Surgery](#))
- *“We changed policies for the prescription and administration of Dilaudid.”*  
([Adverse Drug Events with HYDRORomphone: How Preventable Are They?](#))
- *“Our facility used the Advisory as basis for revised study modules for OB department.”*  
([Supplemental Advisory regarding Labor and Delivery](#))
- *“I look for your input as we face the flu and norovirus season for new ways to educate and inform the staff and visitors.”*  
([Controlling the Annual Threat of Norovirus Gastroenteritis Outbreaks](#))
- *“We attempt to call physicians when they place residents on antibiotics and ask them if they are asymptomatic and we call and ask that medication be discontinued.”*  
([Clostridium Difficile Infections in Nursing Homes](#))

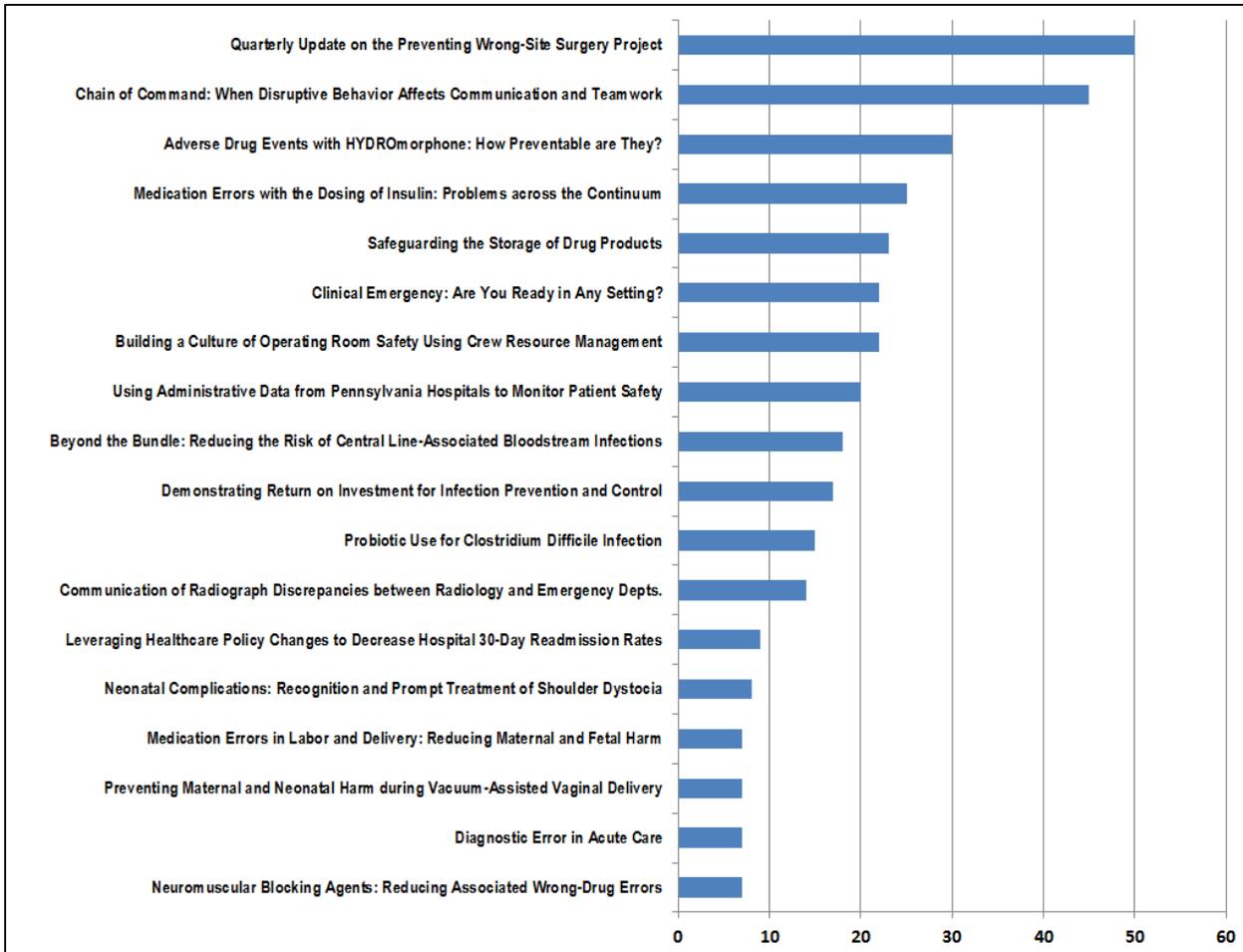


Figure 6.3. Patient Safety Advisory Articles Cited by PSOs as Prompting Them to Make Changes in 2010 (346 changes).

## Impressions of the PSL Program

The Authority has established regional Patient Safety Liaisons (PSLs) who interact more directly with acute care facilities. PSOs were asked to indicate how often their facility had interacted with their respective PSL in a variety of formats (Figure 6.4). They were also asked about the usefulness of their experience with the PSLs (Figure 6.5). Further, 39% of the PSOs who responded reported that they have made or are planning changes based on the interaction with the PSL.

Interaction with PSL (# responses)	Often	Several times	Once or twice	Not at all
Engaged in a phone call (n=155)	9.0%	51.6%	34.2%	5.2%
Engaged in a facility visit (n=157)	4.5%	40.1%	53.5%	1.9%
Attended an Authority-sponsored educational offering (n=156)	8.3%	32.7%	46.2%	12.8%
Requested education regarding PA-PSRS or other patient safety information and/or resources (n=153)	3.9%	29.4%	43.8%	22.9%
Participated in group collaborative moderated by a PSL (n=150)	3.3%	10.7%	30.7%	55.3%
Requested guidance on a failure mode and effects analysis (FMEA) at your facility (n=152)	0.0%	2.6%	15.8%	81.6%
Requested guidance on communication of best practices regarding patient safety at your facility (n=155)	0.6%	16.1%	35.5%	47.7%
Engaged Authority representatives to speak to frontline practitioners on clinical topics (n=149)	0.0%	2.7%	13.4%	83.9%

Figure 6.4. Interactions with PSLs by Acute-level Facility PSOs

Response (n=157)	%
Very Useful	70.7%
Somewhat Useful	23.6%
Not Useful	2.5%
No Opinion	1.9%
No Contact	1.3%

Figure 6.5. Perceived Usefulness of PSLs by Acute-level Facility PSOs

Note that in response to a separate question, 17% responded that they were in the PSO position for less than a year, so exposure to their PSL would have been somewhat limited.

The acute-level facility PSOs were asked further about the topics of interest they would like to discuss with their PSL. Toolkits and risk reduction strategies received the most interest (Figure 6.6).

Topics of Interest (# responses)	High Interest	Some Interest	Low Interest	No Interest at all
Healthcare Associated Infections (HAI) (n=148)	34%	39%	23%	5%
Risk Reduction Strategies (n=152)	43%	49%	8%	1%
Medication Safety (n=149)	38%	46%	15%	1%
Wrong Site Surgery (n=148)	26%	29%	29%	16%
Toolkits and other educational resources (n=149)	44%	46%	7%	3%
Teamwork and communication (n=151)	43%	44%	11%	2%
Potential networking sessions (n=151)	42%	42%	12%	4%

Figure 6.6. Topics of Interest to Discuss with PSLs

## Impressions of PassKey

One aspect of the PSL program implemented this past year was the Patient Safety Knowledge Exchange, or PassKey, as it is commonly known. This is a secure website designed to share information, ideas and solutions related to patient safety. This website was designed and is maintained by the Authority for the exclusive use of Pennsylvania Patient Safety Officers and their delegates, as well as participants in Authority-sponsored regional or statewide collaboratives. The Authority encourages facilities to post information regarding how they are improving patient safety in their facilities so other facilities can learn from their success stories. PassKey will also allow facilities to ask questions and to search for answers that may already be provided on the site. PSLs are able to further interact with their regional facilities by posting their contact information, a calendar of events and information about collaboratives in the region.

Of the PSOs surveyed, 98.2% of those who have used it agree it is a valuable tool in sharing good practices between Pennsylvania facilities. Further, 88.3% agree they are looking forward to using it as a tool in stimulating discussions about patient safety. However, about half (52.5%) of the PSOs responded they are not wholly comfortable using PassKey. Some PSOs have expressed concerns about the confidentiality of information posted on Passkey.

## Use of Analytic Data Tools in PA-PSRS

The PA-PSRS system has a variety of reporting tools available to users of the system, both in nursing homes and acute care facilities, such as hospitals and ASFs. Along with pre-defined reports, there are also tools to download data from PA-PSRS for analysis in order to track and improve patient safety performance. The reporting tools have both chart-based and tabular formats and can be customized to isolate specific time periods and event types (see Figure 6.9 for an example).

### Acute-level Facilities' Use of Analytic Tools

When responding acute care facility PSOs were asked whether these analytic data tools were a key source for aggregate information about patient safety in their facility, 73.2% agreed they were. Further, 34.1% responded their facility relies on them as their primary analytic tools. One of the

drawbacks PSOs noted was the reporting tools were somewhat inflexible. They said they were not able to gain the detail they desired.

About a third of the responding PSOs reported they used the analytic data tools at least monthly or more often; about 30%, less often and the rest, not at all (Figure 6.7).

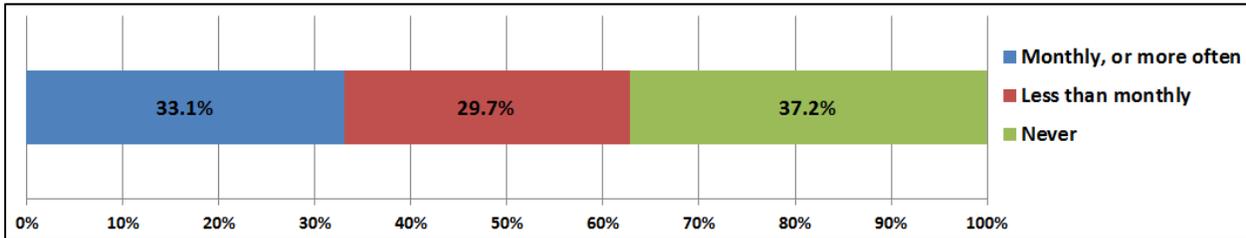


Figure 6.7. Responding PSOs use of Analytic Data Tools in PA-PSRS (n=145)

Some PSOs also named other tools or methods they used for analyzing PA-PSRS data; of those named, almost half used Excel or Access (see Figure 6.8).

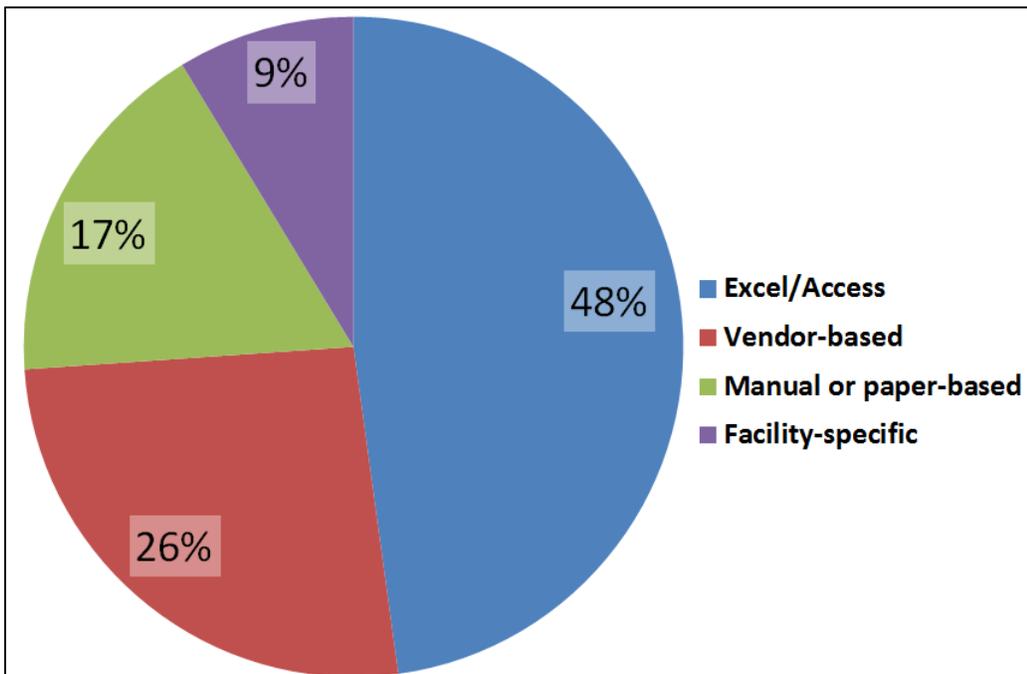


Figure 6.8. Named tools used to analyze PA-PSRS data (n=23)

### **Nursing Homes' Use of Analytic Tools**

Infection Prevention Designees (IPDs) in nursing homes also have analytical data tools available in PA-PSRS. Figure 6.9 shows an example of a nursing home report provided in PA-PSRS for IPDs, the “Catheter Associated Urinary Tract Infection Rate,” chart version. As with most other reports, there is a tabular version so facilities can perform further analysis.

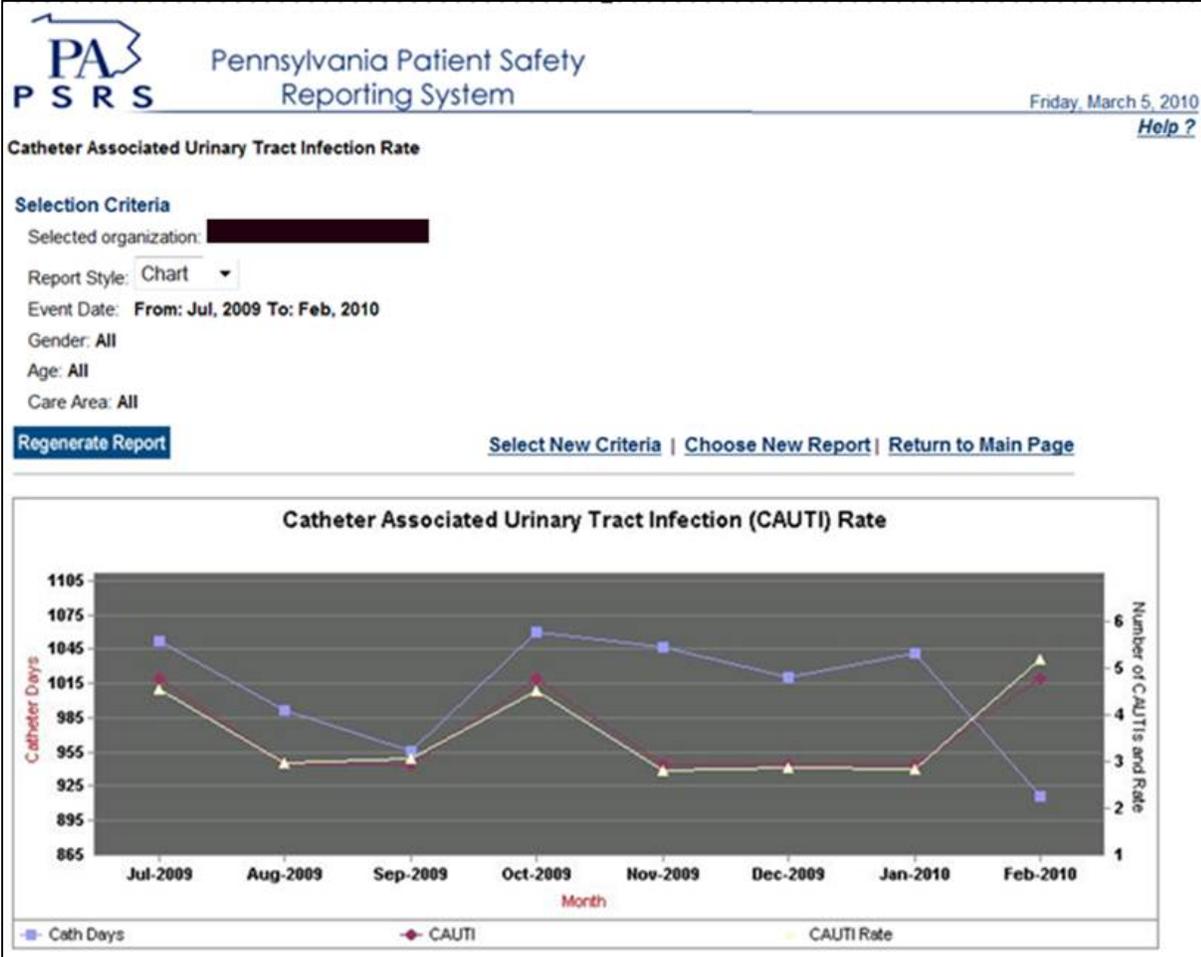


Figure 6.9. Example of a Report Provided in PA-PSRS – “Catheter Associated Urinary Tract Infection Rate”

Their responses to similar questions asked of PSOs yield differing views. Almost 60% of responding IPDs reported using the analytic data tools at least monthly or more often (Figure 6.10). This may be because nursing homes have fewer alternatives to PA-PSRS for monitoring safety than hospitals, many of which have implemented electronic patient safety programs internally.

