April 28, 2010

Pennsylvania Patient Safety Authority

2009 Annual Report

An independent agency of the Commonwealth of Pennsylvania

Analyzing, Educating, and Collaborating for Patient Safety

Letter from the Board Chair

PATIENT SAFETY AUTHORITY

An independent agency of the Commonwealth of Pennsylvania

April 28, 2010

Dear Fellow Pennsylvanians:

In 2009, the Pennsylvania Patient Safety Authority continued to lead in its efforts to educate healthcare facilities and improve patient safety. This effort included beginning to collect healthcare-associated infection data from Pennsylvania nursing homes. The data is the most comprehensive healthcare-associated infection data for nursing homes in the nation.

Last year, the Authority modified its Pennsylvania Patient Safety Reporting System (PA-PSRS) to enable over 700 nursing homes to report healthcare-associated infections (HAIs) as charged under Act 52 of 2007. All Pennsylvania nursing homes began reporting HAIs in June 2009. This significant step forward keeps Pennsylvania in the forefront of efforts nationwide to reduce infections. The first six months of data collected from nursing homes is presented in this annual report. The data is among the largest population-level studies of HAI events in this vulnerable population. The Authority has begun integrating the data from nursing homes into its educational activities and in the award-winning *Pennsylvania Patient Safety Advisory*.

Another Authority focus in 2009 included developing the unique Patient Safety Liaison program under the director of Educational Programs. Six Patient Safety Liaisons are based regionally throughout Pennsylvania so each hospital, ambulatory surgical facility, abortion facility and birthing center has an Authority representative to consult with regarding patient safety issues in their facilities. Throughout the year, facilities attended new educational courses developed by the Authority based upon feedback received by the Patient Safety Liaisons from Patient Safety Officers (PSOs).

Development of a new electronic forum called the Patient Safety Knowledge Exchange (PassKey) began in 2009 for PSOs to exchange information, ideas and solutions within the facility patient safety community. PassKey will be available to PSOs by June 2010.

The Authority also conducted its annual survey to PSOs who continue to give high marks for the usefulness of the information in the *Pennsylvania Patient Safety Advisory* and for the new Patient Safety Liaison program.

As 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 the new education initiatives and programs detailed in this report.

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

Ana Pujols-McKee, M.D.
Chair, Board of Directors
Pennsylvania Patient Safety Authority

PATIENT SAFETY AUTHORITY

An independent agency of the Commonwealth of Pennsylvania

Board of Directors

Ana Pujols-McKee, MD
Anita Fuhrman, RN, BS
Joan M. Garzarelli, RN, MSN
Terry Hyman, Esq.
Roosevelt Hairston, Esq.
Lorina L. Marshall-Blake
Gary Merica, R.Ph
Clifford Rieders, Esq.
Stanton Smullens, MD
Marshall W. Webster, MD

*

Michael Doering, Executive Director
Teresa Plesce, Administrative Specialist
Laurene M. Baker, Director of Communications
Franchesca Charney, Director of Educational Programs
Denise Barger, Patient Safety Liaison, Southeast Region
Michelle Bell, Patient Safety Liaison, Southeast Region
Christina Hunt , Patient Safety Liaison, South Central Region
Richard Kundravi, Patient Safety Liaison, Northwest Region
Megan Shetterly, Patient Safety Liaison, Northeast Region
Robert Yonash, Patient Safety Liaison, Southwest Region

*

Office Location/Mailing Address
333 Market Street
Lobby Level
Harrisburg, PA 17120

Phone: 717-346-0469
Fax: 717-346-1090
Email: patientsafetyauthority@state.pa.us
Web site: www.patientsafetyauthority.org

What Pennsylvania Healthcare Facilities Have to Say About the Authority

"The Patient Safety Authority sponsored programs provide PSO's with opportunities to collaborate with colleagues, while supplying invaluable, usable and applicable information as well as education. Mutual concerns and opportunities may be addressed in a non-punitive setting, which encourages the sharing of ideas. Our common goal, to deliver safe health care to the public, is well served by your organization and the Patient Safety Liaison in the south central region."

Robin Egbert, RN, BSN
Nurse Administrator
Digestive Disease Institute

"I have learned so much when reading the [Patient Safety Advisories] and other resource materials that are available through the Patient Safety Authority. We have implemented new practices based upon information that I have acquired from these articles, for example the article relating to Hand Hygiene Practices and the Use of Alcohol-based Sanitizers article. At our facility, we historically had only installed alcohol foam dispensers outside of patient rooms for staff use, but after reading the article, and recognizing the importance of hand washing for everyone that visits our facility, I have decided to also install them in all patient rooms for patients and family to use. It is also a huge advantage to now have a clinical Patient Safety Liaison assigned to our ambulatory surgery center."

Bernadette Malos, RN
Clinical Manager
Digestive Health & Endoscopy Center

"The Patient Safety Authority is a tremendously valuable resource for the ambulatory surgery center community. With the subject of patient safety being at the forefront of regulatory compliance and playing a significant role in risk management and operating a sound business, many surgery centers need a resource that can advocate for their industry with timely advice and counsel. By definition, ASC operations exist for efficiency, quality and convenience. The regulatory and compliance standards are required and ASC personnel must assure this in order to maintain licensure and accreditation. In this capacity, the Patient Safety Authority serves as the ultimate resource for successful surgery center operations".

Patrick Garman, MHA
Administrator
Spartan Health Surgicenter

"The PassKey project has the potential to serve Pennsylvania Patient Safety Officers and their representatives as a valuable networking resource promoting patient safety within the commonwealth. A recent overview of the planned site was impressive and exceeded expectations. Participating members will have a central location to share efforts already implemented within their organizations as well as "discuss" relevant topics in a colloquial setting."

Gene Mushak, RN, BSN
Patient Safety Officer
Allied Services Rehabilitation Hospital

What Other Healthcare Organizations Are Saying About the Authority

"I am a fan of the work the Pennsylvania Patient Safety is doing. I believe that there is a great deal of work being done at the state level all across the country but Pennsylvania is clearly leading the way for the rest of us. [The Authority's] monthly [Patient Safety Advisories] are shared across the country and the information, based on solid data and analysis, is driving real improvements. [If the Authority] is ever looking for partners in a project, the NYSDOH's [New York State Department of Health] Patient Safety Center would be very happy to work with you."

John Morley, MD
Medical Director
NYSDOH/OHSM

"The Health Care Improvement Foundation (HCIF) congratulates the Pennsylvania Patient Safety Authority for leading the nation in raising awareness about patient safety issues. Through the Patient Safety Advisory publications, data analysis briefs, and numerous toolkits and educational brochures, the Authority offers well-received provider resources to promote the spread of safety interventions and practices. In the Philadelphia area, the Authority has collaborated with area hospitals and HCIF to make progress on important issues such as falls prevention and elimination of wrong-site surgery. We look forward to our sustained partnership with the Authority as we work to ensure the safety of all patients receiving care in Pennsylvania."

Kate J. Flynn, FACHE
President
Health Care Improvement Foundation

"The Pennsylvania Patient Safety Authority, by mission and deed, continues to demonstrate an unwavering determination to keep patients safe, reduce adverse events, and use its many innovative resources to inform, educate and create meaningful change. The Authority's quarterly Advisory communication, for example, is a highly-effective means of translating learnings gleaned through the organization's reporting mechanisms into real-world processes, tools and recommendations to improve safe care."

Diane C. Pinakiewicz, MBA
President
National Patient Safety Foundation

"In 2009, the Patient Safety Authority and the Hospital & Healthsystem Association of Pennsylvania (HAP) strategically partnered to implement the American Hospital Association's (AHA) Center for Healthcare Governance trustee quality curriculum. As Pennsylvania hospitals fulfill their responsibilities in providing quality, cost-effective and affordable health care, and hospital boards demonstrate their accountability for decision-making, it is vital for boards to strengthen their understanding of their quality oversight. HAP appreciates the Authority's commitment and partnership with HAP to reinforce this vital component of hospital trustee and executive leadership accountability in the provision of quality patient care."

Carolyn F. Scanlan
President and Chief Executive Officer
The Hospital and Healthsystem Association of Pennsylvania (HAP)

TABLE OF CONTENTS

EXECUTIVE SUMMARY **1**
THE AUTHORITY'S EDUCATION MISSION CONTINUES TO GROW 1
The Patient Safety Liaison Program *2*
Enhanced Public Website *2*
Patient Safety Training for Trustees Continued in 2009 ..... *3*
Speakers' Bureau and Information Booth *4*
THE AUTHORITY INCREASES ITS ROLE IN FIGHTING HEALTHCARE-ASSOCIATED INFECTIONS (HAI) 4
Nursing Homes Begin Reporting HAI through the Authority's Enhanced PA-PSRS System *5*
ENGAGING PATIENTS AND CONSUMERS 5
Consumer Tips and Brochures *5*
New Web Site Features Added for Patients and Consumers *5*
HIGHLIGHTS OF DATA SUBMITTED TO THE PENNSYLVANIA PATIENT SAFETY AUTHORITY 6
DATA COLLECTION AND ANALYSIS **9**
THE REPORTING SYSTEM 9
Introduction *9*
Interpreting PA-PSRS Data *11*
Definitions *12*
Standardization of Reporting Update *14*
Report Volume *16*
Reports by Month and Submission Type 16
Reports by Facility Type 17
Report Submission Trends 18
Reports by Event Type *20*
Reports by Region and Submission Type *23*
Reports by Level of Patient Harm *27*
Reports Involving the Patient's Death *29*
Patient Demographics *30*
Patient Gender 30
Patient Age 32
Patients Most at Risk by Age 33
Reports by Location/Department (Hospitals Only) *34*
HEALTHCARE ASSOCIATED INFECTIONS 35
Hospitals *35*
Catheter-Associated Urinary Tract Infections (CAUTIs) 37
CAUTI National Comparison 37
Central Line-Associated Bloodstream Infections (CLABSI) 38
CLABSI National Comparison 38
Nursing Homes *40*
Analysis 41
Respiratory Tract Infections 43
Urinary Tract Infections 45
Skin and Soft Tissue Infections 46
Gastrointestinal Infections 50
Other Infections 50
Facility Response to Infection 52
Organisms Identified in Laboratory Studies 53
Data Integrity and Validation 54
Nursing Home Analytical Reports 55
Nursing Home Feedback from the Annual Authority Survey 55
Pennsylvania Patient Safety Advisory Infection Articles *56*
Successful Reduction of Healthcare-Associated MRSA Infection Rates 56
Successful Reduction of Ventilator-Associated Pneumonia 59
Barriers to Urinary Catheter Insertion and Management Practices 61
Practice-Proven Strategies to Increase Influenza and Pneumonia Vaccination Rates in Long-Term Care 63
Ambulatory Surgery Facilities (ASFs) *65*
HAI Advisory Panel *65*
HAI Educational Programs *66*

Webinars 66
On-Site Educational Presentations 66
Comprehensive Unit-Based Safety Program (CUSP) Initiative 66
Help Desk Inquiries 67
2010 Plan For Infection Prevention Program 67
EDUCATION, OUTREACH AND COLLABORATION 69
THE PATIENT SAFETY LIAISON PROGRAM – ENGAGING IN CONVERSATION 69
PSL Mission: Educating Healthcare Facilities by Collaborating 70
A Complete PSL Program 71
Successes for the PSL Program 72
PSL Program Obstacle 73
ADDITIONAL EDUCATIONAL PROGRAMS AND COLLABORATIVES 74
PassKey (Patient Safety Knowledge Exchange) - Keeping the Conversation Going 74
Mislabeled Specimen Collaborative 75
Wrong-Site Surgery Collaborative 76
Falls Collaborative 76
CUSP/CLABSI Collaborative 76
Patient Safety Officer Basic Foundation Course I 77
Beyond the Basics Course II 77
MRSA Presentation 77
Patient Safety Training for Trustees 77
THE AUTHORITY'S ANNUAL SURVEY OF PATIENT SAFETY OFFICERS 79
PENNSYLVANIA PATIENT SAFETY ADVISORY 79
THE PATIENT SAFETY AUTHORITY STRIVES TO EDUCATE 80
WEB SITE REDESIGN 82
REPORTING SYSTEMS 83
REACTION TO PSL PROGRAM 84
SUMMARY 85
PATIENT SAFETY GUIDANCE BASED ON REPORT ANALYSIS AND RESEARCH 87
ERRORS IN RADIATION THERAPY 87
MEDICATION ERRORS: SIGNIFICANCE OF ACCURATE PATIENT WEIGHTS 88
BEYOND THE COUNT: PREVENTING THE RETENTION OF FOREIGN OBJECTS 90
SAFETY IN THE MR ENVIRONMENT: FERROMAGNETIC PROJECTILE OBJECTS IN THE MRI SCANNER ROOM 91
PREVENTING MATERNAL AND NEONATAL HARM DURING VACUUM-ASSISTED VAGINAL DELIVERY 92
CONFUSION REGARDING CONCENTRATION OF TAMIFLU® ORAL SUSPENSION 93
NEUROMUSCULAR BLOCKING AGENTS: REDUCING ASSOCIATED WRONG-DRUG ERRORS 94
DOES YOUR ADMISSION SCREENING ADEQUATELY PREDICT ASPIRATION RISK? 96
MEDICATION ERRORS IN LABOR AND DELIVERY: REDUCING MATERNAL AND FETAL HARM 98
PATIENT SCREENING AND ASSESSMENT IN AMBULATORY SURGICAL FACILITIES 100
OTHER ITEMS 103
FEDERAL LEGISLATION 103
PATIENT SAFETY LEGISLATION 103
RECOMMENDATIONS FOR STATUTORY OR REGULATORY CHANGE 104
ANONYMOUS REPORTS 104
REFERRALS TO LICENSURE BOARDS 104
PATIENT SAFETY DISCOUNT PROGRAM 104
BOARD OF DIRECTORS AND PUBLIC MEETINGS 105
FISCAL STATEMENTS AND CONTRACTS 107
FUNDING RECEIVED FROM HOSPITALS, ASFS, BIRTHING CENTERS, AND ABORTION FACILITIES 107
FUNDING RECEIVED FROM NURSING HOMES 109
ANNUAL EXPENDITURES 109
PATIENT SAFETY AUTHORITY CONTRACTS 109
PATIENT SAFETY AUTHORITY BALANCE SHEET 110

EXECUTIVE SUMMARY

The Pennsylvania Patient Safety Authority (Authority) is an independent state agency established under Act 13 of 2002, the Medical Care 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 role is non-regulatory and non-punitive.

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). 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 the reporting of healthcare-associated infections (HAIs) in Pennsylvania and required infection reporting from nursing homes. The law requires significant involvement by the Authority.

This annual report focuses on the primary activities, accomplishments and achievements of the Authority in 2009 including enhancement of the Authority's educational initiatives through the Patient Safety Liaison program, significant enhancements to the Authority's public web site, and efforts to increase our interaction with consumers/patients. In addition, the report focuses on the activities conducted by the Authority regarding the drive to reduce and eliminate HAIs including the enhancement of the Pennsylvania Patient Safety Reporting System (PA-PSRS) to include Pennsylvania nursing homes' healthcare-associated infection reports, HAI analysis and training.

Aggregate data from 2009 facility reports will also be given for report volume, patient demographics and patterns in reports. This information will include analysis of the first six months of healthcare associated-infection data collected from Pennsylvania's over 700 nursing homes. Samples of information provided in the *Pennsylvania Patient Safety Advisories* and the results of our annual survey of Patient Safety Officers are also highlighted.

For copies of the 2009 Annual Report, go to www.patientsafetyauthority.org.

THE AUTHORITY'S EDUCATION MISSION CONTINUES TO GROW

The Authority continues to educate through its *Pennsylvania Patient Safety Advisory* and also through its outreach and collaboration efforts. The Patient Safety Liaison (PSL) program, begun in 2008, has flourished allowing the Authority and its facilities one-on-one conversations with Patient Safety Officers. These discussions have garnered several additional education initiatives. Along with the PSL program, the Authority completed its pilot program to educate Boards of Trustees and top level management through a program developed in partnership with the Hospital and Healthsystem Association of Pennsylvania (HAP) and the American Hospital Association (AHA). Plans to educate 100 hospitals' boards of trustees and top level management over a three-year period are in motion. The Authority has also expanded its continuing education program to include the Pennsylvania State Nurses Association (PSNA).

The Patient Safety Liaison Program

The Patient Safety Liaison (PSL) program began in 2008 with a pilot program and one Patient Safety Liaison in the Northeast region of Pennsylvania. Today, the program has five PSLs located throughout Pennsylvania. In May 2010 when the sixth and final PSL begins work in the Southeast, each healthcare facility reporting under Act 13 of 2002 will have access to a PSL for consulting purposes. The program began, in part, because Patient Safety Officers requested "more of a presence" from the Authority. In April 2009, a Patient Safety Liaison was hired to consult in the Northwest region. In June 2009 a third PSL was hired to consult in the South Central region and in December 2009 a fourth PSL was hired to consult in the Southwest region. In February and March 2010 the fifth PSL was hired for the Southeast region of Pennsylvania. In 2009, the PSL Program experienced a growth not only in the number of employees in the program, but also in the amount of educational activities as a result of those new hires. As each PSL has gotten to know the Patient Safety Officers in their regions, the conversations have generated new educational programs and new collaborations on a variety of topics that include wrong-site surgery, methicillin resistant *Staphyoloccus aureus* (MRSA), mislabeling of lab specimens, the patient safety officer basic foundation course I, the beyond the basics course II, patient safety leadership and insights, root cause analysis, teamwork, human factors, highly reliable organizations (HRO), and failure mode and effects analysis training (FMEA).

Since the first PSL was hired in August 2007, the PSL program has gradually developed so that all healthcare facilities submitting reports through the Pennsylvania Patient Safety Reporting System (PA-PSRS) to the Patient Safety Authority have a consultant to help them improve patient safety in their facilities. The educational resources available to Patient Safety Officers (e.g. *Pennsylvania Patient Safety Advisory* articles, toolkits, consumer tips) are discussed at the first meeting with the PSL. In general, these meetings have been successful in fostering a relationship between the PSO and PSL. Sometimes in the first meetings the CEO or other management staff attend the meeting with the PSO to help the facility understand the concept behind the program and to engage all levels of staff in patient safety.

As the PSL program has developed throughout 2009 and into 2010, the PSLs and PSOs continue to help each other find new ways to engage in conversation not only with each other, but with other Pennsylvania healthcare facilities and state organizations. In 2010, the Patient Safety Knowledge Exchange program (PassKey) will provide an electronic forum for PSOs to communicate with one another about a host of patient safety related issues and to share policies, processes and information that have had a positive impact on patient safety in individual facilities. As the communication grows among healthcare facilities through the PSL program and PassKey, we anticipate that patient safety awareness will grow along with patient safety improvements.

Enhanced Public Website

The Authority unveiled its new web site and design in January 2009. The new site, www.patientsafetyauthority.org, features an enhanced search engine with easier navigation and features allowing users to share patient safety information more readily. The site also features a new tagline for the Authority: "Analyzing, Educating and Collaborating for Patient Safety." The tagline represents the Authority's mission to improve patient safety by analyzing data, educating healthcare facilities and the general public and collaborating with healthcare facilities and organizations to further use the data.

Specifically, the improved site makes it easier for users to find and distribute information in the following ways:

- Offers Pennsylvania-based healthcare information that is easier to read and find online with an enhanced search engine;
- Gives immediate access to the most recent information from the homepage featuring a spotlight section of "What's New";
- Allows users to browse-by-topic hundreds of *Pennsylvania Patient Safety Advisory* articles;
- Provides users with the means to distribute important Pennsylvania patient safety information through an "e-mail-to-a-friend" feature; and
- Offers a vast collection of educational tools and resources for healthcare providers and community groups to improve patient safety in Pennsylvania healthcare facilities.

Prior to the new web site launch, a small number of PSOs were given access to test its new features. They gave high marks to the site particularly for the new features that give Patient Safety Officers the ability to search *Pennsylvania Patient Safety Advisory* articles by discipline and topic and then e-mail any information to leaders and staff.

Towards the end of 2009, the Authority distributed its annual survey to Patient Safety Officers. Some questions revolved around the new web site and design. Of those PSOs who responded, 92% said the web site provides information in an easy-to-read format; 88% said the web site offers helpful ways to search for information and 83% said the web site provides relevant material.

Patient Safety Training for Trustees Continued in 2009

In 2009, the Authority completed its pilot program to educate executive management and Boards of Trustees about their role in improving patient safety. The initiative is designed to raise awareness and increase responsibility for patient safety by bringing it to the board 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***

In 2010, the Authority and HAP are moving beyond the pilot and plan to begin implementation of the program. We are in the process of identifying and training education consultants who will conduct the training programs. We are also working with groups of facilities and payers to develop additional funding sources. Through this collaboration, the Authority and HAP hope to train 100 additional facilities over the next three years.

Speakers' Bureau and Information Booth

The Authority continues to reach out to the community through its speakers' bureau and information booth. Throughout 2009, 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 healthcare 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.

THE AUTHORITY INCREASES ITS ROLE IN FIGHTING HEALTHCARE-ASSOCIATED INFECTIONS (HAI)

In 2007, the Pennsylvania legislature enacted Chapter 4 of the MCare Act. This gave the Authority additional responsibilities in helping to reduce and eliminate infections in Pennsylvania. In 2009, the Authority continued management of the Pennsylvania HAI Advisory Panel, continued to analyze HAI reports submitted by hospitals through the Centers for Disease Control and Prevention's (CDC's) National Healthcare Safety Network (NHSN), and implemented the enhancements to PA-PSRS that enabled submission of HAI reports by nursing homes. Also, the Authority's mission to educate healthcare facilities and nursing homes about healthcare-associated infections continued through healthcare-associated infection articles published in the *Pennsylvania Patient Safety Advisories*, the development and performance of educational webinars based on HAI issues in Pennsylvania and other live presentations and classes. For example, the Authority made regional presentations to representatives of ambulatory surgical facilities on how to fight MRSA in their facilities.

According to MCare, the Department of Health is responsible for calculating and publicizing state-wide and specific hospital rates associated with HAI in Pennsylvania. The Department of Health published the first report in January 2010. This report covered data from July 2008 through December 2008. A total of 13,771 HAIs were reported by Pennsylvania hospitals during the period July-December 2008. The most commonly reported HAIs were urinary tract infections (24.82%), surgical site infections (22.23%) and gastrointestinal infections (18.15%). Among the urinary tract infections, 69% were associated with a urinary catheter. Among the bloodstream infections, 68% were associated with a central line. More about hospital HAI reporting and the DOH report is detailed further in the "Healthcare-Associated Infections – Analyzing Reports" section of this annual report.

Nursing Homes Begin Reporting HAI through the Authority's Enhanced PA-PSRS System

In 2009, many Authority resources were directed towards providing an effective and efficient way for nursing homes to comply with the MCare Act in reporting HAI. The Authority completed the significant enhancement of PA-PSRS to allow web-based entry of HAI events by nursing homes. The Authority also provided live training at 30 sites where approximately 1,150 nursing home employees were educated on what was reportable and how these events should be reported. The system went live in June 2009 when over 700 nursing homes began reporting. In October and December 2009, the Authority also provided nursing homes with 13 analytical reporting tools within the PA-PSRS system that they can use to analyze their own data.

From July through December 2009, 16,729 HAI events were submitted through PA-PSRS by Pennsylvania nursing homes. With the implementation of PA-PSRS, Pennsylvania has begun collecting the most comprehensive healthcare-associated infection data from nursing homes in the nation.

More information about the hospitals and nursing homes healthcare-associated infection reports and analysis is available in the "Healthcare-Associated Infections – Analyzing Reports" section of this annual report.

ENGAGING PATIENTS AND CONSUMERS

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 2009, 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 also developed a new brochure "How You Can Obtain Your Medical Records" for patients to know what they can expect when they need to obtain their medical information.

New Web Site Features Added for Patients and Consumers

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 on 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, click on "Patients and Consumers."

HIGHLIGHTS OF DATA SUBMITTED TO THE PENNSYLVANIA PATIENT SAFETY AUTHORITY

Other highlights of data submitted to the Pennsylvania Patient Safety Authority and educational activities during calendar year 2009 follow.

- 528 hospitals, ambulatory surgical facilities, abortion facilities and birthing centers submitted 226,670 reports of Serious Events and Incidents to the Authority, an increase of 6,796 reports from 2008. In 2009, the Authority received 18,889 reports per month on average, an increase of 3% from 2008.

- Approximately 96% of all reports submitted by these facilities in 2009 were Incidents, or did not cause harm to the patient. Approximately four percent of all reports were submitted as Serious Events, which indicates that the patient received some level of harm, ranging from minor, temporary harm to death.

- The number of Incident reports averaged 18,200 per month, an increase of 3.4% from 2008. Serious Event reports averaged 689 per month, a 4.3% decrease from the previous year. Part of the decrease can be traced to a certain event type (healthcare-associated infections or HAIs) some of which have previously been reported through the Pennsylvania Patient Safety Reporting System (PA-PSRS). Since February 2008, hospitals report all HAIs through the Center for Disease Control and Prevention's (CDC) National Healthcare Safety Network (NHSN). However, taking into account the HAI reports from both years, Serious Events of other types increased 2.9% from 2008 to 2009.