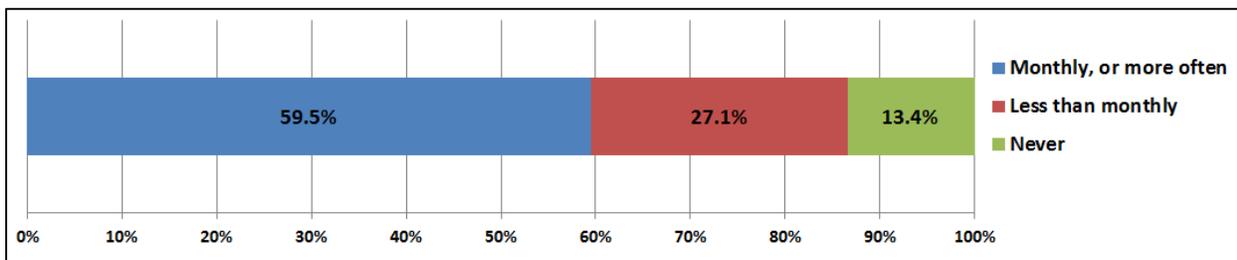


Figure 6.10. Responding IPDs use of Analytic Data Tools in PA-PSRS (n=247)

IPDs were asked how useful they found the specific reports available to them in PA-PSRS and they largely found them useful, as demonstrated by Figure 6.11. The search tool had the highest percentage of users (95.8%) that found it useful. The three reports with the lowest of percentages also were the three reports that respondents never used or had no opinion towards. Two of the three involve vaccination rates while the third lowest was the data export tool.

Reports Available to Nursing Homes in PA-PSRS	n	Very Useful	Somewhat Useful	Not Useful	No Opinion / Never Used
Search Submitted Event Reports	239	42.7%	33.5%	3.3%	20.5%
Catheter Associated Urinary Tract Infection Rate Report	236	30.1%	39.4%	5.1%	25.4%
Catheter Utilization Report	232	29.7%	41.4%	6.0%	22.8%
Respiratory Tract Infection Rate Report	233	27.5%	41.2%	3.9%	27.5%
Respiratory Tract Infection Vaccination Proportion Report	231	18.2%	27.7%	7.4%	46.8%
Respiratory Tract Infection Vaccination Failures Report	231	16.5%	26.8%	8.2%	48.5%
Skin and Soft Tissue Infection Rate Report	236	23.7%	39.0%	5.1%	32.2%
Gastrointestinal Infection Rate Report	232	23.3%	40.1%	4.7%	31.9%
Data Export	225	14.2%	28.4%	5.8%	51.6%

Figure 6.11. Usefulness of PA-PSRS Reports according to Responding IPDs

## Summary

In our 2010 survey of Patient Safety Officers and Infection Prevention Designees, respondents voiced their opinion that they find the *Patient Safety Advisory* an informative and useful publication, once again giving high evaluations for all named categories. Affirmative assessments were given for the evolving PassKey program as well. PSOs indicated that Patient Safety Liaisons are useful in stirring positive change in their facilities. There were positive reviews for the analytic tools in PA-PSRS among those using them; an opportunity exists to expand use, perhaps through user training sessions and improving the tools themselves.

## VII. THE PATIENT SAFETY AUTHORITY ADVISORY

### Pennsylvania Patient Safety Advisory Subscriptions Go Global

#### Program Distribution

The Pennsylvania Patient Safety Authority distributes its *Pennsylvania Patient Safety Advisory* to more than 5,000 program affiliates (i.e., acute healthcare facilities, nursing homes, board and panel members in Pennsylvania) as of December 31, 2010. About 25% of these recipients are patient safety officers in acute healthcare facilities or infection prevention designees in nursing homes (see Figure 7.1). The remaining majority constitutes other recipients affiliated with the Authority's reporting facilities or patient safety programs (e.g., senior corporate officials, other affiliates of the facilities reporting events to the Authority through PA-PSRS).

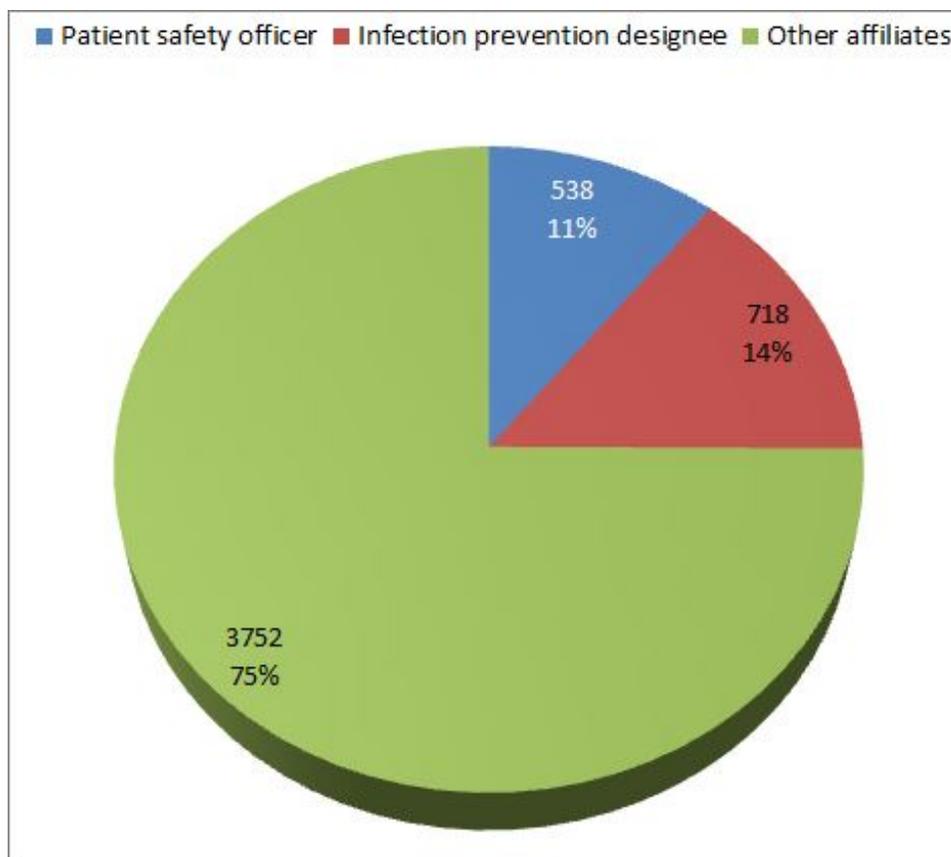


Figure 7.1. *Advisory Program Affiliate Distribution, as of December 31, 2010*

## General Distribution

There are non-program subscribers in Pennsylvania, the remainder of the United States, and in other countries who receive the quarterly *Advisory*. Of the total non-program subscribers (i.e., general distribution; n = 2,496 as of December 31, 2010), about 96% are U.S. based. Of non-U.S. subscribers, the five highest by percentage are Canada (1.20%), Australia (0.36%), the United Kingdom (0.32%), Germany (0.20%), and Malaysia (0.16%). (See Figure 7.2 for a complete listing.)

Country	Subscribers	Percentage	<i>(continued)</i>	Country	Subscribers	Percentage
United States	2,397	96.03%	France	2	0.08%	
Canada	30	1.20%	Hong Kong SAR	2	0.08%	
Australia	9	0.36%	Lebanon	2	0.08%	
United Kingdom	8	0.32%	Philippines	2	0.08%	
Germany	5	0.20%	Switzerland	2	0.08%	
Malaysia	4	0.16%	Taiwan	2	0.08%	
Netherlands	3	0.12%	Austria	1	0.04%	
Saudi Arabia	3	0.12%	China	1	0.04%	
Singapore	3	0.12%	Indonesia	1	0.04%	
Spain	3	0.12%	Israel	1	0.04%	
Sweden	3	0.12%	Japan	1	0.04%	
Argentina	2	0.08%	Malta	1	0.04%	
Belgium	2	0.08%	New Zealand	1	0.04%	
Brazil	2	0.08%	Turkey	1	0.04%	
Colombia	2	0.08%	<b>Total</b>	<b>2,496</b>	<b>100%</b>	

Figure 7.2. *Advisory* Non-Program Subscribers by Country, as of December 31, 2010

## U.S. Locale

Of the U.S. subscribers (n = 2,397), Pennsylvania accounts for the greatest percentage (56.4%), followed by California (2.71%), Illinois (2.67%), Massachusetts (2.50%), New York (2.04%), and Florida (1.88%) as the next five states by percentage. About 7.68% of U.S. subscribers did not indicate a specific state in the subscription records and were otherwise unidentifiable by the information provided (e.g., zip code, city, e-mail domain). While there are no general distribution subscribers listed from Vermont, the *Advisory* does have an editorial board member who resides there; thus, the *Advisory* has subscribers located in all 50 states. (See Figure 7.3).

<b>State</b>	<b>Subscribers</b>	<b>Percentage</b>	<b>(continued)</b>	<b>State</b>	<b>Subscribers</b>	<b>Percentage</b>
Pennsylvania	1,352	56.40%	Delaware	9	0.38%	
California	65	2.71%	Oklahoma	9	0.38%	
Illinois	64	2.67%	South Carolina	9	0.38%	
Massachusetts	60	2.50%	Arizona	8	0.33%	
New York	49	2.04%	Iowa	8	0.33%	
Florida	45	1.88%	Puerto Rico	8	0.33%	
Maryland	43	1.79%	Kansas	7	0.29%	
Ohio	38	1.59%	New Hampshire	7	0.29%	
Texas	36	1.50%	Hawaii	6	0.25%	
New Jersey	33	1.38%	New Mexico	6	0.25%	
Virginia	33	1.38%	Mississippi	5	0.21%	
North Carolina	29	1.21%	Nevada	4	0.17%	
Indiana	26	1.08%	Rhode Island	4	0.17%	
Michigan	23	0.96%	West Virginia	4	0.17%	
Missouri	23	0.96%	Idaho	3	0.13%	
Tennessee	19	0.79%	Wyoming	3	0.13%	
Washington	19	0.75%	Arkansas	2	0.08%	
Washington, D.C.	18	0.75%	Nebraska	2	0.08%	
Alabama	17	0.71%	South Dakota	2	0.08%	
Colorado	16	0.67%	Utah	2	0.08%	
Wisconsin	15	0.63%	Alaska	1	0.04%	
Georgia	14	0.58%	Montana	1	0.04%	
Maine	12	0.50%	North Dakota	1	0.04%	
Kentucky	11	0.46%	Virgin Islands	1	0.04%	
Louisiana	11	0.46%	Vermont	0	0.00%	
Minnesota	11	0.46%	Unknown	184	7.68%	
Oregon	10	0.42%				
Connecticut	9	0.38%	<b>Total</b>	<b>2,397</b>	<b>100%</b>	

Figure 7.3. Advisory U.S. Non-Program Subscribers by State/District/Territory, as of December 31, 2010

## General Distribution Growth

The number of general subscribers continues to grow. The Authority switched to a new e-mail distribution system in July 2010. Through December 31, 2010, 214 individuals (representing a 9% increase) elected to receive the *Advisory* (see Figure 7.4). Fifty-five percent of the new subscribers are located in Pennsylvania.

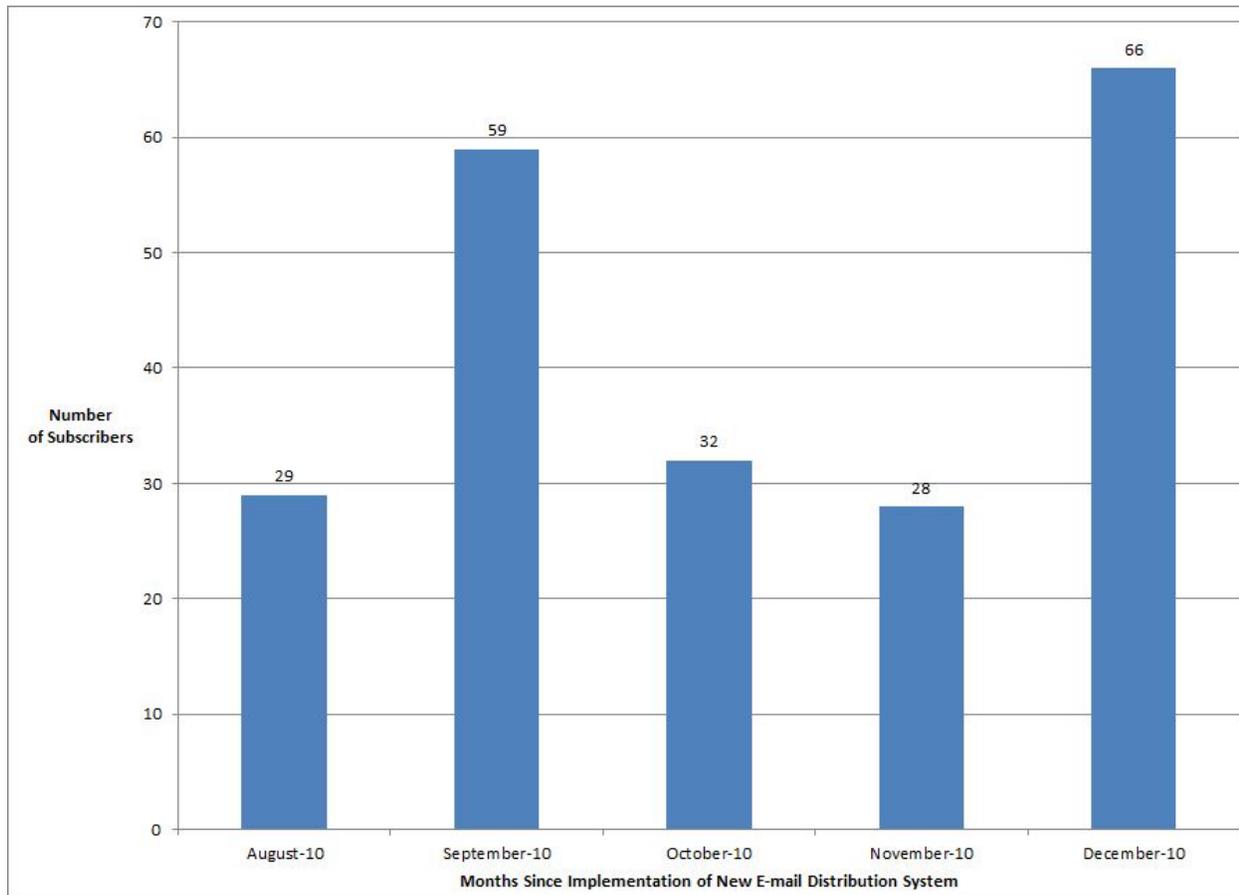


Figure 7.4. *Advisory* Non-Program Subscribers, as of December 31, 2010

## Subscribers of Interest

Excluding the majority of healthcare systems and facilities, the *Advisory* is received by subscribers from organizations and agencies of note in Pennsylvania, the remainder in the United States, and in other countries.