- After approximately 1,150 nursing home representatives received training on reporting HAIs through PA-PSRS in 30 live sessions across Pennsylvania, 720 nursing homes began reporting HAIs to the Authority in June 2009. From July through December 2009, 16,729 HAI events were submitted to the Authority by nursing homes. The three most common infections reported are: Respiratory Tract Infections (RTI), Skin and Soft Tissue Infections (SSTI) and Gastrointestinal Infections (GI).

- In December 2009, the Authority surveyed Infection Prevention Designees (IPDs) at nursing homes. When asked how easy or difficult it was to submit a report through PA-PSRS, 94.7 % said it was very easy or somewhat easy to submit reports, 5 % were neutral and one respondent said it was somewhat difficult.

- Late in 2009, the Authority developed 13 analytical reporting tools for use within PA-PSRS by individual nursing homes. Using these tools, nursing homes are able to view and print facility-specific reports for all categories of infections, so they can identify trends and work towards investigating risk factors for reducing and ultimately eliminating HAIs.

- Reports from hospitals accounted for 90.9% of all reports submitted. However, ambulatory surgical facility reports increased from 11.8 reports per facility in 2008 to 12.2. reports per facility in 2009.

- Statewide, the most frequently reported events in hospitals involved Errors related to Procedures/Treatments/Tests and Medication Errors (22%). Errors related to Procedures/Treatments/Test comprise 9% of reports involving harm and 6% of events contributing to or resulting in death. Medication errors comprise 4% of events involving harm and 1% of events contributing to or resulting in death.

- While Complications related to Procedures/Treatments/Tests comprise only 12% of reports overall in 2009, they comprise 42% of the reports of events involving harm and 59% of all reports of events resulting in or contributing to the patient's death.

- Reports in perinatal patients (those aged 20 days or younger) increased 6.7%, from 4,107 reports in 2008 to 4,381 reports in 2009. Also, reports involving children and adolescents (those aged 21 years or younger) increased 16.8% in 2009.

- Reports in patients over age 65 also showed some changes in regard to Serious Events and Incidents. For example, elderly patients accounted for 64% of reports categorized as Falls in 2004 and 2005. This figure has declined steadily to 57.9% in 2009. Also, in 2009, reports with a primary categorization of Skin Integrity dropped from 73.1% occurring in patients over 65 in 2008 to 71.2% in 2009. Skin integrity reports include pressure sores, bruises and other skin-related conditions.

- In fulfilling its education mission in 2009, the Authority conducted a total of 16 on-site educational programs consisting of nine nursing home-related programs, four hospital/general healthcare programs and three ambulatory surgery facility-related programs.

- In 2009 the Authority continued to develop its Patient Safety Liaison program, led by the Director of Educational Programs. At the time this annual report went to press, the PSL hiring process has been completed with five PSLs working in the PSL role and one scheduled to begin in May 2010. The PSLs will act as patient safety consultants to the hospitals, ASFs, birthing centers and certain abortion facilities that are required to report under the MCare Act.

- In 2009 more than 200 Patient Safety Officers attended educational programs developed by the Director of Educational Programs and PSLs. Many of these educational initiatives were spurred by feedback gathered from PSL visits with Patient Safety Officers.

- The PSLs are also engaged in several collaborative programs within their regions that include topics such as mislabeling of blood specimens, wrong-site surgery, falls and central line-associated bloodstream infections (CLABSI).

- In a recent annual Authority survey, Patient Safety Officers (PSOs) that responded to the survey reported making 633 changes in their facilities in 2009 as a result of specific *Patient Safety Advisory* articles produced by the Authority.

For copies of the 2009 Annual Report, go to www.patientsafetyauthority.org.

(Page left intentionally blank)

DATA COLLECTION AND ANALYSIS

THE REPORTING SYSTEM

Introduction

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 defines as "Serious Events" and "Incidents." 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 requested. In addition, no information about individual facilities is made public.

As defined by Act 13, PA-PSRS is a facility-based reporting system.[4] 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, Act 13 provides for one exception to this facility-based reporting requirement. Under this exception, a healthcare worker who feels that his or her facility has not complied with Act 13 reporting requirements may submit an Anonymous Report directly to the Authority. (See the section on Anonymous Reports on page 104.)

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 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.

Among questions are those related to 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.

Once a report is submitted, the Authority's clinical team initiates its analysis. 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 additional review, following up with individual facilities as necessary. The team's primary role is to identify situations of immediate jeopardy and to identify trends or improvements that can be implemented to improve patient safety.

As a result of this comprehensive analysis, the Authority issues *Pennsylvania 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, a majority (70%) of all responding facilities indicated that they have implemented improvements within their facilities as a result of information contained in this year's *Advisories*. The 568 Patient Safety Officers and nursing home representatives responding to the 2009 survey cited 633 processes or system changes they had made as a result of *Advisory* articles.

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 Guidance Based on Report Analysis and Research"* (see page 87). In addition, all copies of the *Advisory* are accessible on the Authority web site, 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 that will help 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

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.

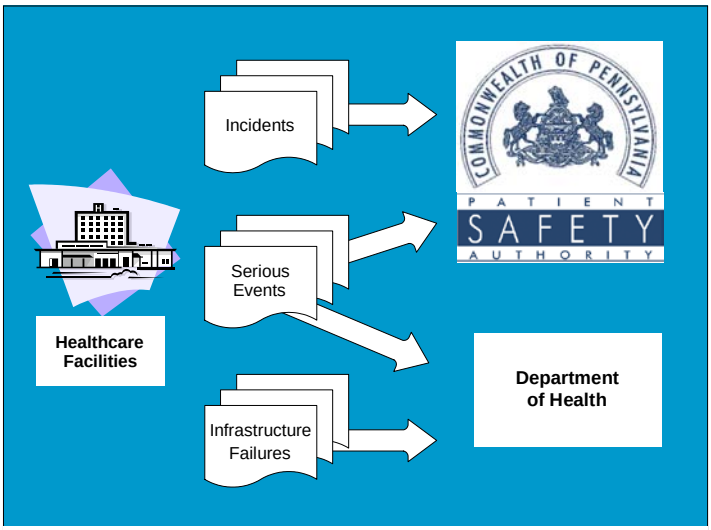


Figure 1. Submission of PA-PSRS Reports

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 that 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 PA-PSRS 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, 2009, and December 31, 2009. 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 35 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 of 2002, which has its own unique definitions for what is and what is not reportable through PA-PSRS. 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 of 2002 (MCare) 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 to the Patient Safety Authority 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 2007, there were 243 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 2007, there were 246 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, postpartum care related to medically uncomplicated pregnancies." For the purposes of this report, at the end of 2009, 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 2009, there were eighteen 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 40 for data received to date from nursing homes.

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).1***

  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 that resulted 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.

---

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

Standardization of Reporting Update

The Authority continues work to help standardize what facilities determine to be reportable events. In 2007 and early 2008, the Authority conducted a study that identified significant disparities between facility reporting rates.

In December 2008, the Authority sent letters to the 50 hospitals that were deemed to be reporting at the lowest rate into the Authority's event reporting system, PA-PSRS, when compared to other facilities of similar size and type of licensure. The qualifying criteria included the following:

- They reported no Incidents in the year previous.
- They reported no Serious Events in the previous year.
- They reported less than 10% of the reporting volume for hospitals of similar size and type.

The purpose of these letters was to encourage these hospitals to examine and improve their internal patient safety culture by using PA-PSRS as a step in the process. Judging by the short term response, these letters had some intended impact. After three months, the Authority reassessed these same 50 lowest reporting facilities using the same set of criteria that generated the letters. More than half of these facilities met the challenge by improving their reporting in that time. Twelve of the non-reporters in a category had begun to report. Many had improved their reporting enough to the point that they would not have received the same letter after the re-assessment. In addition, the Authority continued to follow the reporting patterns of these 50 hospitals throughout 2009. Figure 2 below demonstrates the volume of reports received from these facilities has significantly increased as a result of this mailing.

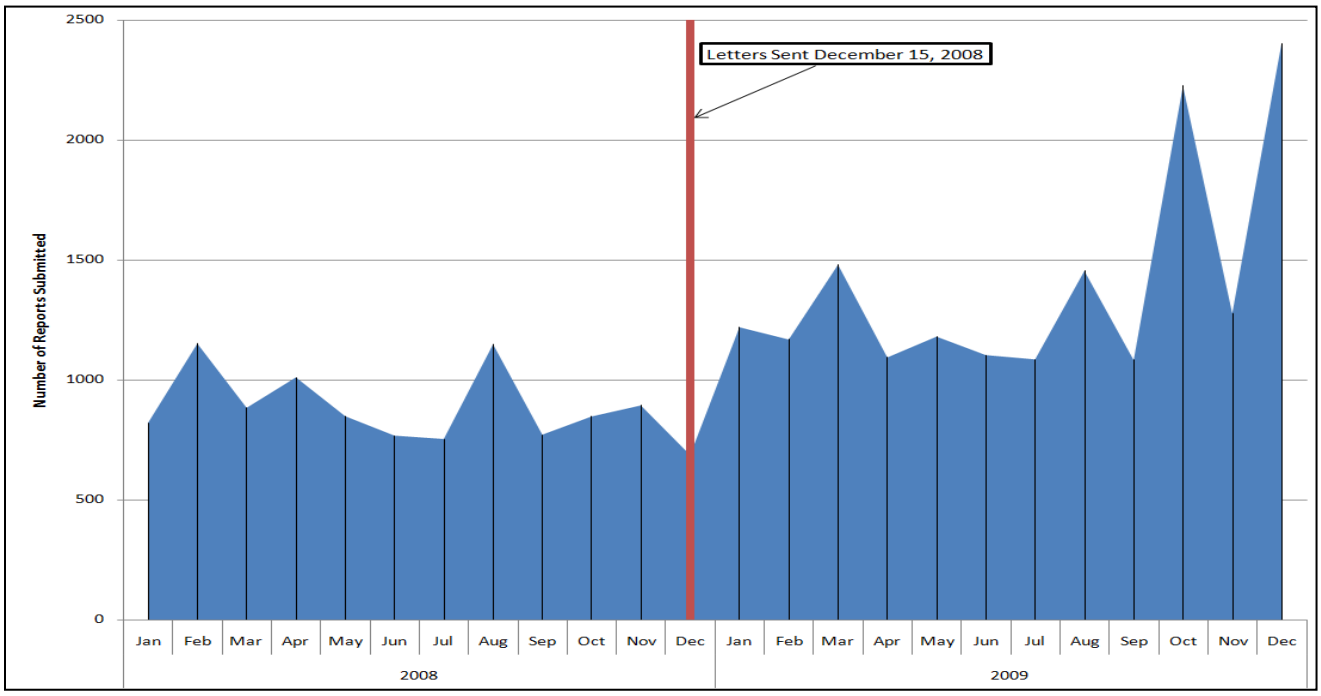


Figure 2. Impact of Letters Upon Increased Reporting

During 2009, the Authority also continued its work on ideas for improving reporting consistency through potential standardization of definitions related to event reporting. The Authority, in concert with the Department of Health, developed preliminary draft principles that could relate to reporting. On February 28, 2009, the Authority, in conjunction with the Department of Health, published in the *Pennsylvania Bulletin* a draft document titled the "Standards for Healthcare Facility Determinations of Serious Events under Act 13 of 2002" (Standards). This notice outlined the19 preliminary draft principles for making determinations about when a particular event qualified as a Serious Event. The notice invited public comment from interested stakeholders, and the Authority received many comments both in favor of and in disagreement with these principles. Authority staff accumulated and summarized the comments for the Authority Board. At the Authority's board meetings in April and June 2009, we discussed the public comments.

As a result of the discussions, several principles were removed or modified. Based on a decision at its June 9, 2009 board meeting, the Patient Safety Authority recommended to the Department of Health that both agencies issue joint guidance to Pennsylvania healthcare facilities asserting the following principles facilities and DOH surveyors should use to help in determining whether a particular event, occurrence, or situation meets the statutory definition of a Serious Event under MCare:

Principle 1: An injury is considered unanticipated if either the patient or the provider does not anticipate it.

Principle 2: Merely discussing the possibility of a complication in the consent process or including the complication on a consent form does not, in itself, make the complication anticipated.

Principle 3: Deaths or injuries that are solely the result of the patient's disease, in the absence of any contributing event, occurrence or situation, are not Serious Events.

Principle 4: If the event, occurrence or situation hastens death (as in a terminally ill patient) or exacerbates a pre-existing injury, this is a Serious Event.

Principle 5: An incorrect or missed diagnosis resulting in a delay in care that materially affects the patient's condition constitutes an injury.

Principle 6: An injury is not considered anticipated solely because it falls within statistical norms or benchmarks in the clinical literature. Such injuries, if they otherwise meet the definition of Serious Event, must still be reported.