Pennsylvania organizations and agencies include the following:

- Pennsylvania Ambulatory Surgery Association
- Pennsylvania Department of Aging
- Pennsylvania Medical Society
- Pennsylvania Health Care Cost Containment Council
- Pennsylvania Department of Health
- Pennsylvania Office of the Budget
- Pennsylvania Capitol Police Department
- Planned Parenthood of Central Pennsylvania
- Pennsylvania State Board of Medicine

Other U.S. agencies and organizations include the following:

- Federal government and other national healthcare improvement organizations:
  - Agency for Healthcare Research and Quality
  - American Association of Critical Care Nurses
  - American College of Physicians (New York chapter)
  - American Congress of Obstetricians and Gynecologists
  - American Hospital Association
  - American Society of Health-System Pharmacists
  - Association of periOperative Registered Nurses
  - Board of Registration in Medicine
  - Center for Devices and Radiological Health
  - Centers for Disease Control and Prevention
  - Consumers Advancing Patient Safety
  - Institute for Healthcare Improvement
  - Joint Commission
  - National Academy for State Health Policy
  - National Patient Safety Foundation
  - National Quality Forum
  - Physician Insurers Association of America
  - U.S. Department of Health and Human Services
  - U.S. Department of Veterans Affairs
  - U.S. Food and Drug Administration
  - U.S. National Institutes of Health
  - U.S. Office of Inspector General
  - United States Pharmacopeia

- State government and other healthcare improvement organizations:
  - Alabama Department of Mental Health
  - Connecticut Hospital Association
  - Georgia Hospital Association
  - Indiana Hospital Association
  - Los Angeles County Department of Health Services
  - Maryland Department of Health and Mental Hygiene
  - Massachusetts Coalition for the Prevention of Medical Errors
  - Massachusetts Department of Public Health
  - Massachusetts Hospital Association
  - Masspro
  - Minnesota Hospital Association
  - New Jersey Department of Health and Senior Services
  - New Jersey Hospital Association
  - New York City Health and Hospitals Corporation
  - New York State Department of Health
  - Oklahoma Department of Mental Health and Substance Abuse Services
  - Oregon Patient Safety Commission
  - South Carolina Department of Labor, Licensing and Regulation
  - Washington State Department of Health and Social Services
  - Wisconsin Department of Health Services
  - Wisconsin Hospital Association

Non-U.S. agencies and organizations include the following:

- Cancer Care Ontario (Canada)
- Clinical Excellence Commission (Australia)
- Hospital Authority of Hong Kong
- Industrial Technology Research Institute of Taiwan
- New South Wales Department of Health (Australia)
- NHS Bedfordshire (United Kingdom)
- Queensland Health (Australia)
- U.K. National Patient Safety Agency

## Patient Safety Information Based on Report Analysis and Research

The *Pennsylvania Patient Safety Advisory* is the primary means through which the Pennsylvania Patient Safety Authority communicates with healthcare facilities about the significant trends identified in events reported through its reporting system. The *Advisory*, a quarterly publication with periodic supplements, is disseminated through e-mail and is also available from the Authority's website at [www.patientsafetyauthority.org](http://www.patientsafetyauthority.org). Since the first *Advisory* was issued in March 2004, the Authority has published more than 340 articles on a variety of clinical issues. In 2010, the Authority published four quarterly issues and two supplements, composed of more than 35 articles. Following are summaries of selected 2010 articles.

## **Managing Patient Access and Flow in the Emergency Department to Improve Patient Safety**

2010 Dec;7(4):123-34.

Timeliness of care in the emergency department (ED) starts with the patient arrival to diagnostic evaluation phase of care, which encompasses patient registration, triage, placement, and physician arrival/diagnostic evaluation. This phase influences timeliness of care for the remainder of the visit and has been associated with clinical outcomes and patient safety issues. The following information, from the first article in a series on ED timeliness of care, focuses on strategies to improve patient safety and quality of care during the patient arrival to diagnostic evaluation phase.

In 2009, Pennsylvania healthcare facilities reported to the Pennsylvania Patient Safety Authority 1,930 events of complications of procedures or treatments or tests in the ED. The Authority analyzed a subset of 412 of the events (submitted from August through December 2009), of which the facilities reported 14 as Serious Events (events that harm patients) and 398 as Incidents (so-called near miss or no harm events). The Authority further determined that 40 events occurred during the aforementioned patient arrival to diagnostic evaluation phase, 258 during the diagnostic evaluation to disposition decision phase, and 114 during the disposition decision to discharge phase. A variety of factors contribute to such events that occur in the ED; Figure 7.5 includes factors identified in the reports during all three phases.

Existing and proposed ED measures, including those from the Hospital Quality Alliance, the Centers for Medicare and Medicaid Services, the Oklahoma Foundation for Medical Quality, and the National Quality Forum, indicate that national payment and quality organizations endorse standardization of ED performance measures (e.g., decrease patient wait time, improve time to diagnostic treatment). Furthermore, to sufficiently understand how to improve timeliness of care, EDs can measure facility-specific utilization and census patterns. The Authority offers a collection of resources to accomplish these tasks (see <http://www.patientsafetyauthority.org/EducationalTools/PatientSafetyTools/edflow/Pages/home.aspx>).

Strategies specific to the patient arrival to diagnostic evaluation phase include the following:

- Implement a predictive model of staffing in the ED and staff accordingly.
- Optimize low-census/low-utilization times in the ED, and prepare for busier times. Monitor ED capacity in real time.
- Adopt accurate and reliable triage methodology and train staff in its use.
- Consider alternate triage strategies to expedite patient door-to-registration time (e.g., abbreviate collection of data during registration and collect the remainder at another point during ED stay).
- Assign a patient flow manager to facilitate patient flow through the ED.
- Implement fast-track or urgent care treatment areas where low-acuity patients receive separate but parallel care from dedicated practitioners.
- Consider environmental design principles in ED areas (e.g., redesign so that work areas are close to patients).
- Develop a customer service culture that accounts for the psychology of waiting (e.g., include means to occupy patients and families during wait times).

CONTRIBUTING FACTORS IDENTIFIED	FACTORS BY PATIENT TREATMENT PHASE			
	Patient Arrival To Diagnostic Evaluation	Diagnostic Evaluation To Disposition Decision	Disposition Decision To Final Discharge	Factor Total
<b>Team Factors</b>				
Communication problems between providers	2	4	2	8
Change of service		1		1
Cross-coverage situation		1		1
Shift change	1			1
<b>Total</b>	<b>3</b>	<b>6</b>	<b>2</b>	<b>11</b>
<b>Work Environment</b>				
Distractions/interruptions	1	4	2	7
Limited access to patient information	1			1
Equipment malfunction	1			1
<b>Total</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>9</b>
<b>Task Factors</b>				
Training issues	1	3	1	5
Emergency situation		2		2
<b>Total</b>	<b>1</b>	<b>5</b>	<b>1</b>	<b>7</b>
<b>Staff Factors</b>				
Inadequate system for covering patient care	1			1
Insufficient staffing			1	1
Issue related to proficiency	1	7	2	10
<b>Total</b>	<b>2</b>	<b>7</b>	<b>3</b>	<b>12</b>
<b>Patient Characteristics</b>				
Lack of patient compliance/adherence	3	6	3	12
Lack of patient understanding		4	1	5
Lack of family member cooperation			1	1
<b>Total</b>	<b>3</b>	<b>10</b>	<b>5</b>	<b>18</b>
<b>Organization/Management Factors</b>				
Presence of boarder patient			1	1
Unclear or ambiguous policies or procedures	1			1
Procedures not followed	2	13	3	18
<b>Total</b>	<b>3</b>	<b>13</b>	<b>4</b>	<b>20</b>
<b>Other Contributing Factors (not specified)</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>11</b>
<b>Total Contributing Factors</b>	<b>17</b>	<b>51</b>	<b>20</b>	<b>88</b>

Figure 7.5 Contributing Factors Reported to the Authority by Patient Treatment Phase

For the complete article and associated resources, go to <http://www.patientsafetyauthority.org/EducationalTools/PatientSafetyTools/edflow/Pages/home.aspx>.

## **Management of Unanticipated Difficult Intubation**

2010 Dec;7(4):113-22.

Difficulty in airway management can be categorized as difficult mask ventilation and/or difficult tracheal intubation, which is defined by the American Society of Anesthesiologists (ASA) as tracheal intubation requiring more than three attempts in the presence of absence or tracheal pathology. Unanticipated difficulty with endotracheal intubation may result in catastrophic outcomes, including cerebral anoxia and death. Avoiding poor outcomes involves conducting airway assessments and identifying patients at risk for a difficult intubation, as well as having a predetermined management plan for dealing with an unanticipated difficult intubation.

Pennsylvania Patient Safety Authority analysts identified 448 events reported in 2009 involving complications related to anesthesia. Thirty-six events involved a difficult intubation. For 23 events, difficult intubation was reported as unanticipated. Nine difficult intubation events resulted in patient harm.

According to the ASA Task Force on Management of the Difficult Airway, a preoperative airway evaluation, including a history and physical exam, should be conducted, when feasible, before the initiation of anesthetic care. This evaluation would identify clinical factors that might predict a difficult intubation.

Risk factors that may be associated with difficult intubation include the following:

- Adult patient: increased age, male gender, high body mass index/obesity, and history of obstructive sleep apnea (OSA)
- Pediatric patient: usually related to infections, the presence of foreign bodies, or trauma

A thorough history and physical examination includes the following:

- Review of patient's medical records, focusing on any previous difficulty with anesthesia, OSA or snoring
- Evaluation for head/neck abnormalities; diseases affecting the airway that would prevent tracheal intubation
- Evaluation of pharyngeal structures and neck mobility
- Evaluation of patient's respiratory rate, nasal flaring, and accessory muscles

Accurate preoperative prediction of difficult intubation can help reduce the risk of catastrophic outcomes. Furthermore, the prediction of airway difficulty will help determine potential airway management strategies. While there are several quantitative tests to evaluate difficult intubations (e.g., Mallampati score, CL classification, LEMON airway assessment method), none seem to be completely reliable.

Consider the following risk reduction strategies:

- Airway management
  - A predetermined plan is developed, so if the intubation becomes unexpectedly difficult or impossible, anesthesia providers can manage the airway and ensure uninterrupted ventilation of the patient.
  - Limit intubation attempts to three (3), with subsequent use of accessory airway devices or alternative techniques when needed. If it becomes impossible to intubate or ventilate (referred to as the “can’t intubate, can’t ventilate” scenario), surgical intervention may be required.
  - Consider new laryngoscope devices using fiber optic and video technology; these allow intubation to be performed under indirect visualization, therefore overcoming restrictions that might make direct laryngoscope difficult.
- Airway management guidelines
  - ASA’s Difficult Airway Algorithm—First, assess for basic airway management problems, if any; next, evaluate the best approach to the patient’s airway management. If the airway is predicted to be difficult to manage, alternative approaches should be identified if the primary approach fails.
  - The Difficult Airway Society guidelines for the management of unanticipated difficult tracheal intubation are based on escalating management plans. A is the primary tracheal intubation plan, and B is the secondary tracheal intubation plan if plan A fails. Should plan B fail, backup plans C, D, or E can be used.
- Comprehensive difficult airway program
  - Communication—Place a color-coded wristband on patients with a known difficult airway. Place a difficult airway alert on the OR schedule. Document the airway examination on the anesthesia preoperative evaluation form.
  - Equipment—Standardize difficult airway carts to hold advanced airway management equipment, and attach an ASA Difficult Airway Algorithm card to each cart.
  - Personnel—Organize an interdisciplinary team to assist when problems arise with intubation. Train anesthesia technical staff to maintain the equipment.
  - Education—Schedule training sessions for staff and residents, including a “difficult airway” rotation for residents. Enforce the value of patient education to promote the communication of potential airway difficulty to subsequent anesthesia providers.

For the complete article, go to

[http://www.patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/dec7\(4\)/Pages/113.aspx](http://www.patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/dec7(4)/Pages/113.aspx).

### **Controlling the Annual Threat of Norovirus Gastroenteritis Outbreaks**

2010 Dec;7(4):41-8.

Norovirus, a highly contagious virus recognized as the principal cause of worldwide acute gastroenteritis (AGE), can have severe and even fatal consequences especially among vulnerable populations such as the elderly, the immunocompromised, and the very young. The Centers for Disease Control and Prevention (CDC) estimates that norovirus may be the causative agent in more than 23 million AGE cases every year in the United States.



- Ensure sufficient quantities are available of personal protection equipment (PPE), single-use dedicated patient care equipment, and toileting supplies, as well as precaution signs and educational materials.
  - Designate which individuals are responsible for communication (e.g., to patients/residents, to facility leadership) and plan for rapid dissemination of information (e.g., location and extent of the infection).
  - Exclude ill staff members from work for a minimum of 48 hours after resolution of symptoms.
  - Establish protocols for staff to provide care for only one patient group on their ward (e.g., see the sample preparedness checklist at <http://patientsafetyauthority.org/EducationalTools/PatientSafetyTools/norovirus/Pages/checklist.aspx>).
- Outbreak control
    - Place patients in private rooms or separate into cohorts (e.g., symptomatic, exposed but asymptomatic, unexposed).
    - Require separate toilets or commodes for symptomatic patients.
    - Isolate infants for up to five days.
    - Ensure availability of PPE.
    - Implement effective hand hygiene that requires hand washing when hands are visibly soiled and have been in contact with diarrheal patients/residents, are in contact with contaminated surfaces or body secretions, or before contact with food or beverages, as well as after gloves are removed.
    - Clean and disinfect patient care areas at least twice daily. Clean and disinfect frequently touched areas at least three times daily.
    - Clean surfaces and patient equipment before application of disinfectant.
    - Immediately clean emesis or fecal material from upholstered furniture.
    - For food service items, use standard precautions and normal processing and cleaning procedures.
    - Restrict access to community ice machines (i.e., staff are to wear clean, disposable gloves).
    - Ensure prompt, careful linen handling (e.g., wear appropriate PPE, launder patients' unused linens before use on other patients).
    - Reduce likelihood of environmental contamination and norovirus transmission in unaffected areas (e.g., suspend group activities).
- Leadership role
    - Specify roles and tasks ahead of time.
    - Maintain high expectations.
    - Overcome barriers and deal directly with staff resistant to policy or procedures.
- Postoutbreak activities
    - Report process and outcome measures to leaders, staff, and clinicians.
    - Express the norovirus outcome measure as the rate of infection for a unit or facility.
    - Measure performance (e.g., hand hygiene compliance) and monitor processes through observations and interviews. (See a sample process and outcome measures worksheet at <http://www.patientsafetyauthority.org/EducationalTools/PatientSafetyTools/norovirus/Pages/home.aspx>).

When interviewed by Authority analysts, representatives of five Pennsylvania nursing homes indicated the following as the most effective practices used at their facilities that contributed to outbreak resolution:

- Praising staff for rapid, effective handling of outbreak activities and ill patients/residents
- Increasing education
- Ensuring nurse leadership off shifts (e.g., supervising documentation)
- Providing feedback (e.g., data graphs) on effectiveness
- Monitoring environmental cleaning and linen handling
- Ensuring visitor cooperation
- Providing access to a detailed plan
- Ensuring administrative support

For the complete article and associated resources, go to <http://www.patientsafetyauthority.org/EducationalTools/PatientSafetyTools/norovirus/Pages/home.aspx>.

### **Adverse Drug Events with HYDROmorphine: How Preventable are They?**

2010 Sep;7(3):69-75.

Lack of knowledge about the potency and efficacy of HYDROmorphine (Dilaudid®) has frequently led to serious medication errors, especially when a patient is switched from morphine to HYDROmorphine. While HYDROmorphine is a derivative of morphine, it differs pharmacodynamically from morphine in potency, onset, and duration (e.g., it is much more potent by any administration route than morphine).

Pennsylvania Patient Safety Authority analysts reviewed adverse drug events (i.e., medication errors *and* adverse drug reactions [ADR]) involving HYDROmorphine. Pennsylvania healthcare facilities reported 1,694 medication errors from January 2008 to October 2009 that involved the use of HYDROmorphine. According to the reported harm index, more than 68% of the events reached the patient and nearly 2% resulted in patient harm. The predominant medication error event types were wrong dose/overdosage (n = 287), wrong drug (n = 185), and monitoring error/documented allergy (n = 137). With regard to wrong-drug errors, the predominant medication pairs are included in Figure 7.7.

Analysts reviewed ADR events to determine if there were any that may have been preventable. Of 937 ADR events reported to the Authority from June 2004 to October 2009, the three most common types of reactions described were respiratory depression, central nervous system effects, and allergic reactions.

Figure 7.7. Predominant Medications Associated with Wrong-Drug Errors involving HYDROmorphine (n = 146, 78.9%), January 2008 to October 2009

MEDICATION PRESCRIBED	MEDICATION ADMINISTERED	NUMBER	% OF TOTAL REPORTS (N = 185)
HYDROmorphine	morphine	66	35.7%
morphine	HYDROmorphine	63	34.1
HYDROmorphine	lorazepam	6	3.2
HYDROmorphine	meperidine	6	3.2
oxycodone	HYDROmorphine	5	2.7

Of the respiratory depression and central nervous system effects events (n = 449), 205 appear to have been preventable events that occurred as a result of inappropriate doses.

Healthcare facilities can use risk reduction strategies to identify system-based causes of wrong-drug and wrong dose/overdose errors and prevent patient harm. System improvements, such as strategies addressing constraints and standardization, will be more effective than individual improvement alone, such as strategies addressing education. Examples include the following:

**Constraints.** These include prescribing and storage. Facilities may consider requiring prescribers to verify proficiency with patient-controlled analgesia (PCA) pain management and implementing standard order sets for PCA therapy. Prescribers could also consider patient information with regard to HYDROmorphine contraindications; prescribing considerations are available at <http://www.patientsafetyauthority.org/EducationalTools/PatientSafetyTools/hydromorphone/Pages/insert.aspx>.

Storage considerations include reducing stock amounts of HYDROmorphine when possible; avoiding stocking morphine and HYDROmorphine in the same strength if both drugs are available on patient care units; if drugs are stored in an automated dispensing cabinet, requiring pharmacy order review before removing initial dose of HYDROmorphine; and storing each medication in separate, individual bins or drawers.

**Standardization.** System improvement through standardization includes

- establishing protocols for pain management (e.g., guidelines for use of specific analgesics);
- establishing protocols for administration of reversal agents, when warranted, without additional physician orders;
- in order forms, guiding prescribers to the appropriate dose according to three patient types (i.e., most patients, patients older than 64 years or with sleep apnea, and opioid-tolerant patients); and
- ensuring prescribers, when determining dose, consider other medications that the patient has received.

**Differentiation.** When possible, use tall man lettering to emphasize “HYDRO” in HYDROmorphine labeling and other listings. Consider adding label reminders on HYDROmorphine that indicate the brand name equivalent.

**Redundancies.** Require independent double checks before intravenously administering HYDROmorphine doses.

**Patient monitoring.** Establish guidelines for appropriate monitoring of patients who receive opioids (e.g., assessment of quality of respirations). Use standardized formats for documenting and monitoring. Ensure availability of oxygen and naloxone. Establish a process to screen patients for obstructive sleep apnea before PCA therapy.

**Education.** Require annual assessment of competence for healthcare professionals who prescribe, dispense, and administer PCA therapy. Educate all practitioners who are involved with HYDROmorphine use about aspects of its safe use (e.g., dosing norms). Educate staff about the differences between HYDROmorphine and morphine.

ADR monitoring. Consider reviewing ADR event reports involving HYDROmorphone to help further understand the harm resulting from its misuse. Consider using process measures to evaluate the facility's safe use of HYDROmorphone (e.g., see <http://www.patientsafetyauthority.org/EducationalTools/PatientSafetyTools/hydromorphone/Pages/worksheet.aspx>).

For the complete article and associated resources, go to <http://www.patientsafetyauthority.org/EducationalTools/PatientSafetyTools/hydromorphone/Pages/home.aspx>

## **Diagnostic Error in Acute Care**

2010 Sep;7(3):76-86.

Diagnostic error is a diagnosis that is missed, incorrect, or delayed and is detected by a subsequent test or finding. Errors related to misdiagnosis are a frequent cause of patient harm; however, such misdiagnosis-related harm is preventable. Diagnostic error occurs in every clinical specialty, but with the least incidence in specialties that rely on visual pattern recognition and interpretation (e.g., pathology). Diagnosis is a multistep process—listening, collecting data, ordering tests, synthesizing data, and analyzing results—and each step presents ample opportunity for error.

Analysts for the Pennsylvania Patient Safety Authority reviewed 100 events related to diagnostic error<sup>17</sup> that Pennsylvania healthcare facilities reported between June 2004 and November 2008. According to the medical literature, commonly misdiagnosed conditions include cancer, infection, fractures, myocardial infarction, embolism, neurological conditions, and aneurysm. The top five categories of misdiagnosis evident in the 100 event reports reviewed by the Authority are as follows: metastatic cancer (12%), fractures (12%), acute coronary syndrome (2%), and appendicitis (2%).

Common causes of diagnostic error include (1) *cognitive processing errors* such as predisposition through “mental matching” or confirmation bias, (2) *poor or inadequate communication* among clinicians and between clinicians and patients, and (3) *other system-related factors* such as specimen identification and reporting of abnormal or critical test results. For example, Figure 7.8 includes Authority event reports with corresponding cognitive errors.

Healthcare facility leaders, diagnosing physicians, and patients can engage in system level, provider, and patient strategies, respectively, to decrease diagnostic error, such as the following:

- System-level strategies
  - Collect diagnostic error reports (see <http://www.patientsafetyauthority.org/EducationalTools/PatientSafetyTools/diagnosis/Pages/audit.aspx>).
  - Implement interventions that establish strong and reliable feedback loops between and among physicians about diagnostic accuracy.
  - Ensure that all steps in the diagnostic testing phase occur correctly and that all results are communicated back to ordering physicians and patients.

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<sup>17</sup> It is not possible to quantify diagnostic error in Pennsylvania because the Authority's reporting system taxonomy does not include an explicit event type for diagnostic error. Similarly, the Agency for Healthcare Research and Quality Common Formats—the common definitions that allow healthcare providers to collect and submit standardized information regarding patient safety events—does not include a category specific to diagnostic error.

- Consider diagnostic checklists to prevent reliability on memory during error-prone processes  
(see <http://patientsafetyauthority.org/EducationalTools/PatientSafetyTools/diagnosis/Pages/checklist.aspx>).
- Physician strategies
  - Work toward recognizing, analyzing, and reducing diagnostic error.
  - Acknowledge the lack of feedback mechanisms and seek means to give and receive diagnostic feedback.
  - When mentoring residents and medical students, include open discussion about diagnostic challenges, decisions, and failures.
- Patient strategies (how healthcare providers can empower patients)
  - Encourage patients to give and receive information with physicians.
  - Empower patients to question any step in the diagnostic process.
  - Ask patients to report changes in their conditions or results of second opinions.

EVENT REPORT	POTENTIAL COGNITIVE PROCESSING ERROR <sup>1,2</sup>	POTENTIAL FAILURE(S)
<p><i>Patient is an infant seen in the ED [emergency department] during high flu season after an episode of vomiting and period of apnea observed by family. Was discharged, but returned later. Family reported that the patient had another episode of apnea. Patient was evaluated and transferred to another facility for clinical impression of apnea and reflux.</i></p>	<p><b>Availability heuristic.</b> The tendency to accept a diagnosis based upon recent or vividly recalled cases or events rather than on prevalence or probability.</p>	<p>Authority report stated missed diagnosis of apnea and reflux. Physician potentially attributed symptoms to common flu, due to availability. A more thorough physical examination may have led to the discovery of other symptoms indicative of apnea and reflux.</p>
<p><i>Patient seen in the ED on day one and day two for complaints of shortness of breath and chest pain. Diagnosed with an upper respiratory infection and sent home each time. Subsequently later admitted and died. Coroner preliminary report indicated PE [pulmonary embolus] as cause of death.</i></p>	<p><b>Anchoring heuristic.</b> The tendency to fixate on first impressions or initial symptoms without considering causes that appear later or those that do not support the initial hypothesis or diagnosis.</p>	<p>Authority report stated missed diagnosis of PE. Physician may have anchored on diagnosis "upper respiratory infection." Once a physician anchors on a diagnosis, it is very difficult to introduce new differential diagnoses. Physician may not have considered alternate diagnoses on subsequent visits.</p>
<p><i>Patient seen in ED on day one with complaints of abdominal pain. Patient evaluated, treated, and discharged with diagnosis of UTI [urinary tract infection]. The next day, patient presented to another facility and was diagnosed with a ruptured appendix.</i></p>	<p><b>Premature closure.</b> Acceptance of a diagnosis before it has been fully vetted by considering alternative diagnoses or searching for data that contradict the initial diagnosis.</p>	<p>Authority report stated missed diagnosis of appendicitis. Physician omitted tests that would have led to diagnosis of ruptured appendix. Physician may have failed to consider differential diagnoses during history and physical portion of examination.</p>
<p><i>Patient presented to the ED on day one with complaints of chest pain. Stress test done, results negative, and patient discharged. The next day, patient returned to the ED with chest pain and tachypnea, and the left leg was blue and mottled. Dopplers of lower extremities confirmed extensive DVT [deep-vein thrombosis].</i></p>	<p><b>Anchoring heuristic.</b> <b>Premature closure.</b> <b>Representative heuristic.</b> Mental matching to diagnose conditions with characteristic presentations. Predisposes to lack of a differential diagnosis.</p>	<p>Authority report stated missed diagnosis of DVT. Physician may have anchored on diagnosis "acute coronary syndrome" due to complaints of chest pain. Physician may have latched on to representative symptom of chest pain, failing to perform tests to rule out other potential diagnoses (i.e., differential diagnoses).</p>
<p><i>A young man came to the ED for fainting and syncope, including the inability to speak for a few seconds with lateralizing symptoms and staring. In the ED, lab work was done but no CT [computed tomography] scan was ordered. Patient was discharged home with diagnosis of syncope and dehydration secondary to stress, with instructions to follow up with primary care physician. Subsequently, the primary care physician admitted the patient directly into the hospital, where a CT scan was performed and a brain lesion diagnosed.</i></p>	<p><b>Premature closure.</b> <b>Context errors.</b> Occur when the diagnosing physician is biased by patient history, previous diagnosis, or other factors and the case is formulated in the wrong context.</p>	<p>Authority report stated missed diagnosis of brain lesion. Physician may have attributed symptoms to "stress" and evaluated patient in this context. Physician may have failed to rule out other less likely but more serious diagnoses. Physician may have formulated diagnosis in the context of a young man with admitted stress and stopped searching for other plausible diagnoses for symptoms.</p>
<p><b>Notes</b> 1. Scott IA. Errors in clinical reasoning: causes and remedial strategies. <i>BMJ</i> 2009 Jun 8;338:b1860. 2. Gropman J. <i>How doctors think</i>. New York (NY): Houghton Mifflin Company; 2008.</p>		

Figure 7.8. Sample Authority Event Reports with Possible Cognitive Errors

For the complete article and associated resources, go to <http://www.patientsafetyauthority.org/EducationalTools/PatientSafetyTools/diagnosis/Pages/home.aspx>.

## Chain of Command: When Disruptive Behavior Affects Communication and Teamwork

2010 Jun 16;7(Suppl 2):4-13.

Chain of command in healthcare is a formal process for healthcare staff to resolve or report concerns about questionable patient conditions or care. In light of poor provider performance or deteriorating patient status, frontline staff may be hesitant to speak with a physician, supervisor, or other clinician for fear of intimidation or other disruptive behaviors; however, lack of action can result in delay in or inappropriate care for patients. A healthcare facility that values all healthcare staff is one that invests in chain-of-command policies and provides adequate investigation and follow-up of reports of disruptive behavior.

From May 2007 to October 2009, Pennsylvania healthcare facilities reported 177 events involving disruptive behaviors: 73 events were conflicts between healthcare providers, 30 were procedures not followed, 17 were absences of response or delays, 22 were “other,” and 35 of the event reports did not specify a behavior. Of the 73 events of conflict between healthcare providers, chain of command was implemented at facilities in 13 of the events; chain of command was not present but may have affected outcomes in 41 events, and chain of command was not present and would not have affected outcomes in 19 events. More than 40 of the total event reports specified the interactive relationship of healthcare providers (e.g., physician to nurse); see Figure 7.9. Finally, more than 35 of the total event reports indicated contributing factors (e.g., team factors); see Figure 7.10.

Effective January 1, 2009, the Joint Commission mandated (1) that accredited hospitals develop codes of conduct that define acceptable, disruptive, and inappropriate behaviors and (2) that hospital leaders create and implement a process to manage these behaviors. There are many barriers to interprofessional communication and collaboration (e.g., hierarchy, gender, generational differences). Specific strategies to address disruptive behaviors focus on improving communication, teamwork, and collaboration, including the following:

- Implement policy and procedures that include
  - staff accountability for implementing chain of command when patient safety is in question,
  - code of conduct (e.g., expectations of professional behaviors),
  - transparency (e.g., model of desirable behaviors) so that all staff are able to talk about vulnerabilities and failures without fear of reprisal,
  - zero tolerance for egregious disruptive behaviors, and
  - definitions of behaviors that will be referred for disciplinary action.

Figure 7.9. Chain of Command Listed in Reports of Conflict, May 2007 to October 2009

HEALTHCARE CLINICIAN TO HEALTHCARE CLINICIAN	NUMBER OF REPORTS (N = 44)	PERCENTAGE
Physician to nurse	39	89%
Surgeon to anesthesia clinician	3	7
Nurse to medical student	2	5

- Conduct open discussions (e.g., regular patient safety rounds) about risks and barriers with the patient safety officer, other quality improvement staff, clinical leaders, and clinicians.
- Encourage interdisciplinary dialogue to address ongoing conflicts and move beyond them.
- Educate and coach leaders and managers in skills that address relationship building and collaborative practice.
- Assess staff perception of the extent of unprofessional behaviors and the risk of harm to patients.
- Implement a reporting/surveillance system for disruptive behaviors.
- Support reporting/surveillance with follow-up interventions for involved staff that progress from informal conversations to detailed action plans to disciplinary action, when warranted.

Figure 7.10. Contributing Factors Listed in Disruptive Behavior Reports, May 2007 to October 2009

CONTRIBUTING FACTORS	NUMBER OF REPORTS (N = 37)	PERCENTAGE
<b>Organizational/Management</b>		
Procedure not followed	15	41%
Unclear or ambiguous policy and procedure	1	3
<b>Team Factors</b>		
Communication problem between clinicians	7	19
<b>Task Factors</b>		
Training issue	3	8
Emergency situation	1	3
Inexperienced staff	1	3
<b>Staff Factors</b>		
Issue related to proficiency	4	11
<b>Patient Characteristics</b>		
Lack of patient compliance/adherence	2	5
Lack of patient understanding	1	3
<b>Work Environment</b>		
High noise level	2	5

For the complete article, go to

[http://www.patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/jun16\\_7\(suppl2\)/Pages/04.aspx](http://www.patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/jun16_7(suppl2)/Pages/04.aspx).

## Tubing Misconnections: Making the Connection to Patient Safety

2010 Jun;7(2):41-5.

Patients often have multiple tubing lines connecting them to medical devices and/or delivering medication or nutrition. The medical devices may also be connected to other devices with tubing lines. In such circumstances, tubing misconnections can occur. Misconnections that pose the most risk of harm to patients are liquid-to-liquid (e.g., wrong substance entering the body) and liquid-to-gas (e.g., gas entering blood vessels). A common reason for misconnections is that many types of tubing lines use common connectors (i.e., luer connectors) that can allow dissimilar lines or catheters to be connected together.