Principle 7: Healthcare services provided to prevent an injury from occurring are not considered additional healthcare services for the purpose of Serious Event determinations.

Principle 8: Any unnecessary procedure or procedure performed in error constitutes an injury, and performance of the correct or intended procedure constitutes additional healthcare services.

Principle 9: Services that could be provided by someone other than a licensed healthcare practitioner outside the clinical setting – essentially, first aid care – do not constitute additional healthcare services.

Principle 10: If a patient sustains an unanticipated injury for which no additional healthcare services are possible, but treatment would be provided if options were available, this is considered a Serious Event.

Principle 11: If a patient sustains an unanticipated injury and additional healthcare services are possible but the risks of those services outweigh the negative consequences of the injury, this is considered a Serious Event.

Principle 12: If additional healthcare services are required to treat an unanticipated injury, and these additional healthcare services are not provided either because of unintentional omission or because the patient declines treatment, the occurrence is still a Serious Event.

Principle 13: It is not necessary to report a Serious Event that occurred in another healthcare setting.

The Authority is still in discussions with the Department of Health regarding these principles. The principles have not been advanced by the Department of Health.

The Authority believes that implementation of this limited set of principles will reduce a portion of the reporting volume variances between facilities. However, these principles do not address all definitional issues that result in reporting disparities. The Authority is considering working with reporting facilities and professional health care organizations to address additional issues regarding patient safety event definitions and reporting.

Report Volume

Reports by Month and Submission Type

Between January 1 and December 31, 2009, Pennsylvania acute care facilities submitted 226,670 reports through PA-PSRS, bringing the number of reports submitted by these facilities since the program's inception to 1,094,278. Table 1 shows the distribution of submitted reports by month for calendar year 2009.

Table 1. Reports Submitted to PA-PSRS in 2009, by Month, excluding Nursing Homes

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Serious Events	698	702	813	727	653	689	687	602	739	750	607	603	8,270
Incidents	18,209	17,740	21,638	18,278	17,749	16,559	19,798	16,990	17,308	19,323	16,520	18,288	218,400
Total	18,907	18,442	22,451	19,005	18,402	17,248	20,485	17,592	18,047	20,073	17,127	18,891	226,670

Approximately 3.7% of submitted reports were Serious Events, while 96.3% were Incidents. In 2009 the Authority received 18,889 reports per month on average, an increase of 3.1% from 2008. The number of Incident reports averaged 18,200 per month, an increase of 3.4% compared to the previous year. The number of Serious Event reports averaged 689 per month, which represents a 4.3% decrease from 2008. Part of the decrease can be traced to a certain event type, healthcare-associated infections (HAIs), which were reported through the PA-PSRS system in prior years. The mandatory reporting of these events into the Centers for Disease Control and Prevention's (CDC's) National Healthcare Safety Network (NHSN) for hospitals began in early 2008, and a corresponding decline in HAI submitted through PA-PSRS was realized. The number of Serious Events categorized as HAI dropped from 734 in 2008 to 132 in 2009, an 82% decrease. By taking into account the HAI reports from both years, Serious Events of other event types increased 2.9%. In June 2009, nursing homes in Pennsylvania began submitting HAI reports through PA-PSRS. This data will be discussed along with other HAI topics in a separate section.

Reports by Facility Type

As shown in Table 2, the vast majority of reports (90.9%) submitted through PA-PSRS were submitted by hospitals. Among acute-level facilities, the majority is even more pronounced (98.4%). Nursing homes submitted 7.6% of the overall total in just over six months.

Table 2. Reports through PA-PSRS by Facility Type (2009)

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	223,026	3,560	84	226,670	18,740	245,410
Number of Facilities Active for year ending Dec. 31, 2009	237	291	23	551	721	1,249

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

Table 3 shows reporting rates among non-hospital acute-level 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. Ambulatory surgical facilities submitted 12.2 reports per facility in 2009 compared to 11.8 reports per facility in 2008 and 10.7 reports per facility in 2007. Overall, the number of reports from all facilities continues to rise.

Table 3. Reports by Facility Type since Inception of PA-PSRS

	Hospitals		Ambulatory Surgical Facilities/ Birthing Centers/Abortion Facilities		All Facilities
Year	No.	% of Facility Type	No.	% of Facility Type	Total
2004*	69,926	98.69%	925	1.31%	70,851
2005	166,998	98.77%	2,074	1.23%	169,072
2006	193,262	98.69%	2,570	1.31%	195,832
2007	209,285	98.73%	2,698	1.27%	211,983
2008	216,732	98.57%	3,142	1.43%	219,874
2009	223,026	98.39%	3,644	1.61%	226,670
Total	1,079,229	98.62%	15,053	1.38%	1,094,282

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

Report Submission Trends

Figure 3 demonstrates that, as noted previously, the overall volume of reports submitted through PA-PSRS each month has generally climbed since inception and continues to be leveling off somewhat. We interpret this rise not as an increase in the number of reportable events occurring, but rather as improvement on the part of Pennsylvania healthcare facilities in recognizing and reporting Serious Events and Incidents. The number of reports submitted in March 2009, exceeded 22,000; the most in a single month since the inception of the program. The trend lines superimposed over the actual track of monthly reports in the above graphic suggest that the volume of Incidents may be stabilizing somewhat entering the sixth full year of the program.

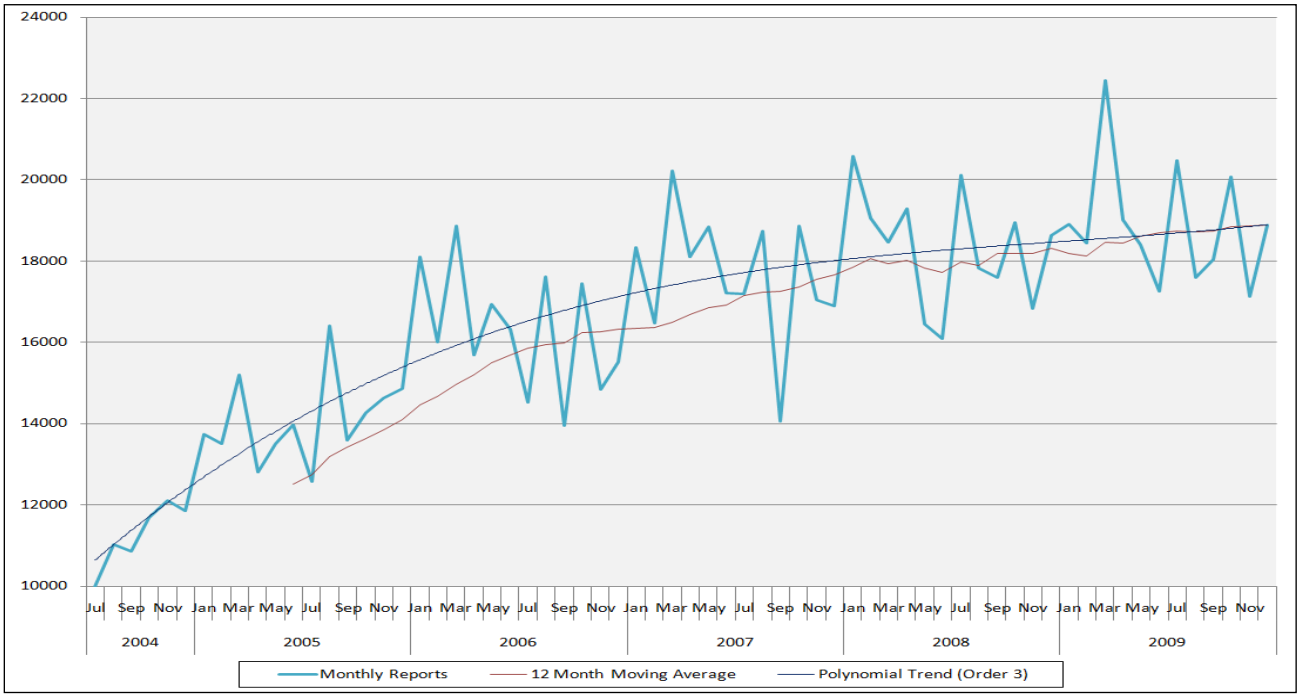


Figure 3. Number of Submitted Reports since Inception of PA-PSRS, by Month

Figure 4 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 (25:1 given that Serious Events have been consistently about 4% of all submitted reports) shows that the volume of Serious Events has increased over the long-term, but not as sharply as the volume of Incidents.

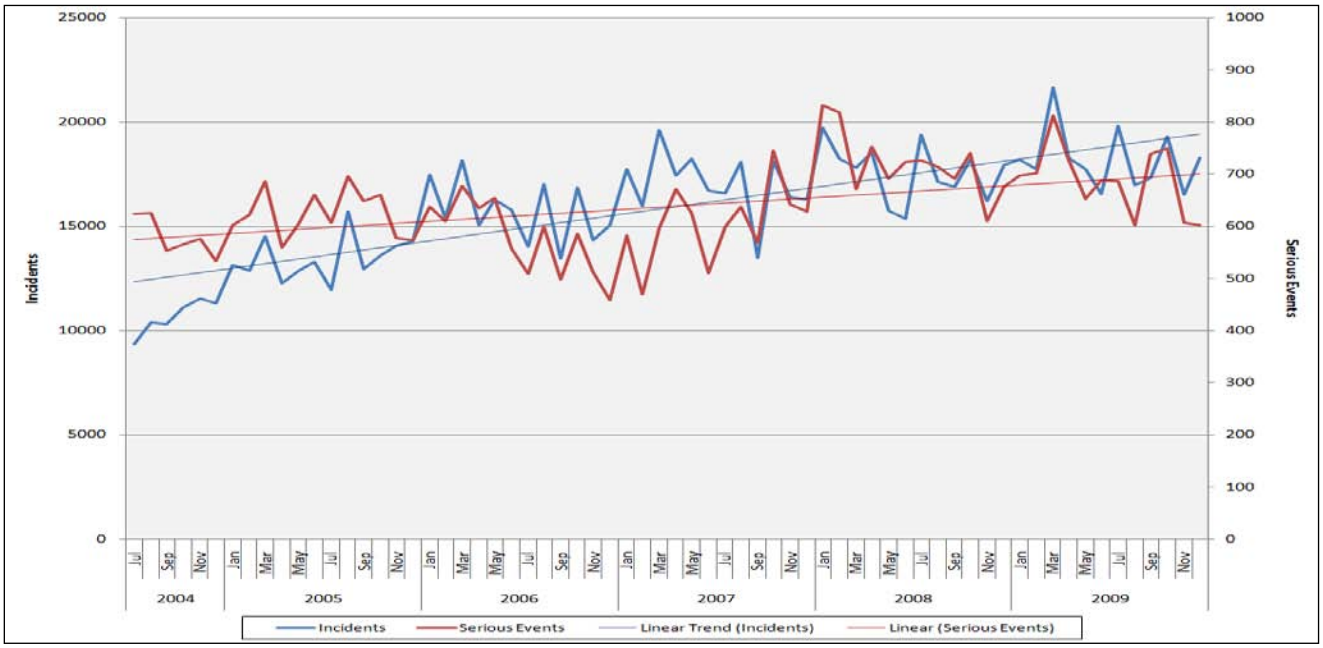


Figure 4. Number of Serious Event and Incident Reports since Inception of PA-PSRS

Figure 5 illustrates the percentage of Serious Events among all submitted reports since 2005, the first full year of the program. Despite several months in 2008, where this percentage rose above 4% due in part to the submission of HAIs into PA-PSRS instead of NHSN, there is a downward trend in the percentage of Serious Events among reports submitted to the Authority.