Between January 2008 and September 2009, Pennsylvania healthcare facilities reported 36 tubing misconnection events to the Pennsylvania Patient Safety Authority: 35 liquid-to-liquid misconnections and one liquid-to-gas misconnection. See Figure 7.11 for the specific breakdown.

Figure 7.11. Tubing Misconnections Reported to the Pennsylvania Patient Safety Authority, January 2008 to September 2009

MISCONNECTION	NUMBER OF REPORTS
Secondary intravenous (IV) infusion connected to lower "Y" port of primary IV tubing set	8
Hemodialysis arterial and venous tubing lines reversed	5
G-tube and J-tube lines reversed	3
Incorrect tubing connection (no further explanation provided in reports)	3
Epidural and patient-controlled analgesia (PCA) tubing sets reversed	2
Nonhemodialysis arterial and venous tubing lines reversed	2
Cell saver tubing connected to cell saver reservoir	1
Feeding tube set connected to Broviac®	1
Feeding tube set connected to peripherally inserted central catheter (PICC) line	1
Feeding tube set connected to suction port	1
Imaging contrast tubing set connected to tracheostomy cuff	1
IV tubing set connected to dialysis catheter	1
IV tubing set connected to PICC line	1
IV tubing set connected to tracheostomy cuff	1
Knee irrigation connected to peripheral IV tubing	1
Miscommunication (arterial line noted in medical record as peripheral IV)	1
Oral medication delivered through peripheral IV line	1
Suction line connected to water seal	1
Suction and feeding tubing sets reversed	1
<b>Total</b>	<b>36</b>

Risk reduction strategies for tubing misconnections include equipment design solutions and hospital policies and practices, relative to clinical and nonclinical staff, are as follows:

- Clinical staff
  - Trace lines back to points of origin to verify correct connections.
  - After patient's arrival to new care area or as part of patient handoff, recheck connections and trace lines back to points of origin.
  - Do not force connections.

- Only use an adapter that is indicated for the specific application.
  - Label high-risk catheters according to type (e.g., epidural).
  - Route lines with different purposes in unique, standardized directions.
  - Identify and manage worker fatigue to prevent inattentiveness.
- Nonclinical staff
    - Provide regular misconnection prevention education.
    - Assess the need for adapters and limit or restrict routine use.
    - Revise and/or establish purchasing policies that include purchasing equipment with misconnection safeguards.
    - Assess for the potential for misconnections during prepurchase evaluations and acceptance testing.

In enteral feeding (i.e., nutrition through a tubing line for patients who cannot orally receive nutrition), misconnections can lead to inappropriate fluids inadvertently delivered to the gastrointestinal tract or intended nutrients inadvertently delivered elsewhere. Risk reduction strategies also concern design and policy and practice issues and some are the same as aforementioned strategies (e.g., directional line routing, managing worker fatigue); strategies specific to enteral feeding are as follows:

- Clinical staff
  - Do not use standard luer syringes for oral medications or enteral feedings.
  - Prohibit modifying intravenous (IV) or enteral feeding devices.
  - Before administering solutions, ensure identification labels indicate the correct delivery route.
  - If color-coding lines and connectors, consider Joint Commission’s concerns about the unintended consequences of this approach, including user reliance on color-coding rather than assuring correct connections and confusion resulting from nonstandard color-coding systems among facilities. The Joint Commission notes that continual education and training about color-coding would be necessary.
- Nonclinical staff
  - Purchase an adequate number of distinctly labeled enteral pumps to reduce use of infusion pumps for enteral administration to adult patients. When using syringe pumps for neonatal feedings, ensure that the pumps are distinguishable from syringe pumps used for IV administration or other purposes.
  - Purchase only enteral feeding sets that are incompatible with female luer connections.
  - Purchase only non-IV-compatible enteral feeding containers.
  - Secure enteral administration sets with enteral feeding containers or use preattached sets before sending them to patient care units.
  - Perform prepurchase evaluations of enteral feeding systems with guidance from a multidisciplinary team.

For the complete article, go to

[http://www.patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/Jun7\(2\)/Pages/41.aspx](http://www.patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/Jun7(2)/Pages/41.aspx).

## **Beyond the Bundle: Reducing the Risk of Central Line-Associated Bloodstream Infections**

2010 Mar 18;7(Suppl 1):1-9.

Sustained reduction of central line-associated bloodstream infection (CLABSI) remains elusive in healthcare facilities despite increased awareness of evidence-based preventive strategies, publication of successful hospital elimination programs, and elimination of reimbursement for treatment. Central venous catheters (CVC) are vital to healthcare; however, use puts patients at risk for CLABSI.

For each CLABSI event reported to the National Healthcare Safety Network,<sup>18</sup> Pennsylvania hospitals indicate compliance with three evidence-based practices: (1) use of maximal sterile barriers, (2) chlorhexidine site preparation, and (3) documentation of review of daily necessity for continuation of the central line. The Pennsylvania Patient Safety Authority's analysis of CLABSI event reports from July 2008 through March 2009 calculated average Pennsylvania CLABSI rates of 1.8/1,000 central line days for critical care areas and 1.1 for ward locations, which are significantly better than the national average of 2.0/1,000 central line days for critical care areas and 1.4 for ward locations ( $p < 0.01$ ; z-test for two proportions). Other findings include the following (see Figure 7.12):

- Of the 158 hospitals reporting CLABSI events, 21.5% indicated compliance with all three practices in every event report.
- Hospitals with the lowest CLABSI rates reported a higher rate of compliance with daily evaluation of line necessity.
- Hospitals with the lowest CLABSI rates were more than twice as compliant with all three practices as hospitals with the highest CLABSI rates.
- Compliance with the practices averaged 55.8% for the 1,916 CLABSI reports.
- An average of 38% of the CLABSI reports documented unknown compliance with the practices.

Facilities can achieve sustainable CLABSI reduction through combination of adaptive culture changes with evidence-based practices and by garnering focus from hospital leaders and clinicians on culture of safety. Strategies to accomplish these tasks include the following:

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<sup>18</sup> In February 2008, Pennsylvania hospitals began reporting healthcare-associated infections and compliance with evidence-based practices to the Pennsylvania Department of Health, the Pennsylvania Healthcare Cost Containment Council, and the Pennsylvania Patient Safety Authority through the National Healthcare Safety Network, which is a reporting system maintained by the Centers for Disease Control and Prevention.

**Leadership.** The Joint Commission requires hospital leadership to assign responsibility for implementation of evidence-based practices associated with CLABSI. Other organizations provide leadership strategies that include:

- meeting with providers on the unit (i.e., safety rounds) to discuss barriers to improvement;
- supporting an infection prevention and control program, providing resources for education, and ensuring accountability of personnel
- selecting a physician champion to communicate with medical staff and designating nursing leaders to maintain unit awareness.

Figure 7.12. Pennsylvania Patient Safety Authority Analysis of CLABSI Prevention Evidence-Based Practice Compliance, by Event\*

CENTRAL LINE-ASSOCIATED BLOODSTREAM INFECTION [CLABSI] BEST PRACTICES	USED	NOT USED	USE UNKNOWN	NOT APPLICABLE	NO ANSWER
<b>Statewide (N = 1,916; CLABSI Rate 1.46 / 1,000 Central Venous Catheter [CVC] Days)</b>					
Maximal sterile barriers used during line insertion	1,098	26	761	2	29
Chlorhexidine skin asepsis used during line insertion	1,068	59	746	14	29
Line necessity evaluated daily and documented	1,044	167	677	1	27
<b>Lowest Quartile Rates (n = 165 CLABSI; CLABSI Rate 0.51 / 1,000 CVC Days)</b>					
Maximal sterile barriers used during line insertion	93	2	65	1	4
Chlorhexidine skin asepsis used during line insertion	91	5	64	1	4
Line necessity evaluated daily and documented	109	4	47	1	4
<b>Highest Quartile Rates (n = 874 CLABSI; CLABSI Rate 3.33 / 1,000 CVC Days)</b>					
Maximal sterile barriers used during line insertion	482	21	365	0	8
Chlorhexidine skin asepsis used during line insertion	457	46	364	1	8
Line necessity evaluated daily and documented	373	137	358	0	8

\* Authority analysis of Pennsylvania CLABSI reports to the National Healthcare Safety Network from July 2008 through March 2009.

**Education.** The Joint Commission also requires facilities to have an educational plan for healthcare workers, patients, and families. For example, workers are to be educated about CLABSI prevention on hire, annually, or when added to job responsibilities. Other organizations offer strategies that include assessing and credentialing physicians who insert CVCs, as well as development of a competence checklist for staff.

**CVC insertion protocols.** The Centers for Disease Control and Prevention addresses insertion protocols in its *Guideline for the Prevention of Intravascular Catheter-Related Infections* (e.g., use of chlorhexidine skin disinfectant). The Joint Commission has several requirements relevant to insertion, including standardizing supply, catheter checklist, and insertion protocol; performing hand hygiene; avoiding insertion of femoral CVCs in adult patients unless other sites are unavailable, and using chlorhexidine-based antiseptic before insertion for patients older than two months of age.

**Insertion checklist.** Such a checklist allows for documentation of compliance with aseptic technique. Appropriate elements include fields that document completion and rationale for deviations; before, during, and after procedure information (e.g., site assessments, sterile field maintenance, application of dressings); physician competence; procedure notes, and clinician signatures.

**Care and maintenance.** The Joint Commission requires hospitals to use a standard protocol to disinfect hub and catheter ports before use. Approaches include:

- scrubbing before every access with 70% alcohol or an alcohol/chlorhexidine preparation;
- changing gauze every two days and transparent dressings at least every seven days (more frequently if soiled, damp, or loose); and
- replacing administration sets no more frequently than every 72 hours, but if used for bloods and lipids, every 24 hours

Special approaches are recommended for areas with unacceptably high CLABSI rates or with patients at heightened risk or who have other complications.

**Process and outcome measures.** Joint Commission requirements for hospitals include monitoring and evaluation of process (e.g., percentage of compliance with CVC insertion protocol) and outcome measures (e.g., CLABSI rate).

For the complete article and associated resources, go to <http://www.patientsafetyauthority.org/EducationalTools/PatientSafetyTools/clabsi/Pages/home.aspx>.

### **Leveraging Healthcare Policy Changes to Decrease Hospital 30-Day Readmission Rates**

2010 Mar;7(1):1-8.

Experts estimate that as many as 20% of patient hospitalizations are rehospitalizations within 30 days of discharge. Such rehospitalizations or readmissions are costly, potentially harmful, and often preventable. In recognition of impending national- and state-level policy changes, Pennsylvania hospitals should evaluate respective 30-day readmission rates and formulate short- and long-term plans to reduce these rates while working to improve patient care.

In 2008, the Medicare Payment Committee calculated the annual cost of readmissions to the national Medicare program at \$15 billion. The committee has recommended that the Centers for Medicare and Medicaid Services confidentially report readmission rates and resources around hospitalization episodes (30-day periods) to hospitals and physicians for two years, followed by public disclosure of providers' relative resource use in the third year. Once 30-day readmission rates are calculated and analyzed, financial penalties and incentives will follow. At the state level, avoidable readmissions have been targeted in the statewide healthcare reform, "Prescription for Pennsylvania."

In 2008, there were 57,852 hospital readmissions in Pennsylvania within 30 days of the original hospitalization, accounting for \$2.5 billion and 350,000 hospital days, according to the Pennsylvania Health Care Cost Containment Council. From June 2004 through August 2009, Pennsylvania healthcare facilities reported more than 3,500 events related to readmissions to the Pennsylvania Patient Safety Authority that they felt met the reporting criteria.

See Figure 7.13 for a complete timeline of readmission initiatives and reports.

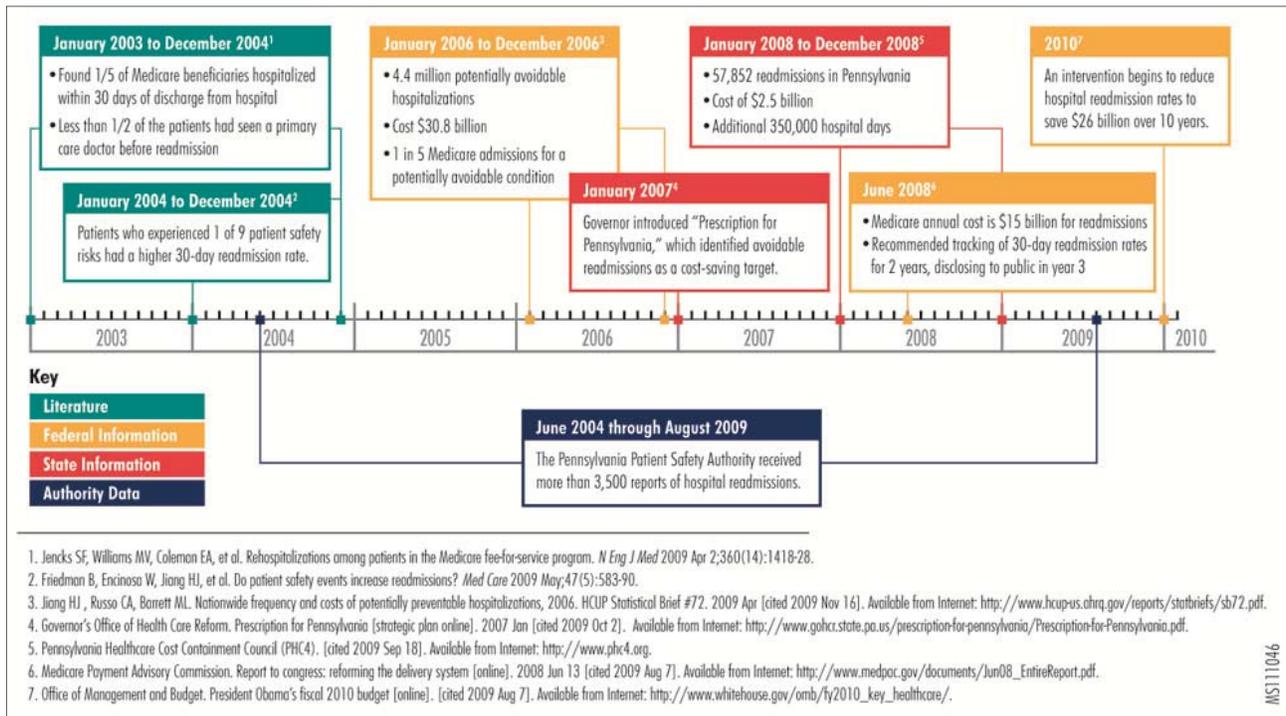


Figure 7.13. Timeline of 30-Day Avoidable Readmission Information

According to analysis of a subset of 392 events reported to Authority from January through August 2009 (120 Serious Events and 272 Incidents), common themes of hospital readmission include the following:

1. Ineffective communication among providers, between providers and patients, and between providers across healthcare settings
2. Inadequate transitions of care within hospitals and between hospitals and community settings

Strategies that Pennsylvania hospitals can implement, depending on resources, include the following:

**Environmental scan.** Collect facility performance data and compare with national and state benchmarks. Plan for the potential financial impact associated with Medicare readmission discussions. Determine if it is possible to collaborate with community healthcare resources to improve care transitions across settings.

**Admission assessment.** Document any patient admission occurring within 30 days of any hospital discharge and determine the reason for readmission. Consider employing a transitional coach to perform enhanced admission assessments. Include the patient and family in the discharge process; assess and determine the appropriate post acute care setting.

**Teaching.** Identify who will help the patient on discharge. Customize discharge instructions and ensure the patient can comprehend them. Use "teach-back" methodology to ensure patient understanding.

**Real-time handover communication.** Reconcile the patient’s medication on admission and at each care transition. Discharge the patient with a copy of his or her plan of care, and share the plan with the subsequent healthcare provider. Set the initial outpatient appointment. Relate a report of the patient’s care to the emergency contact listed in the patient’s record.

**Post hospital follow-up.** Consider implementing a follow-up telephone call to the patient from staff member one to three days after discharge to confirm understanding of instructions and medications. Establish a hospital telephone number that the patient can call until his or her physician takes over care. Assess the patient’s home to evaluate self-reported ability to manage care.

**Future preparation.** Investigate relationships with other providers (e.g., primary care physician) to establish collaboration across the care continuum. Establish a collaborative system across care settings with shared accountability for patient care. Establish data collection criteria and share readmission data among care settings. Establish a common care plan to share across care settings. Finally, investigate integrated electronic health records and remote monitoring technology.

For the complete article, go to [http://www.patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/Mar7\(1\)/Pages/01.aspx](http://www.patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/Mar7(1)/Pages/01.aspx).

### Medication Errors with the Dosing of Insulin: Problems across the Continuum

2010 Mar;7(1):9-17.

Controlling blood sugars with insulin is essential in the management of hyperglycemia in both diabetic and nondiabetic patients. However, studies show that the use of insulin is associated with more medication errors than any other type or class of drug.

From January 2008 to June 6, 2009, Pennsylvania healthcare facilities reported 2,685 events to the Authority that mentioned medication errors involving the use of insulin products. According to the reported harm index, 78.7% of the events reached the patient, and 1.8% resulted in patient harm. The predominant medication error event types associated with insulin (see Figure 7.14) were drug omission (24.7%, n = 662), wrong drug (13.9%, n = 374), and wrong dose/over dosage (13%, n = 348). More than 52% (n = 1,409) of the reported events led to situations in which a patient may have or did receive the wrong dose or no dose of insulin, which could lead to fluctuations in glycemic control.

The Authority’s database also contains reports of a separate issue involving insulin, namely its availability in 500 unit/mL concentration known as U-500 insulin. Most insulin is supplied from the manufacturer in a 100 unit/mL concentration. Use of the U-500 concentration has risen because of several factors (e.g., escalating obesity epidemic, increasing insulin resistance); however, there are no insulin syringes designed to measure doses of U-500 insulin.

This absence increases the risk that a fivefold dosing error will occur.

Figure 7.14. Predominant Medication Error Event Types Associated with the Use of Insulin (N = 2,057, 76.6%), January 2008 to June 6, 2009

EVENT TYPE	NUMBER	% OF TOTAL REPORTS (N = 2,685)*
Dose omission	662	24.7%
Wrong drug	374	13.9%
Wrong dose/overdosage	348	13%
Other (specify)	309	11.5%
Extra dose	227	8.5%
Wrong dose/underdosage	137	5.1%

\* Sum of percentages exceeds 76.6% due to rounding.

Organizations can strive to identify system-based causes of errors with the use of insulin vials and pen devices and implement risk reduction strategies, such as the following examples, that prioritize system solutions followed by individual improvement.

**Constraints.** Reduce or limit the variety of insulin products in the facility formulary. Upon patient discharge, remove patient-specific insulin products from patient care areas.

**Standardization.** Standardize and simplify orders for insulin (e.g., develop standard protocols and format for prescribing; include generic names; use a single, standard concentration for adult intravenous [IV] insulin infusions). Safely store and dispense insulin (e.g., return all insulin to storage immediately after use, separate insulin products from one another in refrigerators).

**Differentiate.** Distinguish between or otherwise make insulin products differ in appearance (e.g., have pharmacy staff prepare and dispense prefilled syringes for once daily doses of long acting insulin, apply bold labels on atypical concentrations).

**Redundancies.** Require independent double checks of all doses before dispensing and administering IV insulin.

**Education.** Educate staff about insulin products and delivery methods on an ongoing basis. Document all insulin products and relevant information (e.g., generic and brand names, concentration, administration routes) and place documentation where insulin is prescribed, dispensed, or administered.

**Monitoring adverse events.** Use process measures to assess core processes, and obtain outcome measures by evaluating patient records (see a sample tool at <http://www.patientsafetyauthority.org/EducationalTools/PatientSafetyTools/insulin/Pages/worksheet.aspx>).

**U-500 insulin.** Ensure consistent use of a tuberculin syringe with U-500 insulin, with total doses expressed in terms of units and volume. Establish that pharmacy staff prepares and dispenses the ordered dose with a second individual performing an independent double check.

**Besides blood glucose monitoring.** Facilities can determine the safest way to receive, document, communicate, and verify blood glucose readings by means including recording on a flow sheet the dose and corresponding lab value and discouraging verbal communication of blood glucose results.

For the complete article and associated resources, go to <http://www.patientsafetyauthority.org/EducationalTools/PatientSafetyTools/insulin/Pages/home.aspx>.

## **Communication of Radiograph Discrepancies between Radiology and Emergency Departments**

2010 Mar;7(1):18-22

The number of radiologic examinations performed in the emergency department (ED) is increasing. However, a radiograph ordered in the ED may not be reviewed immediately by a radiologist for reasons including limited availability of radiology services after hours and the increasing demand on radiology services due to growing ED volume. In addition, the varying processes among facilities for communicating radiograph readings from the radiology department to the ED means that discrepancies between the two readings may not be communicated back to the ED. When discrepant interpretations occur between the preliminary reading by an ED physician and the final reading by a radiologist, follow-up communication is essential to ensure that the patient has received appropriate care.

Pennsylvania Patient Safety Authority Analysts identified 3,173 reports from June 2004 through December 2008 related to discrepancies between the ED physician interpretation of a radiograph and the final reading by a radiologist. Of the 194 event types reported in 2008, none were submitted as a Serious Event. However, in 68 (35%) of the reports, the discrepancy involved a potentially significant clinical finding, the most common of which was a fracture. Fifty-five (28%) of the reports indicate that miscommunication was a contributing factor in the event.

Consider the following risk reduction methods to address ED/radiology discrepancies:

- Develop a system for interpretation and communication of radiographic discrepancies that can be implemented during each shift.
- Implement a standardized method for timely communication at each stage of the information chain, including the following:
  - Inform the radiologist of the ED physician's interpretation.
  - Communicate the radiologist's interpretation of the ED radiograph to the ED physician.
  - Develop a consistent method to reconcile the radiograph interpretation with the actual follow-up care provided to the patient.
  - Communicate the radiographic readings to the referring or subsequent treating physician and the patient as appropriate.

For the complete article, go to

[http://www.patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/Mar7\(1\)/Pages/18.aspx](http://www.patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/Mar7(1)/Pages/18.aspx).

## VIII. MEASURING IMPROVEMENT AND VALUE CREATED BY THE PATIENT SAFETY AUTHORITY

Almost nine years after passage of the MCare Act of 2002, there are notable indications from a variety of sources that the Authority's programs are beginning to yield significant successes. What follows are two analyses of these trends and results. The first analysis, *Signs of Safety Improvement in Pennsylvania's Healthcare Community*, offers evidence of Pennsylvania healthcare improvements attributable, at least in part, to Authority efforts. The second study, *Patient Safety Authority Product Value Analysis*, presents a market valuation of several products and services the Authority produces and distributes to its constituencies.

*Signs of Safety Improvement in Pennsylvania's Healthcare Community* reports on a significant and continuing reduction in Pennsylvania malpractice claims (distinct from structural changes in the law) running counter to national trends exhibiting increases in malpractice claims. In addition, reductions have been seen in the severity of wrong site surgery (WWS) events, and a 72% WSS reduction was demonstrated in the recent HCIF sponsored WSS collaborative. Furthermore, evidence of Pennsylvania reductions in hospital HAI, central line-associated bloodstream infections (CLABSI), and blood specimen labeling errors add further weight to the successes of Authority patient safety programs. Finally, Pennsylvania hospitals' grassroots effort to standardize color-coded wristbands has become the de facto national standard.

The *Patient Safety Authority Product Value Analysis* demonstrates that certain commercially comparable products and services provided without charge by the Authority to Pennsylvania facilities (and in some cases to the broader patient safety community) have an estimated market value ranging from \$5.4 million to over \$10 million. These results suggest that these products are generating a significant recovery against the annual assessment of \$5.8 million. These products and services, the PA-PSRS software applications, the Authority's educational courses, and the *Patient Safety Advisory* publications, account for less than half the total effort of the Authority and its contractors. These products all contribute to the Authority's mission to improve patient safety in the Commonwealth, and are in addition to the Authority's many other activities focused on reducing patient harm. A set of three appendices detailing the *Patient Safety Authority Product Value Analysis* computations immediately follows the Value Analysis.

## Signs of Safety Improvement in Pennsylvania’s Healthcare Community

For those working in patient safety, a variety of sources are available that offer evidence about whether the delivery of healthcare is becoming safer. One significant area of success found in Pennsylvania is a substantial reduction in malpractice claims since the Medical Care Availability and Reduction of Error Act of 2002 (MCare)—the Pennsylvania Patient Safety Authority’s authorizing legislation—was signed into law.

Since 2002, payouts from the state’s excess liability fund have dropped by 58%, and the number of claims has been cut by more than half (Figure 8.1).<sup>1</sup> Some of this decline is attributed to MCare’s tort reform provisions, such as the requirement for certificates of merit, a reduction of MCare coverage limits, and the requirement in Act 127 of 2002 that malpractice actions be brought in the county where the cause of action occurred. However, these were structural changes that would have caused marked, one-time shifts in the malpractice environment, most evident in 2002 and 2003 as these provisions went into effect. Yet, claims and payouts have continued to decline since then, and this may represent healthcare facilities’ progress in improving patient safety.

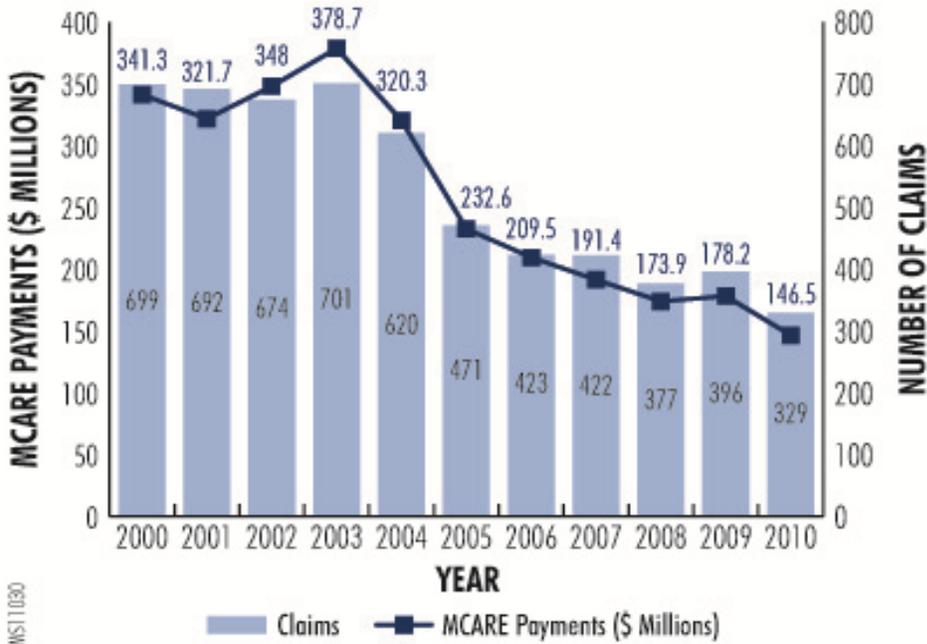


Figure 8.1. MCare Payments and Claims (2000-10). Source: Pennsylvania Office of the Governor.

What makes these results even more significant is that they occurred during a time when malpractice claim costs were increasing in the United States as a whole (Figure 8.2). Between their 2004 peak and 2009, hospital professional liability loss costs per bed dropped by over 23% among hospitals in Pennsylvania. During the same period, hospitals nationally saw their loss costs per bed rise by about the same percentage.<sup>ii</sup>

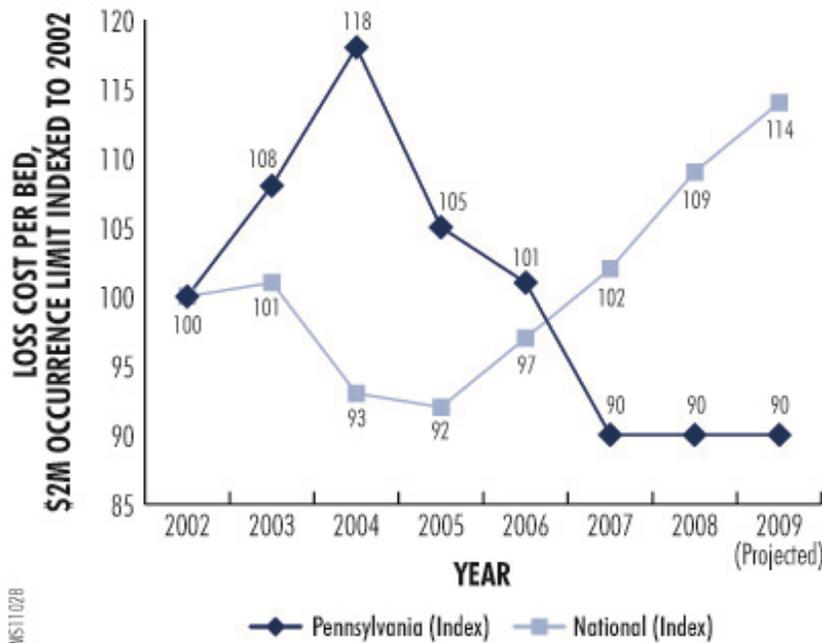


Figure 8.2. Hospital Professional Liability Loss Cost per Bed, Indexed to 2002. Source: Pennsylvania Patient Safety Authority analysis of data from Aon Analytics.

While claims represent only one lens through which we examine how safely care is delivered, a 2010 report from the RAND Corporation established a strong link between patient safety and malpractice claims. The researchers used 20 patient safety indicators developed by the Agency for Healthcare Research and Quality to identify 365,000 adverse events in a database of California hospital discharge data from 2001 through 2005. They analyzed these data in combination with data on over 27,000 claims from physician malpractice carriers covering more than 50% of non-self-insured physicians in the state. Analyzing the data by year at the county level, they found that a decrease of 10 adverse events in a given year correlated with a decrease of 3.7 malpractice claims and that three-fourths of the within-county variation in claims could be accounted for by changes in patient safety outcomes.<sup>iii</sup>

Other encouraging signs of progress include the following:

- In the 2011 March issue of the *Pennsylvania Patient Safety Advisory*, the Authority provides an update on our progress in eliminating wrong-site surgery. In a previous issue we documented that while wrong-site surgery persists, since the Authority began collecting data in 2004, a greater proportion of cases have been wrong-side regional blocks, suggesting a reduction in severity, if not frequency.<sup>iv</sup>
- Hospitals participating in a wrong-site surgery prevention collaborative sponsored by the Health Care Improvement Foundation achieved a 72% reduction in wrong-site surgeries

through implementation of 11 action goals aimed at prevention.<sup>v</sup> The Authority helped to monitor the program's success by providing deidentified, aggregate data on the number of cases reported each quarter by participating hospitals, and the Authority's clinical director, John R. Clarke, MD, FACS, served as faculty for the collaborative's workshops.

- Pennsylvania hospitals have made significant strides in reducing the incidence of healthcare-associated infections (HAIs). For example, the catheter-related urinary tract infection rates in all unit types in Pennsylvania hospitals were lower than in comparable units nationally, ranging from 19% to 84%.<sup>vi</sup>
- A report on HAIs from the U.S. Centers for Disease Control and Prevention found that Pennsylvania's rate of central line-associated bloodstream infections was nearly one-third lower than the national average.<sup>vii</sup>
- A grassroots effort by Pennsylvania hospitals to implement the Authority's guidance on the use of color-coded patient wristbands to communicate important clinical information has developed into a de facto standard endorsed by the American Hospital Association and adopted or in the process of adoption in some form in 40 U.S. states.<sup>viii</sup>
- The 2011 June *Advisory* will feature the results of an Authority-sponsored collaborative in which participating hospitals substantially reduced errors in blood specimen labeling. The Authority is supporting other multi-facility collaboratives on such topics as wrong-site surgery, patient falls, and surgical site infections that the Authority hopes will report positive results in the near future.