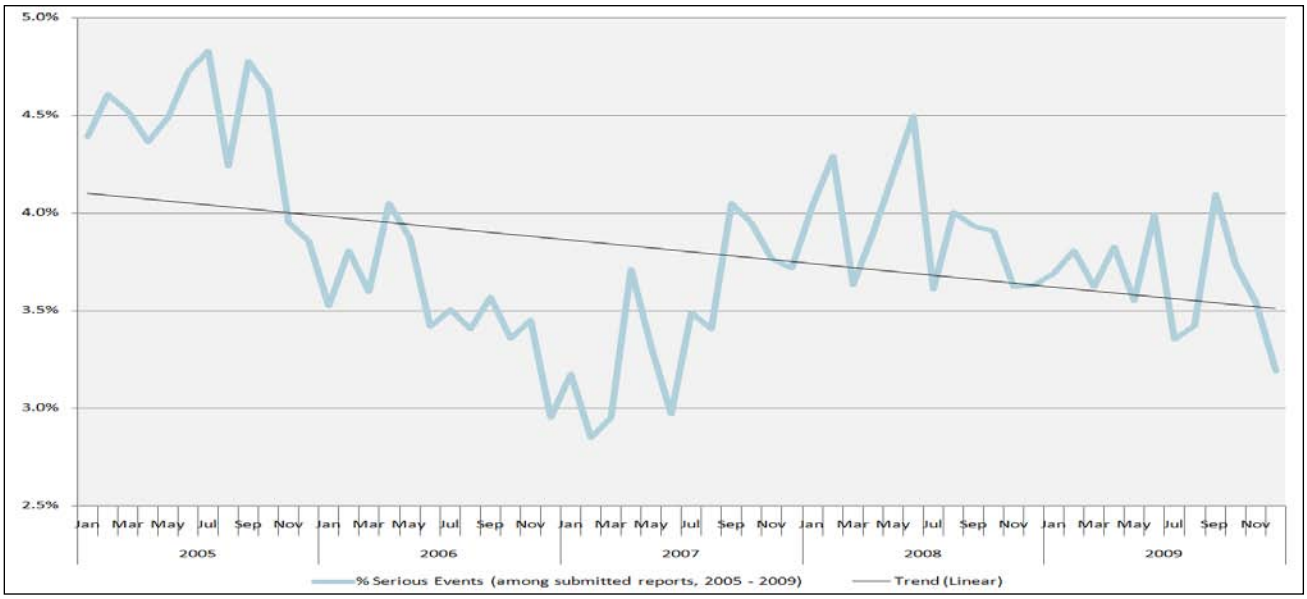


Figure 5. Percentage of Serious Event Reports (2005-2009)

Figure 6 also demonstrates the relationship between Incidents and Serious Events over the past five years. While Serious Events as a percentage of all reports have declined over time (as shown in Figure 5), they have not declined consistently in absolute numbers. Figure 6 shows that the number of Serious Events has increased, but this increase has been outpaced by the reporting of Incidents.

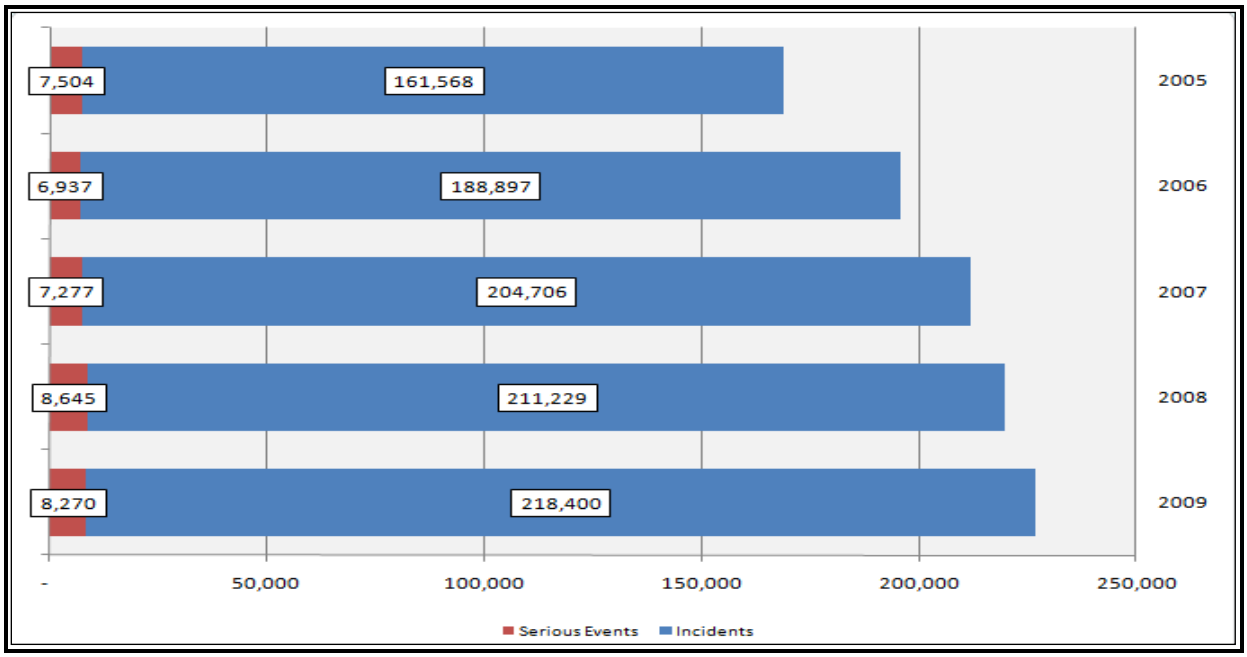


Figure 6. Comparison by Year of Serious Events and Incident Reports of PA-PSRS (2005-2009)

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.

Table 4 shows the percentage of reports submitted under each top-level Event Type. The most frequently reported occurrences were Errors Related to Procedure/Treatment/Test (23%) and Medication Errors (22%). These two Event Types account for 45% 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 Serious Events.

As shown in Table 4 below, the largest number of Serious Event reports was under the Event Type category Complications of Procedures/Treatments/Tests, accounting for 43% of all Serious Event reports. Relative to the overall average of 4% of reports indicating harm, harm was significantly less likely to be reported under Medication Errors (1%).

Table 4. Reports by Event Type and Submission Type for 2009

Event Type	Serious Events			Incidents			Total	Percent of Total
	No.	% of Type	% of Total	No.	% of Type	% of Total		
Medication Errors	296	1%	4%	48,881	99%	22%	49,177	22%
Adverse Drug Reactions (not a medication error)	292	6%	4%	4,464	94%	2%	4,756	2%
Equipment / Supplies / Devices	60	2%	1%	3,455	98%	2%	3,515	2%
Falls	1,332	4%	16%	33,718	96%	15%	35,050	15%
Errors Related to Procedure / Treatment / Test	747	1%	9%	50,203	99%	23%	50,950	22%
Complications of Procedure / Treatment / Test	3,529	13%	43%	24,577	87%	11%	28,106	12%
Transfusions	35	1%	0%	3,445	99%	2%	3,480	2%
Skin Integrity	1,195	3%	14%	33,850	97%	15%	35,045	15%
Other / Miscellaneous[2]	784	5%	9%	15,807	95%	7%	16,591	7%
Total	8,270	4%	100%	218,400	96%	100%	226,670	100%

[2] 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 7 demonstrates that a large decline in Serious Events from 2005 to 2007 occurred in Skin Integrity, the Event Type in which Pressure Ulcers are typically submitted. Perhaps due to greater awareness of Pressure Ulcers in regard to Centers for Medicare & Medicaid Service (CMS) reimbursement, a renewal of submissions was evident within the last two years. Serious Events of report type Complications of Procedure/Treatment/Test decreased from 2008; the event type includes healthcare-associated infections, which hospitals are now submitting to the Centers for Disease Control and Prevention's (CDC's) National Healthcare Safety Network (NHSN).

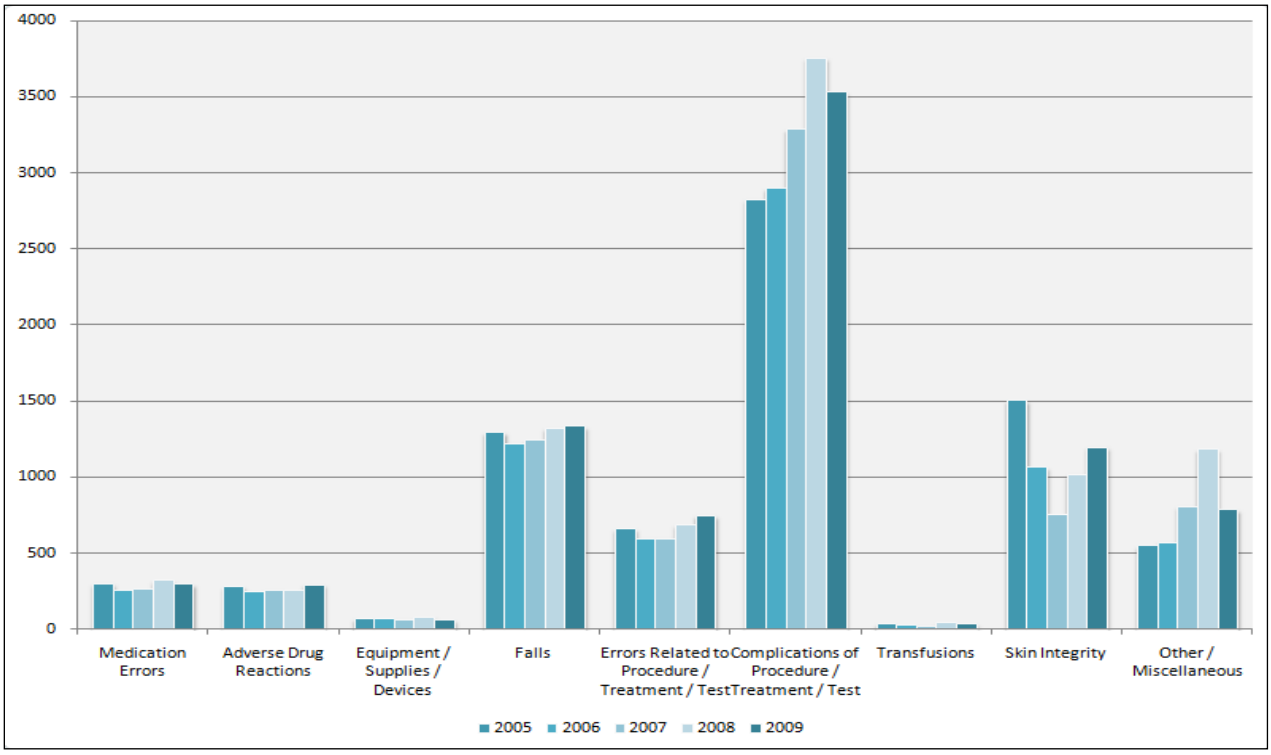
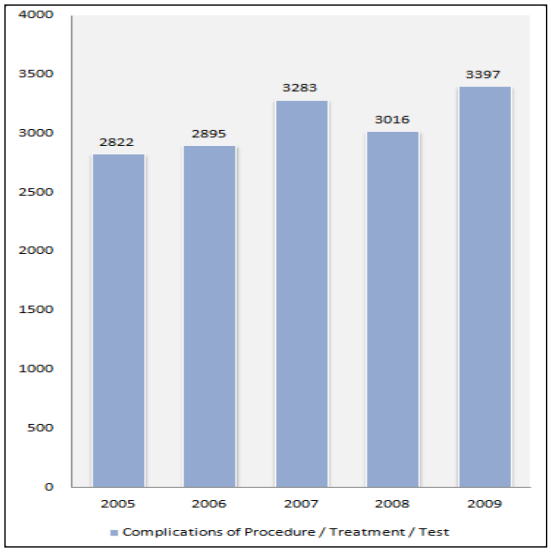


Figure 7. Reports Classified as Serious Events by Event Type (2005-2009)



A closer look at Serious Events of report type Complications of Procedure/Treatment/Test actually shows a decrease from 2007 to 2008 when excluding the Serious Events submitted as HAI, as shown in Figure 8. The upward trend resumes with 2009.

Figure 8. Detail of Serious Events of report type Complications of Procedure/ Treatment/Test, excluding HAI Reports Submitted as Serious Events in 2005 through 2009

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 9. This breakdown is based on the Department of Health's Public Health Districts.

Figure 9. Public Health Districts

The variation in the number of reports submitted through PA-PSRS by geographic region (see Figure 10) 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.