While we cannot yet claim that healthcare is as safe as it should be, it's important to recognize and celebrate our successes, to hold and improve on the gains that we've made, and to encourage knowledge transfer to increase the diffusion of effective practices.

#### Notes

<sup>i</sup> Pennsylvania Office of the Governor. Pennsylvania sees significant improvements in medical malpractice climate [press release online]. 2010 Oct 5 [cited 2011 Jan 3]. Available from Internet: <http://www.prnewswire.com/news-releases/governor-rendell-pennsylvania-sees-significant-improvements-in-medical-malpractice-climate-104352743.html>.

<sup>ii</sup> Johnson E. *Hospital professional liability and physician liability 2009 benchmark analysis*. Chicago: Aon Analytics; 2009.

<sup>iii</sup> Greenberg MD, Haviland AM, Ashwood JS, et al. Is better patient safety associated with less malpractice activity? [online report]. 2010 [cited 2011 Jan 3]. Available from Internet: [http://www.rand.org/pubs/technical\\_reports/2010/RAND\\_TR824.pdf](http://www.rand.org/pubs/technical_reports/2010/RAND_TR824.pdf).

<sup>iv</sup> Quarterly update on the preventing wrong-site surgery project: digging deeper. Pa Patient Saf Advis [online] 2010 Mar [cited 2011 Jan 3]. Available from Internet: [http://patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/Mar7\(1\)/Pages/26.aspx](http://patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/Mar7(1)/Pages/26.aspx).

<sup>v</sup> Pelczarski KM, Braun PA, Young E. Hospitals collaborate to prevent wrong-site surgery. *Patient Saf Qual Health* 2010 Sep-Oct:20-6.

<sup>vi</sup> Pennsylvania Department of Health. 2008 report: healthcare-associated infections (HAI) in Pennsylvania hospitals [online]. 2010 Feb 16 [cited 2011 Jan 3]. Available from Internet: <http://www.portal.state.pa.us/portal/server.pt/directory/haip/123902?qid=76847912&rank=6#>.

<sup>vii</sup> Centers for Disease Control and Prevention. First state-specific healthcare-associated infections summary data report [online]. 2009 Jan-Jun [cited 2011 Jan 3]. Available from Internet: [http://www.cdc.gov/hai/pdfs/stateplans/SIR\\_05\\_25\\_2010.pdf](http://www.cdc.gov/hai/pdfs/stateplans/SIR_05_25_2010.pdf).

<sup>viii</sup> American Hospital Association. Implementing standardized colors for patient alert wristbands [online]. Qual Advis 2008 Sep 4 [cited 2011 Jan 14]. Available from Internet: <http://www.aha.org/aha/advisory/2008/080904-quality-adv.pdf>.

## Patient Safety Authority Product Value Analysis

While the mission of the Pennsylvania Patient Safety Authority is to improve patient safety throughout the Commonwealth, the direct financial measure of patient safety improvement remains somewhat elusive. While it is clear the avoidance of patient harm events produces both social and economic benefit; attributing this value directly to Authority activities may require additional data and a longer-term perspective. The Authority does however deliver specific products and services to the Commonwealth's healthcare facilities and other constituent groups that are subject to valuation, and the economic value of these deliverables is measurable and substantial.

The products the Authority provides *free of charge* to these constituent groups have specific economic value; that is the price or fee which customers pay to acquire similar products and services from commercial vendors or trade associations. The following analysis measures the value created by the Authority in these products and services. While the long-term benefits of patient safety improvement will almost certainly result in substantial and sustainable long-term economic returns, the results of this study indicate that a few key products provide an annual value that is equivalent to a full recovery of the Authority's annual expenditures.

The Authority's value analysis determines comparable values for three product groups:

- 1) **PA-PSRS Software and Applications (Appendix A)**
- 2) **Educational Program Presentations (Appendix B)**
- 3) **PA-PSRS Patient Safety Advisory Subscriptions (Appendix C)**

The values assigned to these deliverables can be viewed as equivalent to operating revenue, even though the Authority provides such products and services at no additional cost to end users (beyond annual MCare assessments). This measure of revenue provides a basis for comparison to the Authority's annual expenditures and the facility assessments.

Relative to each of these product groups, commercial products and services are delivered in similar quantities and content to the same or similar recipients of the Authority programs. For example, in determining the estimated value of PA-PSRS Software and Applications (see Appendix A, which follows this report), the staff measured the value of the PA-PSRS system for hospitals using PA-PSRS as their only incident reporting system. This analysis included a review of the nine incident reporting and risk management vendors that utilize the PA-PSRS interface. From those nine vendors, four were selected for marketing interviews (all with senior product and sales management), with the primary focus on modules most comparable to features contained in PA-PSRS. Each of the four vendors shared proprietary pricing algorithms with the Authority, permitting the development of accurate PA-PSRS value estimates.

The value assigned to PA-PSRS in the software application piece of this value analysis is the average cost of the four comparable vendor incident reporting modules priced for installation, licensing, and maintenance, and amortized over five years utilizing. In addition, two value ranges were developed: 1) a low end value range for small facilities; and 2) vendor pricing for larger facilities representing the mid to high value range. As another measure of value, annual data entry savings for facilities using the PA-PSRS Interface were calculated using: 1) basic clerical data entry wages and process time for the low range; and 2) Patient Safety Officer (PSO) salaries and a more complex data entry process for the mid to high range. Pricing ranges were also estimated for non-surveillance, web-based, healthcare-associated infection (HAI) reporting systems in nursing homes.

Educational Program Presentations (Appendix B) were priced at both: 1) the lowest “early-bird” registration member rates offered by HAP (The Hospital and Healthsystem Association of Pennsylvania) and ASHRM (American Society for Healthcare Risk Management); and 2) the higher non-member “at the door” rates. The HAP and ASHRM pricing was applied to Authority programs of similar content and length. While this analysis identifies 54 educational program events, and over one thousand hours of staff effort during the 2010-2011 fiscal year, other Authority work product that was not directly measureable against comparable “paid-for” events was not included in this value analysis.

This “non-revenue associated effort” comprises the majority of Patient Safety Liaison (PSL) staff time, and includes PSL consultative work with the facilities, collaboratives, speaking engagements and presentations at facility board retreats and grand rounds, data analysis in response to facility queries, consumer outreach, press and public relations, legislative outreach, patient safety toolkit and knowledge exchange development, and CME/CEU credit offerings. (To view Appendix B go to page 150 of this Annual Report.)

The Authority *Advisory* subscription values (Appendix C) were calculated using quarterly on-line and print journal rates in the patient safety, medical, and scientific fields, distinguishing the high and low ranges using comparable individual and institutional subscription pricing tables.

**Summary of Authority Value Analysis Results:**

The low-range total value estimate (\$5.46M) for the three Authority product groups is nearly equivalent to the Authority’s entire FY10-11 budget (\$5.87M) and current assessment levels (\$5.80M), and the higher range (\$10.07M) is over 1.7 times the Authority’s annual expenditures.

	<b><u>Low Range</u></b>	<b><u>Mid-Hi Range</u></b>
Appendix A – PA-PSRS System	\$3,898,830	\$7,810,706
Appendix B – Educational Programs	565,000	804,010
Appendix C – <i>Advisory</i> Subscriptions	<u>999,459</u>	<u>1,462,286</u>
<b>Total Value Estimate for FY 10-11</b>	<b><u>\$5,463,289</u></b>	<b><u>\$10,077,002</u></b>

**Future Analysis:**

In addition to the value revealed in this analysis of the Authority’s commercially competitive products, the next phase of this study will consider the economic benefits attributable to patient safety improvement in Pennsylvania. This valuation of what is certainly a substantial aspect of the Authority’s core mission could present highly significant returns on the efforts and investments of both the Authority and the Commonwealth’s healthcare reporting facilities.

Appendix A

PSRS Value Analysis

Valuation Factors:	Base System Factors			Mid-Hi System Factors		
PA PSRS Hospitals	239	facilities		239	facilities	
<b>PSRS Only</b> Users (39% Assumption)	93	facilities		93	facilities	
PSRS Interface Users	70	facilities		70	facilities	
Hosp Incident Reports (12 Months)	218,400	incident reports				
PSRS Interface Incident Reports	99,610	45.6%	reports	99,610	reports	
Incident input time savings ( <b>interface users only</b> )	8,301	hrs @ 5 min per entry		16,602	hrs @ 10 min per entry	
Hourly Rate w/ 40% Benefit Rate	\$24.50	Clerical \$ per hr	40% benefit rate	\$56.00	PSO \$ per hour	

Interface/PSRS/HAI System Valuations:

	Facilities #	Base System Value	Est. Annual Base Cost per System	ff.	Mid-Hi System Value	Est. Annual Mid-Hi Cost per System	ff.
Annual <b>Interface</b> Data Input Savings	70	\$203,370		1	\$929,693		2
Value of Annual PSRS License and Maintenance to <b>PSRS Only</b> Users	93	\$1,880,460	\$20,220	3	\$3,501,450	\$37,650	4
Annual Value <b>Nursing Home HAI only</b> PSRS System	726	\$1,815,000	\$2,500	5	\$3,379,562	\$4,655	5
<b>Annual PSRS/Interface Value</b>		<b>\$3,898,830</b>			<b>\$7,810,706</b>		

<sup>1</sup> \$35K clerical wages @ 5 min per entry, with 40% benefits.

<sup>2</sup> \$80K PSO salaries @ 10 min per entry, with 40% benefits.

<sup>3</sup> Avg. of four vendors, small facility, incident reporting, 5 yr amortztn intall, license, and support.

<sup>4</sup> Avg. of four vendors, mid-large facility, incident reporting, 5 yr amortztn intall, license, and support.

<sup>5</sup> Nursing home non-surveillance web based HAI only. Mid-Hi value uses PSRS Only price differential.

Appendix B

Education and Other Programs

PSA Value Analysis

<u>Date</u>	<u>Program</u>	<u># Days</u>	<u># Functions</u>	<u># Attendees</u>	<u>Low</u>	<u>Mid-Hi</u>	<u>Low Total</u>	<u>Mid-Hi</u>
					<u>Market</u>	<u>Market</u>		
					<u>Value per</u>	<u>Value per</u>		
					<u>Participant</u>	<u>Attendee</u>	<u>Value (\$)</u>	<u>Total Value</u>
					<u>(\$)</u>	<u>(\$)</u>		<u>(\$)</u>
2H10	PSO Basics	2.0	2	90	\$350	\$500	\$31,500	\$45,000
2H10	Beyond the Basics	6.0	3	130	\$600	\$825	\$78,000	\$107,250
2H10	Networking & Intro to PassKey ASF	4.0	4	100	\$350	\$500	\$35,000	\$50,000
2H10	Other Networking	2.5	5	120	\$250	\$349	\$30,000	\$41,880
2H10	Conferences/Presentations	12.8	13	475	\$227	\$332	\$108,000	\$157,875
<b>Total Projected for 2H 2010</b>		27.3	27	915	\$309	\$439	<b>\$282,500</b>	<b>\$402,005</b>
Extrapolation to 1H 2011		27.3	27	915	\$309	\$439	\$282,500	\$402,005
<b>Total Educational Program Value FY 10-11</b>		54.5	54	1830	\$309	\$439	<b>\$565,000</b>	<b>\$804,010</b>

- Internal training seminars not included
- Rates derived from similar HAP and ASHRM Courses:

<u>Program Length</u>	<u>Early-Bird Member Rates</u>	<u>Non-Member Rates</u>
1 Hr	\$150	\$249
1.5-2 Hr	\$200	\$299
1/2 Day	\$250	\$349
1 Day	\$350	\$500
2 Days	\$600	\$825

Appendix C

Comparable Subscription Pricing for Pennsylvania Patient Safety Advisory

		Institutional Annual Rate	<i>ff</i>	Individual Rate	Annual
<i>Journal of Patient Safety</i>					
Quarterly					
	Print	\$517	a		
	Single .pdf x 4	\$496	b		
<i>Cambridge Quarterly of Healthcare Ethics</i>					
Quarterly					
	Online	\$260	c		
	Online & Print	\$312	d		
<i>ECRI Healthcare Risk Control (HRC)</i>					
Monthly	Online	\$1,555			
	Online & Print	\$1,655			
<i>Journal of Cell Science</i>					
Quarterly					
Online Only					
	Private Clinics	\$1,285	e	\$150	f
	Non-Res Hosp	\$2,565	g		
	Med Schools and Research	\$2,825			
(Footnotes denote market segment pricing components)					

Pa Patient Safety Advisory

Quarterly Subscription Annual Value Estimates

Online	# Subscriptions	Base Rate	<i>ff</i>	Base Value	Mid-Hi Rate	<i>ff</i>	Mid-Hi Value
NH	726	\$205	c,f	\$148,830	\$260	c	\$188,760
ABF	18	\$205	c,f	\$3,690	\$260	c	\$4,680
ASF	287	\$205	c,f	\$58,835	\$260	c	\$74,620
HOSP	268	\$680	b,c,e	\$182,329	\$1,107	b,c,g	\$296,676
BRC	5	\$205	c,f	\$1,025	\$260	c	\$1,300
Tot Facilities	1,304			\$394,709			\$566,036
(5,350 Unique Addresses)							
Hard Copies (33% Dis	500	\$415	a,d	\$207,250	\$415	a,d	\$207,250
General Subscribers	2,650	\$150	f	\$397,500	\$260	c	\$689,000
<b>Total Subscription Value</b>				<b>\$999,459</b>			<b>\$1,462,286</b>

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## **IX. OTHER ITEMS**

### **Federal Legislation**

#### **National Healthcare**

In 2010, the US Congress passed and President Obama signed into law the Patient Protection and Affordable Care Act (PPACA). In addition to the elements of the law reported in the mainstream media that focused on ensuring patients have access to healthcare, there are a number of provisions aimed at improving patient safety and healthcare quality more broadly. For example, the law:

- Directs CMS to extend its policy of non-payment for certain hospital-acquired conditions (HACs) from Medicare (effective in 2007) to Medicaid (effective July 2011).
- Provides for financial penalties for hospitals in the top quartile on selected HACs by 2015 and incentive payments for hospitals that perform well.
- Financial penalties for hospitals that exceed expected benchmarks for readmissions.
- Results of patient safety and quality metrics for healthcare facilities will be published by CMS on consumer-friendly websites like HospitalCompare and NursingHomeCompare.

The Authority will continue to monitor implementation of the PPACA and other patient safety-related legislation at the national and state levels.

#### **Patient Safety Organizations**

Congress enacted the Patient Safety and Quality Improvement Act of 2005, P.L. 109-42, 42 U.S.C. 299b-21—b-26 (the “Act”) to provide a framework for entities that collect health information on patient safety events from health care providers to become listed and certified as federally recognized Patient Safety Organizations (“PSOs”). As a PSO, these entities will be able to share information relating to patient safety events with other PSOs with the aim of improving patient safety and the quality of care nationwide. Pursuant to the Act, the federal Department of Health and Human Services (“HHS”) published proposed rules on February 12, 2008, and final rules on November 21, 2008. Importantly, the Act focuses on creating a voluntary system through which health care providers can share sensitive information relating to patient safety events without fear of liability, thereby leading to improvements in patient safety and in the quality of patient care. Neither the Act nor the proposed rules, however, addressed the circumstances under which an entity under a state mandate to collect similar patient safety information could become listed and certified as a PSO. The final rules addressed this issue. The final rule expressly precludes entities collecting patient safety information pursuant to a mandatory reporting system established under state law from becoming listed and receiving certification as a federally recognized PSO.