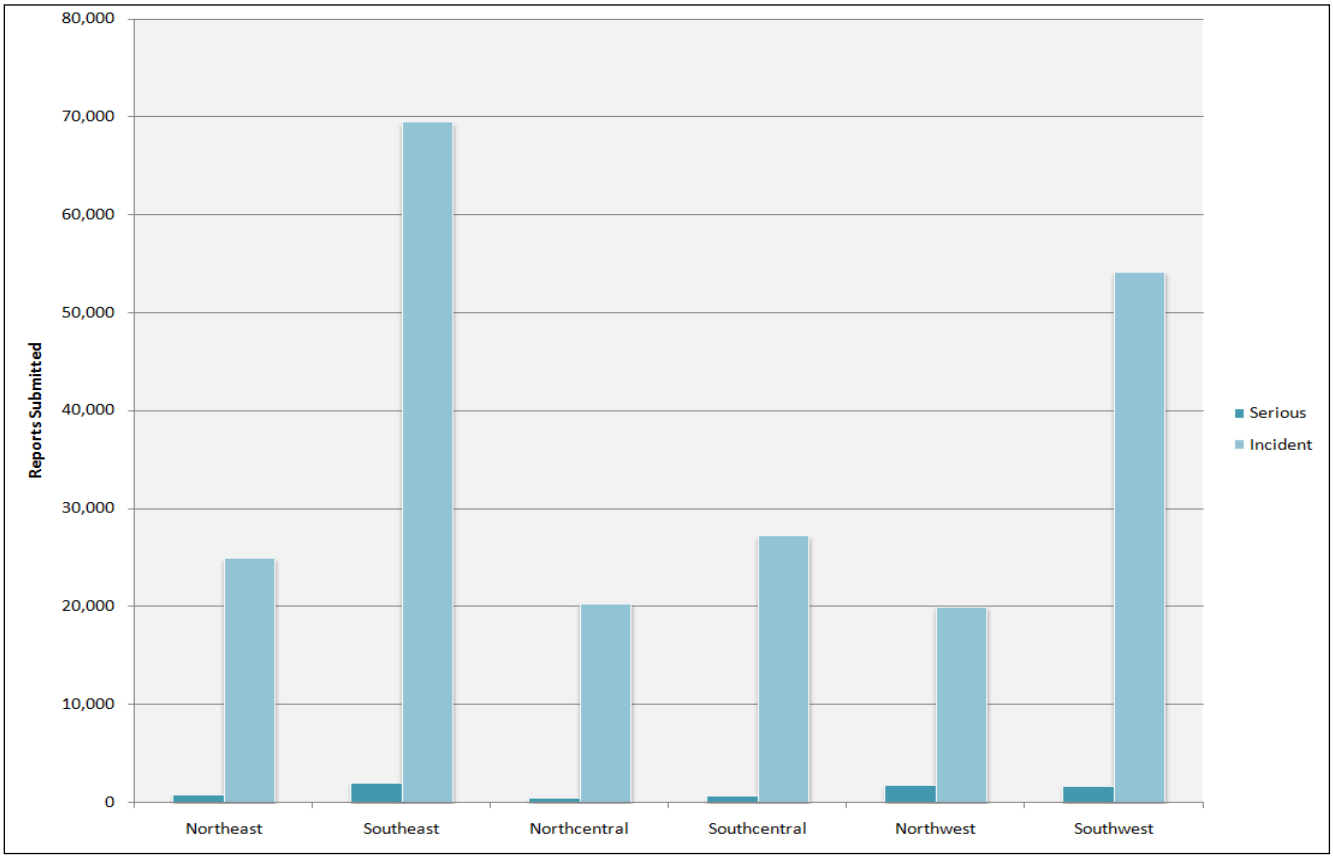


Figure 10. Number of Serious Event and Incident Reports from Hospitals by Region (2009)

Adjusting the report volume for a measure of healthcare utilization paints a different picture. Figure 10 shows, by region, the number of reports from hospitals per 1,000 patient days.[4] 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 55.2 Incidents per 1,000 patient days, far more per 1,000 patient days than any other region. The rest of the regions reported between 19.1 to 30.1 Incidents per 1,000 patient days.

This does not necessarily suggest that facilities in the North Central 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. In evidence of this theory, the North Central region has the second largest pooled mean number of reports submitted per hospital (Figure 11), behind only the Southwest region.

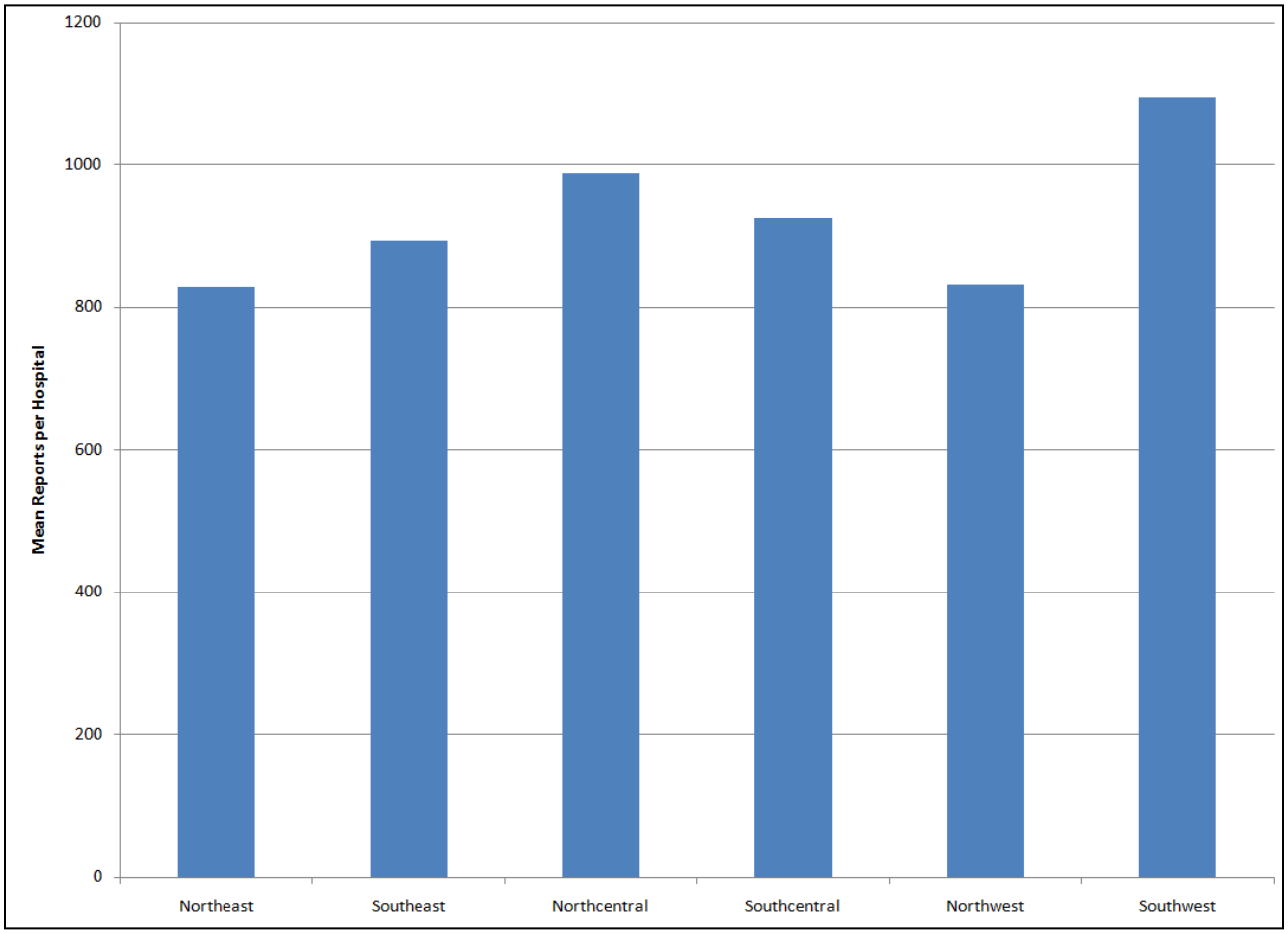


Figure 11. Pooled Mean Number of Reports Submitted Per Hospital by Region (2009)

Also of note in Figure 12, the Northwest region submitted a significantly greater proportion of Serious Events (7.8% of their reports) than the statewide average (3.2%). Conversely, the South Central region submitted the highest proportion of Incidents (97.9%) followed closely by the North Central region (97.8%).

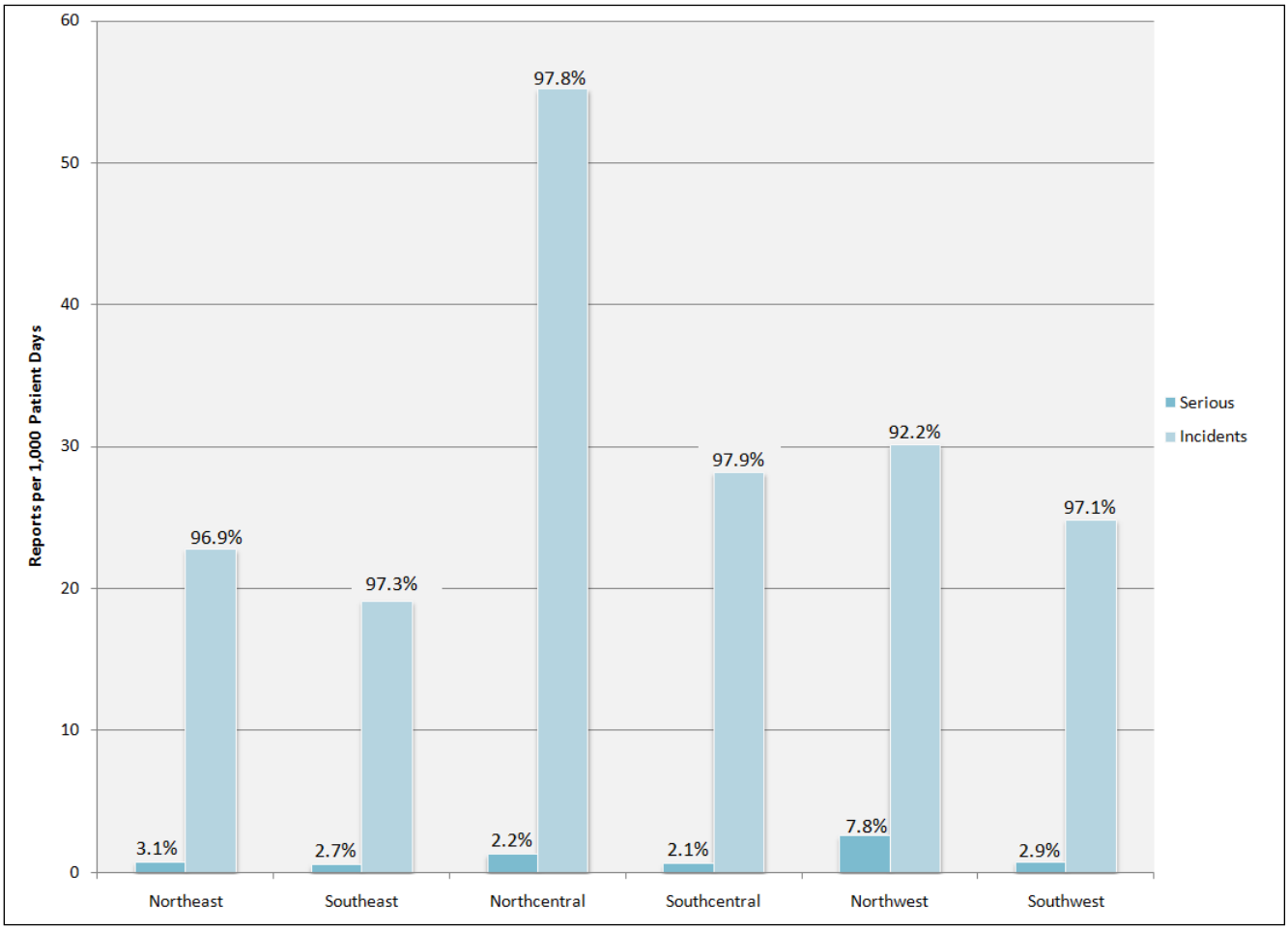


Figure 12. Reports from Hospitals per 1,000 Estimated Patient Days by Region (2009)

Comparing year to year, there is an observable increase of hospital reports per 1,000 patient days across the southern regions and a decrease across the northern regions, as seen in Figure 13. There was an overall increase of 1.5% hospital reports per 1,000 patient days from 2008 to 2009.