Because the Authority is an entity operating a state reporting system to which providers are required to report under Pennsylvania law, the Authority is ineligible under current federal regulations from listing and certification as a federally recognized PSO.

## Pennsylvania Patient Safety Legislation

In July 2007, Act 52 became law charging the Authority, the Department of Health (DOH) and the Pennsylvania Healthcare Cost Containment Council (PHC4) with reducing and eliminating healthcare-associated infections in Pennsylvania. The Centers for Disease Control and Prevention (CDC) provide the reporting tool, but the Authority added reporting components to the CDC reporting system (NHSN) to meet Act 13 of 2002 (MCare) reporting requirements and prevent facilities from duplicate reporting. Along with hospitals, nursing homes are required to report infections to the Authority and DOH. The Authority must analyze the infection data and provide all healthcare facilities mentioned in the Act with information similar to that contained in *Pennsylvania Patient Safety Advisories*. Hospitals began reporting infection data to the CDC February 14, 2008. Nursing homes began reporting to PA-PSRS in June 2009. Analytical tools were also added to the program shortly after reporting began allowing nursing homes to review healthcare associated infections (HAIs) in their institutions to better understand how they can reduce and eliminate them.

In May 2006, House Bill 1591 was signed into law as Act 30 requiring certain abortion facilities and providers to report through the Pennsylvania Patient Safety Reporting System (PA-PSRS). The law requires abortion facilities and providers that perform 100 or more procedures annually to report Serious Events, Incidents and Infrastructure Failures. Qualifying facilities began reporting in early 2007, in accordance with the law. In 2010, there were 15 qualifying abortion facilities.

## Recommendations for Statutory or Regulatory Change

Act 13 of 2002 (MCare) calls upon the Authority to suggest recommendations for statutory or regulatory changes that may help improve patient safety in the Commonwealth. At this time, the Board does not have any formal recommendations for statutory or regulatory change.

## Anonymous Reports

Act 13 of 2002 (MCare) includes an important provision that permits individual healthcare workers to submit what the MCare Act defines as an “Anonymous Report.” Under this provision, a healthcare worker who has complied with section 308 (a) of the Act may file an anonymous report regarding a Serious Event. Act 13 of 2002 requires facilities to make anonymous report forms available to healthcare workers. The Authority does not receive many anonymous reports. The Authority makes the forms available on the PA-PSRS website, which is accessible without a password. The reporting form is a simple, one page questionnaire. To ensure healthcare workers are aware of the option to submit an anonymous report, the Authority developed an anonymous report pamphlet. The pamphlet includes an anonymous report form with guidelines for filing a report so PSOs can make them easily accessible for hospital staff. The Authority’s Patient Safety Liaisons also ensure PSOs are making the anonymous report forms accessible to employees while making their routine visits to facilities in their region.

Healthcare workers are able to submit an anonymous report according to the protocols established through the PA-PSRS system. Persons completing the form do not need to identify themselves, and the Authority assigns professional clinical staff to conduct any subsequent investigations. The Authority encourages healthcare workers to submit anonymous reports when they believe their facility is not responding appropriately to Serious Events. Act 13 of 2002 requires that the Annual Report include the number of anonymous reports filed and reviews conducted by the Authority. The Authority did not receive an anonymous report in 2010 that complied with Act 13 of 2002 requirements.

## **Referrals to Licensure Boards**

Act 13 of 2002 requires the Authority to identify the number of referrals to licensure boards for failure to submit reports under the Act's reporting requirements. No such situations were identified during 2010. However, it is important to note that the Patient Safety Authority is unlikely to receive information related to a referral to a licensure board as PA-PSRS reports do not include the names of individual licensed practitioners. That information is more appropriately referred to the Department of Health or will be reported directly by a facility to a specific licensing board.

## **Patient Safety Discount Program**

Section 312 of Act 13 of 2002 provides for what the Act defines as a Patient Safety Discount. Under this provision, facilities may be eligible for a reduction in medical liability insurance premiums if they can demonstrate a reduction in Serious Events as a result of adopting a program recommended by the Authority. In previous years, the Authority has recommended the National Patient Safety Foundation's (NPSF) "Stand Up™ for Patient Safety" program and the "100,000 Lives Campaign" of the Institute for Healthcare Improvement.

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## **X. BOARD OF DIRECTORS AND PUBLIC MEETINGS**

Members of the Board of Directors are appointed by the Governor and the General Assembly, according to certain occupational or residence requirements. As of December 31, 2010 members include:

- Physician appointed by the Governor, who serves as Chair: Ana Pujols-McKee, MD  
Residence: Philadelphia (Philadelphia County)
- Appointee of the President pro tempore of the Senate: Marshall W. Webster, MD  
Residence: Pittsburgh (Allegheny County)
- Appointee of the Minority Leader of the Senate: Cliff Rieders, Esq.  
Residence: Williamsport (Lycoming County)
- Appointee of the Speaker of the House: Stanton N. Smullens, MD  
Residence: Philadelphia (Philadelphia County)
- Appointee of the Minority Leader of the House: Terry Hyman, Esq.  
Residence: Carlisle (Cumberland County)
- Nurse appointed by the Governor: Joan M. Garzarelli, RN, MSN  
Residence: Irwin (Westmoreland County)
- Pharmacist appointed by the Governor: Gary A. Merica, RPh  
Residence: Red Lion (York County)
- Hospital employee appointed by the Governor: Roosevelt Hairston, Esq.  
Residence: Malvern (Chester County)
- Health care worker appointed by the Governor: Anita Fuhrman, RN, BS  
Residence: Lebanon (Lebanon County)
- Non-health care worker appointed by the Governor: Lorina L. Marshall-Blake  
Residence: Philadelphia (Philadelphia County)
- Physician appointed by the Governor: Vacant

Act 13 of 2002 requires the Board of Directors to meet at least quarterly. During 2010, the Board met frequently to assess and develop future patient safety educational and advocacy activities including implementation of Act 52 of 2007 and its Patient Safety Liaison Program. Representatives of healthcare, consumer and other stakeholder groups, including the General Assembly, have attended and spoken at public meetings. Following are the dates of all public board meetings held by the Authority during 2010:

January 26, 2010  
March 9, 2010  
April 27, 2010  
June 1, 2010  
September 14, 2010  
October 26, 2010

Minutes of the public meetings are available on the Authority's website at [www.patientsafetyauthority.org](http://www.patientsafetyauthority.org).

**Address:** Pennsylvania Patient Safety Authority  
333 Market Street, Lobby Level  
Harrisburg, PA 17120

**Phone:** 717-346-0469      **Fax:** 717-346-1090

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## **XI. FISCAL STATEMENTS AND CONTRACTS**

Act 13 establishes the Patient Safety Trust Fund as a separate account in the State Treasury. Under Act 13, the Authority, which has sole discretion to determine how those funds are used to effectuate the purposes of the patient safety provisions of the Act, administers funds in the Patient Safety Trust Fund.

Funds for the Patient Safety Trust Fund come from assessments made by the Department of Health on certain medical facilities. The department has 30 days following receipt of those moneys to transfer them to the Trust Fund.

The Authority recognizes that Pennsylvania hospitals, birthing centers, ambulatory surgical facilities, and certain abortion facilities bear financial responsibility for costs associated with complying with mandatory reporting requirements. Accordingly, the Authority has focused on two fiscal goals: to be moderate in the use of moneys contributed by the healthcare industry and to assure that healthcare facilities paying for PA-PSRS receive direct benefits from the system in return.

In this regard, in designing PA-PSRS, the Authority included within the system a variety of integral and analytical tools that provide immediate, real-time feedback to facilities about their own adverse event and near-miss reports and activities and a report that aggregates reports in the National Patient Safety Goal categories. Facilities can use these tools for their internal patient safety and quality improvement programs. The Authority also publishes the *Pennsylvania Patient Safety Advisory*, a scholarly journal issued quarterly that includes detailed analysis and identification of trends of reports submitted through PA-PSRS. Finally, the Authority has provided numerous training and education programs including topics such as reporting basics, Beyond the Basics, regional root cause analysis, failure mode effect and analysis, reduction of MRSA in ambulatory surgical facilities, and new patient safety officer school, to name a few. These programs are generally offered for free. As identified elsewhere in this report, the Authority is expanding its services to be increasingly collaborative with reporting facilities and other patient safety-centric organizations. By directly offering clinical guidance, feedback, and educational programs to providers about actual events which occurred in Pennsylvania, the Authority provides value to the healthcare industry that funds this program.

### **Funding Received from Hospitals, ASFs, Birthing Centers and Abortion Facilities**

Act 13 sets a limit of \$5 million on the total aggregate assessment on healthcare facilities for any one year beginning in 2002, plus an annual increase based on the Consumer Price Index (CPI) for each subsequent year. On January 13, 2010, the Authority recommended to the Department of Health that the FY 2009-2010 surcharge assessment total \$5 million. This amount is 25% more than the surcharge assessment from the previous fiscal year, and 18% less than the maximum

annual amount that could have been assessed for the year pursuant to Act 13. At the time of this recommendation, the Patient Safety Authority Board took several points into consideration, including:

- The Patient Safety Trust Fund would have had a negative uncommitted balance by the end of the current fiscal year in June 2010.
- The Patient Safety Authority budget only increased by 2 percent for FY 2009-2010. Any increases in budgeted spending were focused on patient safety programs assisting facilities. Staff did not receive pay increases for this fiscal year.
- The Patient Safety Authority FY 2009-2010 budget was approximately \$5.8 million. Staff projected expenditures for this period of approximately \$5.5 million would result in savings of approximately \$300,000.

Act 13 requires that the Annual Report include a summary of fund receipts and expenditures, including a financial statement and balance sheet. The following tables are presented to meet these requirements and also include Act 52/HAI financial information:

#### Facility Assessments

Fiscal Year	Number of Facilities assessed by DOH	Total value of assessments	Total Assessments received by DOH <sup>19</sup>
2002-03	356	\$ 4,999,922	\$ 4,663,000
2003-04	377	\$ 2,562,938	\$ 2,542,316
2004-05	414	\$ 2,500,159	\$ 2,508,787 <sup>20</sup>
2005-06	450 <sup>21</sup>	\$ 2,499,906	\$ 2,500,149
2006-07	453	\$ 2,500,034	\$ 2,498,127
2007-08	526	\$ 5,400,000	\$ 5,391,583
2008-09	524	\$ 3,972,951	\$ 3,972,677
2009-10	519	\$4,989,539	\$4,989,781

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<sup>19</sup> Amounts assessed and amounts received will differ because a few facilities may have closed in the interim or are in bankruptcy. In a few cases, the Department of Health is pursuing action to enforce facility compliance with Act 13's assessment requirement.

<sup>20</sup> Total Assessments received are greater than assessments made because some funds received were late payments for the previous year's assessment.

<sup>21</sup> The number of facilities assessed by the Department of Health differs from the number of Act 13 facilities cited elsewhere in this report due to the differences in the dates chosen to calculate the number of facilities for these two different purposes.

## Funding Received from nursing homes

Act 52 allows the Department of Health to assess the nursing homes up to \$1 million per year. In 2008, following the Authority's suggestion, the Department of Health assessed 725 nursing home facilities \$1,000,782 for FY 2008-2009. This money can only be spent on activities related to HAI and implementation and maintenance of Act 52. On August 31, 2009, the Department of Health decreased the FY 2009-2010 nursing home assessment to \$800,000, again in agreement with the Authority's suggestion. This amount is a 20% reduction from the previous year's assessment, and approximately 20% below the maximum assessment permitted under Act 52 based on annual CPI adjustments.

Nursing Home Assessments

Fiscal Year	Number of Facilities assessed by DOH	Total value of assessments	Total Assessments received by DOH
2008-09	725	\$1,000,782	\$1,000,782
2009-2010	711	\$ 800,000	\$ 799,382

## Annual Expenditures

During calendar year 2010, the authority spent approximately \$5.38 million. Please see the table below.

Actual Expenditures for Calendar Year 2010

Major Object Code	Amount
100: Personnel	\$1,311,419
300: Operating	\$4,072,458
400: Fixed Assets	\$ 0
TOTAL	\$5,383,877

## Patient Safety Authority Contracts

Act 13 requires the Authority to identify a list of contracts entered into pursuant to the Act, including the amounts awarded to each contractor.

During the calendar year 2010, the Authority received services under the following contracts. Please note: While contract amounts are given for the fiscal or contract years, actual amounts expended are given for the calendar year.

Key: FC (Funds Commitment); PO (Purchase Order)

ECRI Institute, FC # 4000013036

Five-year contract for program administration, clinical analysis, training and data collection and reporting infrastructure services

November 2008 to June 30, 2013

Total Contract Amount \$20,170,397 over 5 years

Amount Expended in 2008: \$496,373.04 (November and December)

Amount Expended in 2009: \$3,664,012.67 (January through December)

Amount Expended in 2010: \$3,747,379.11 (January through December)

IKON Office Solutions, PO #4300182251

Color Copier Lease

October 1, 2009 to June 30, 2011 @ \$414.30/month plus overages

Lease Expense: \$4,971.60

Overage Expense: \$8,529.14

Amount Expended in 2010 (Jan–Dec 2010): \$13,500.74

IKON Office Solutions, PO # 4500509140

B&W Copier Lease

February 1, 2009 to June 30, 2010 @ \$232.03/month

Amount Expended in 2010 (Jan–Jun 2010): \$1,624.21

IKON Office Solutions, PO # 4500514314

B&W Copier Lease

July 1, 2010 to June 30, 2011 @ \$210.12/month

Amount Expended in 2010 (Jul– Dec 2010): \$1,050.60

Total IKON Expenditures in 2010: \$16,175.55

Harrisburg Parking Authority, FC#490001139

Parking at the Forum Place – Five Months (Jan-May 2010)

4 spaces at \$130 per space, or \$520/month

Parking at the Chestnut Street Garage – Seven Months (Jun-Dec 2010)

4 spaces at \$130 per space, or \$520/month (Jun-Nov 2010)

4 spaces at \$145 per space, or \$580/month (Dec 2010)

Amount Expended in 2010: \$6,300.00

DS Waters of America, Inc., FC#4300236331

Bottled Water delivery

Amount Expended in 2010: \$103.00

## Patient Safety Authority Balance Sheet

The following Balance Sheet reflects the status of the Patient Safety Trust Fund as of December 31, 2010:

Patient Safety Trust Fund Balance Sheet (Unaudited) <sup>22</sup>  
As of December 31, 2010

<b>ASSETS</b>	
Cash	\$ 0
Cash in Transit	0
Temporary Investments	3,934,278
<b>TOTAL ASSETS</b>	<b>\$ 3,934,278</b>
<b>LIABILITIES AND FUND BALANCE</b>	
<b>Liabilities:</b>	
Accounts Payable and Accrued Liabilities	\$ 50,256
Invoices Payable	632,686
Accrued Payables Goods Receipt	(295)
<b>TOTAL LIABILITIES</b>	<b>\$ 682,647</b>
<b>FUND BALANCE</b>	
Restricted for Encumbrances	\$ 3,287,288
Deficit <sup>23</sup>	(35,657)
<b>TOTAL FUND BALANCE</b>	<b>\$ 3,251,631</b>
<b>TOTAL LIABILITIES AND FUND BALANCE</b>	<b>\$ 3,934,278</b>

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<sup>22</sup> Source: Comptroller Operations, Commonwealth Office of the Budget

<sup>23</sup> The Deficit item reflects the difference between the Patient Safety Trust Fund balance on December 30, 2010, and the total commitment items carried on the Authority's budget through FYE 2010-2011. This deficit item will be eliminated with the receipt of FY 2010-11 facility assessments transferred from the Department of Health to the Patient Safety Trust Fund during FY 2010-2011. On September 8, 2010, the Authority Board approved the following suggested assessments for FY 2010-2011: Act 13 facility assessments totaling \$5,000,000, and Act 52 HAI assessments totaling \$800,000. The Patient Safety Trust Fund continues to fund all Authority activities, and maintains an adequate balance for all planned Act 13 and Act 52 expenditures in FY 2010-11.