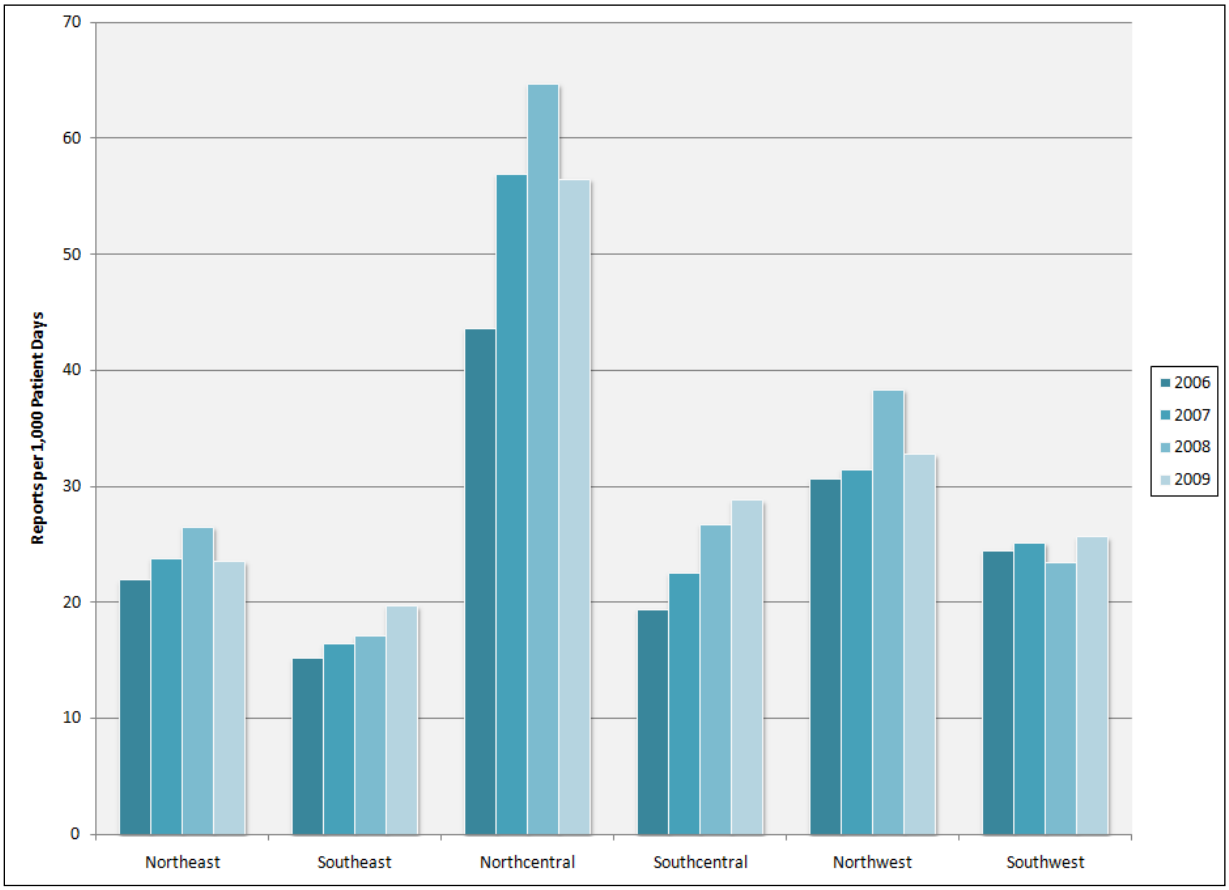


Figure 13. Reports from Hospitals per 1,000 Patient Days by Region (2006 through 2009)

Reports by Level of Patient Harm

For every report submitted through PA-PSRS, the healthcare facility applies a 10-item scale to measure whether an event "reached" the patient and, if so, how much harm it caused. [3] 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 10% 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 86% of all reports)
- Event, Harm—An event that reached the patient and caused temporary or permanent harm (3.5%)
- Event, Death—An event occurred that resulted in or contributed to death (0.1%)

[3] 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.

Table 5 shows the reports received during 2009 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 comprise 12% of reports overall in 2009, they comprise 42% of the reports of events involving harm and 59% 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 22% of reports in 2009, they only comprise 4% of events involving harm and 1% 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.

A certain portion of the reports could be referred to as examples of "unsafe conditions," meaning that there was an observed situation in which some harm was a possibility if corrective action was not taken. Unsafe conditions were cited in 10% of the reports submitted in 2009. 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, 0.4% was reported as unsafe conditions.

Table 5. Reports by Event Type and Level of Patient Harm (2009)

	Unsafe Conditions		Event, No Harm		Harmful Event		Death Event		Total	
Event Type	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Medication error	1,938	8%	46,943	24%	294	4%	2	1%	49,177	22%
Adverse Drug Reaction	85	0.4%	4,379	2%	289	4%	3	1%	4,756	2%
Equipment / Supplies / Devices	366	2%	3,089	2%	57	1%	3	1%	3,515	2%
Fall	358	2%	33,360	17%	1,323	17%	9	3%	35,050	15%
Error related to Procedure / Treatment / Test	4,813	21%	45,390	23%	728	9%	19	6%	50,950	22%
Complication of Procedure / Treatment / Test	1,447	6%	23,130	12%	3,347	42%	182	59%	28,106	12%
Transfusion	383	2%	3,062	2%	34	0%	1	0%	3,480	2%
Skin Integrity	8,714	37%	25,136	13%	1,194	15%	1	0%	35,045	15%
Other / Miscellaneous	5,299	23%	10,508	5%	698	9%	86	28%	16,591	7%
Total	23,403	10%	194,997	86%	7,964	3.5%	306	0.1%	226,670	100%

Also, to repeat figures shown previously, only 3.7% of all reports submitted involve harm to the patient, ranging from a simple laceration to a life-threatening situation and death. Figure 14 illustrates that the vast majority of reports do not result in Patient Harm.

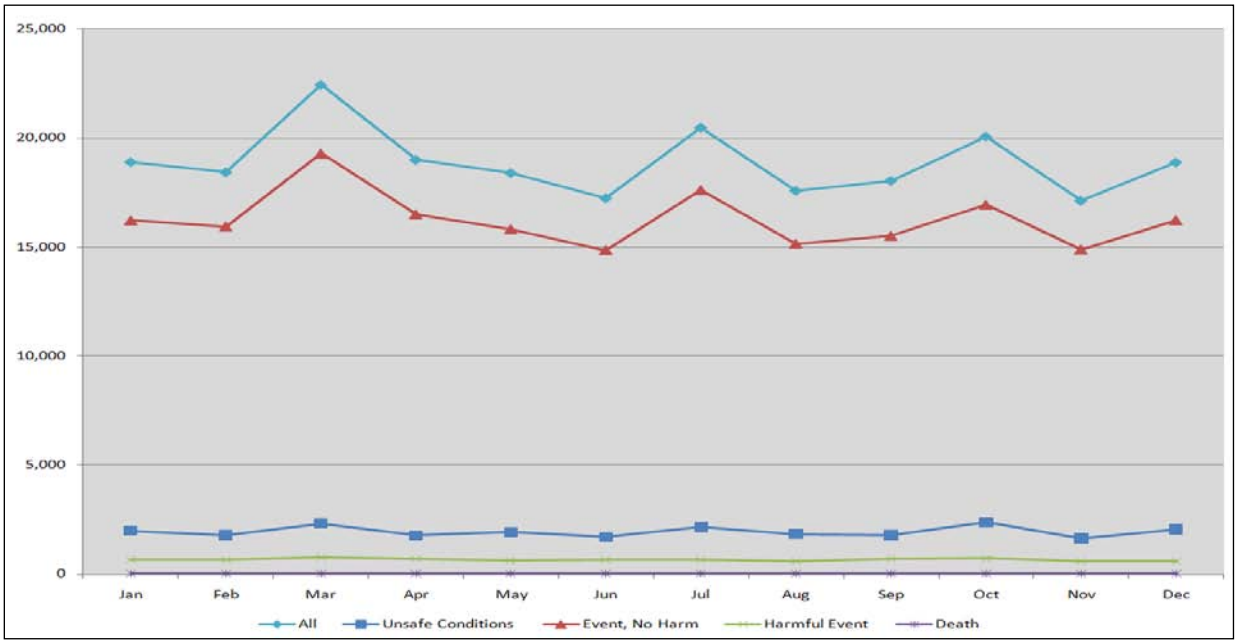


Figure 14. Reports by Level of Harm by Month (2009)

Reports Involving the Patient's Death

In 2009, the Authority received 306 reports of events that may have contributed to or resulted in the patient's death. (Table 6) 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.

Table 6. Reports Involving the Patient's Death, by Event Type (2009)

Event Type	No.	%
Medication error	2	0.7%
Adverse Drug Reaction	3	1.0%
Equipment / Supplies / Devices	3	1.0%
Fall	9	2.9%
Error related to Procedure / Treatment / Test	19	6.2%
Complication of Procedure / Treatment / Test	182	59.5%
Transfusion	1	0.3%
Skin Integrity	1	0.3%
Other / Miscellaneous	86	28.1%
Total	306	100%

These account for one fifth of one percent of all submitted reports. In terms of particular event types, although 13% of all reports in 2009 were attributed to Complications of Procedures/Treatments/Tests, about 59% 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 (49%), patients who suffered cardiopulmonary arrest outside the ICU setting (29%), or maternal complications associated with childbirth (5%).

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. Table 7 presents the number of reports received in 2009 by patient gender and age cohort.

Table 7. Reports Submitted by Age Cohort and Gender (2009)

Age	Female		Male		All Patients		% Patients
Cohort	No.	%	No.	%	No.	%	Female
0 - 4	4,385	3.07%	5,751	4.81%	10,136	3.87%	43.26%
5-14	1,860	1.21%	2,204	1.77%	4,064	1.47%	45.77%
15-24	6,391	5.01%	3,999	3.49%	10,390	4.31%	61.51%
25-34	7,947	6.31%	4,263	3.89%	12,210	5.19%	65.09%
35-44	9,211	7.37%	6,583	6.50%	15,794	6.97%	58.32%
45-54	13,704	11.02%	13,168	12.39%	26,872	11.65%	51.00%
55-64	16,771	13.09%	17,543	16.59%	34,314	14.71%	48.88%
65-74	19,313	15.82%	19,185	18.32%	38,498	16.97%	50.17%
75-84	24,986	21.88%	20,968	21.77%	45,954	21.83%	54.37%
85+	17,595	15.22%	10,843	10.47%	28,438	13.02%	61.87%
Total	122,163	100%	104,507	100%	226,670	100%	53.89%

Patient Gender

Of the 226,670 reports submitted in 2009, 122,163 (53.9%) involved female patients, and 104,507 (46.1%) 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 3.7% of reports involving female patients classified as Serious Events, compared to 3.6% for reports involving males.

Table 8 shows the distribution of reports by patient gender and Event Type. Many of the same patterns observed in 2008 are evident this year as well. The proportion of reports involving female patients was significantly higher among reports of Adverse Drug Reactions.

Table 8. Reports Submitted by Gender and Event Type (2009)

Event Type	Female		Male		All Patients	
	No.	%	No.	%	No.	% of Total
Medication Errors	26,955	54.8%	22,222	45.2%	49,177	21.7%
Adverse Drug Reactions	2,989	62.8%	1,767	37.2%	4,756	2.1%
Equipment / Supplies / Devices	1,804	51.3%	1,711	48.7%	3,515	1.6%
Falls	17,545	50.1%	17,504	49.9%	35,049	15.5%
Errors Related to Procedure / Treatment / Test	28,030	55.0%	22,920	45.0%	50,950	22.5%
Complications of Procedure / Treatment / Test	15,926	56.7%	12,180	43.3%	28,106	12.4%
Transfusions	1,902	54.7%	1,578	45.3%	3,480	1.5%
Skin Integrity	18,223	52.0%	16,823	48.0%	35,046	15.5%
Other / Miscellaneous	8,789	53.0%	7,802	47.0%	16,591	7.3%
Total	122,163	53.9%	104,507	46.1%	226,670	100%

Patient Age

Figure 15 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 that women are more likely than men to have encounters with the healthcare system during childbearing years. Just as in the previous year, patients aged 65 and older account for 52% of all reports from hospitals through PA-PSRS in 2009. Also shown in this figure is the proportion of hospital inpatient admissions as reported by the Pennsylvania Healthcare Cost Containment Council (PHC4).[4] 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.

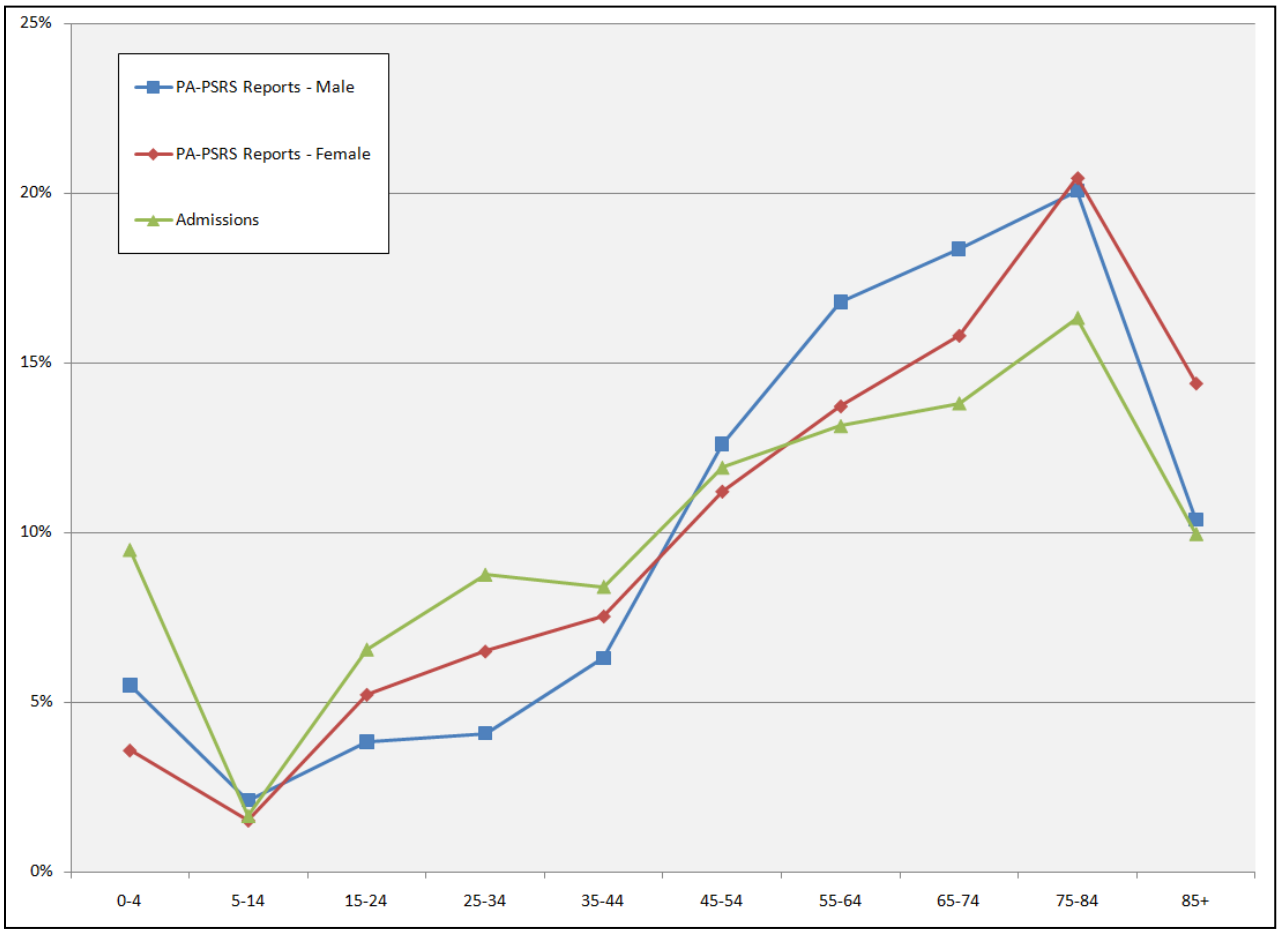


Figure 15. Proportion of Hospital Reports through PA-PSRS by Gender and Age Cohort (2009)

[4] Based upon publicly available data from the website of the Pennsylvania Health Care Containment Council (www.PHC4.org). Estimates were based on statewide inpatient data from the third quarter 2008 through second quarter 2009.

Patients Most at Risk by Age

Elderly Patients

In the Authority's previous annual reports, we identified several patterns of interest in reports involving elderly patients (65 and older). For example, elderly patients accounted for 64% of Falls in 2004 and 2005. This figure declined steadily to 57.9% in 2009 as shown in Table 9. In another area of interest concerning elderly patients, the percentage of Skin Integrity reports among this age group has dropped to 71.2% in 2009. In 2008, more than half of all reports (51.8%) involved patients 65 and older; this figure remained 51.8% in 2009.

Table 9. Percentage of Reports of Specific Event Types Submitted Involving Elderly Patients (2009)

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

Perinatal Patients

There were 4,381 reports involving perinatal patients (those aged 20 days or younger), an increase of 6.7% from 2008, which is a notable reversal of last year's 30% decrease. 3.58% of perinatal reports were classified as Serious Events, just lower than the overall percentage of 3.65%.

Just as last year, about two thirds (63.8%) of reports for these patients were related to Errors or Complications of Procedures, Treatments, or Tests. This does not necessarily mean that 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 (19.7%) of reports involving perinatal patients was related to Medication Errors. This is comparable to the last two years (19.4% in 2008, 20% in 2007). Complications of Procedures, Treatments and Tests accounted for 79.6% of the Serious Events in this age group.

Children and Adolescents

The 21,049 reports submitted through PA-PSRS in 2009 involving children and adolescents (i.e., aged 21 and younger) were 16.8% more than in 2008. This follows a 7.8% increase from 2007. As was the case last year, Errors Related to Procedures, Treatments and Tests were the most commonly submitted type of report, accounting for 27.5% of the reports of this population, followed by Medication Errors at 25.5%. However, event type Complications of Procedures, Treatments and Tests made up 53.2% 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 16, the Care Areas that are considered General Medical/Surgical Units were cited as the location for the greatest number of all reports submitted in 2009, 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 (8.6%), and Ancillary Departments (7.8%).

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

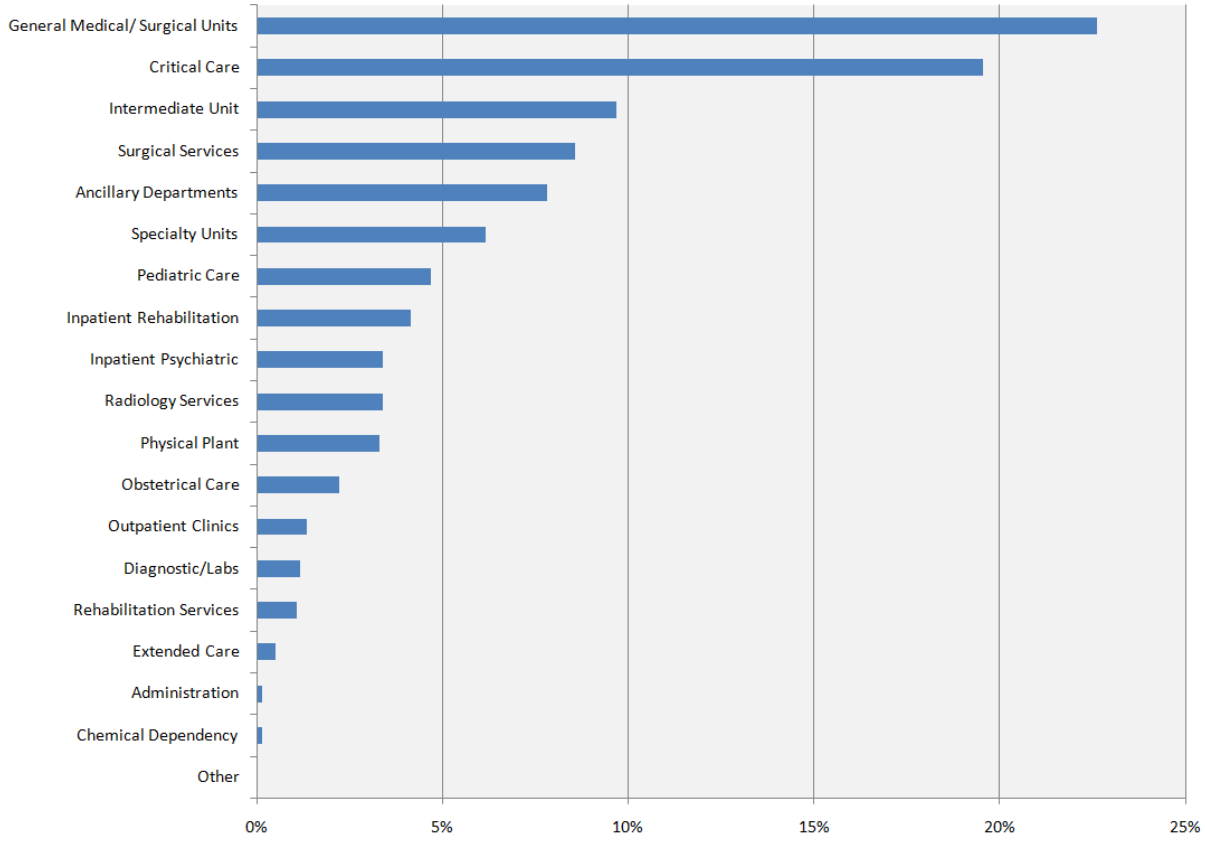


Figure 16. Reports by Location/Department (Hospitals Only, 2009)

HEALTHCARE ASSOCIATED INFECTIONS

The Centers for Disease Control and Prevention (CDC) continues to report hundreds of thousands of deaths, billions of dollars of lost revenue and major morbidity as a result of healthcare-associated infections (HAIs). Recent CDC reports indicate that in American hospitals alone, HAIs account for an estimated 1.7 million infections and 99,000 associated deaths each year.[5]. The Authority, the Pennsylvania Department of Health (DOH) and the Pennsylvania Health Care Cost Containment Council (PHC4) worked together in 2009 to continue meeting the requirements of the Medical Care Availability and Reduction of Error Act (MCare) as modified by Act 52 of 2007.[6]

The Authority, in consultation with the board-appointed HAI Advisory Panel and the DOH, performed a substantial number of activities, including the major task of rolling out the mandatory reporting of HAIs by nursing homes which began in June 2009. The main emphasis for 2009 was on implementation of the nursing home HAI reporting requirements, including: training nursing homes on which HAIs are reportable, how to report them and activation of the reporting system.

Details of all the accomplishments in 2009 related to HAI prevention and future elimination of preventable HAIs, are presented in this report.

Hospitals

Act 52 of 2007 required that hospitals begin reporting HAIs through the CDC's National Healthcare Safety Network (NHSN). Hospitals began reporting in February 2008. In 2009, data would be collected and analyzed for the purpose of providing baseline rates to allow benchmarking and various comparisons. In January, 2010, the DOH released the first publicly available report covering the 6-month period from July through December 2008. Due to the learning curve for many facilities with NHSN and CDC's definitions, DOH considers this report to represent "pilot" data. As such, the rates in the report should not be compared to any previous year's data released by PHC4.[7]

This report focused on Central Line-Associated Bloodstream Infection (CLABSI) and Catheter-Associated Urinary Tract Infections (CAUTI). Future reports from DOH will cover surgical site infections and other types of HAIs.

---

[5] Centers for Disease Control and Prevention. Estimates of Healthcare-Associated Infections. [online]. 2009 Jun [Cited 2010 Feb 23]. Available from Internet: http://www.cdc.gov/ncidod/dhqp/hai.html

[6] Hospital & Healthsystem Association of Pennsylvania. HAP summary: Act 52 of 2007: The Health Care-Associated Infection and Prevention Control Act. [online]. 2007 Jul [Cited 2010 Feb 23]. Available from Internet: http://www.haponline.org/downloads/HAP_Summary_Act_52_of_2007_07262007.pdf

[7] Pennsylvania Department of Health. 2008 Report: Healthcare-Associated Infections (HAI) in Pennsylvania Hospitals. [online]. 2010 Jan [Cited 2010 April 20]. Available from Internet: http://www.portal.state.pa.us/portal/server.pt/community/department_of_health_home/17457

The method of analysis the DOH used in consultation with the Authority and the HAI Advisory Panel was the Standardized Infection Ratio (SIR). This method is defined as the ratio of the *observed* number of infections divided by the *expected* number of infections. The expected number of infections is based on the statewide rate for each HAI type, risk adjusted for different types of hospital units with different patient populations.

A total of 13,771 HAIs were reported by Pennsylvania hospitals during the period July-December 2008, for an overall rate of 2.84 HAIs per 1,000 patient days. The most commonly reported HAIs were urinary tract infections (24.82%), surgical site infections (22.23%) and gastrointestinal infections (18.15%). Among the urinary tract infections, 69% were associated with a urinary catheter. Among the bloodstream infections, 68% were associated with a central line. (see Table 10).

Table 10. Percentage of Healthcare Associated Infections in Pennsylvania Hospitals by Type (July-December 2008)

Infection Type	Number of Infections	%
Bone and Joint (BJ)	5	0.04
Blood Stream Infection (BSI)	1,980	14.38
Central Nervous System (CNS)	39	0.28
Cardiovascular System (CVS)	73	0.53
Ear Nose and Throat (EENT)	322	2.34
Gastrointestinal (GI)	2,499	18.15
Lower Respiratory Tract (LRI)	411	2.98
Pneumonia (PNEU)	1,485	10.78
Reproductive (REPR)	59	0.43
Surgical Site Infection (SSI)	3,062	22.23
Skin and Soft Tissue (SST)	418	3.04
Urinary Tract Infection (UTI)	3,418	24.82
TOTAL	**13,771**	**100%**

Source: Pennsylvania Department of Health

While the data in the report represent only the first six months of reporting, several things are apparent, including that Pennsylvania hospitals have invested substantial effort to comply with the MCare reporting requirements by conducting surveillance for HAIs and reporting them into NHSN. The 2009 data will form the baseline period for the purpose of benchmarking such declines.

Act 52 requires that Pennsylvania institutions accomplish a 10% reduction target for the year 2010 onwards, based on the baseline data reported in 2009. While the rates of HAIs in Pennsylvania 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 and not as comprehensive. Pennsylvania has the most comprehensive reporting requirement in the nation, while in other states self-selected institutions are usually larger facilities and are often affiliated with academic centers; therefore, they are different from other healthcare facilities in many ways. Pennsylvania hospital data reflects many types of facilities.

Catheter-Associated Urinary Tract Infections (CAUTIs)

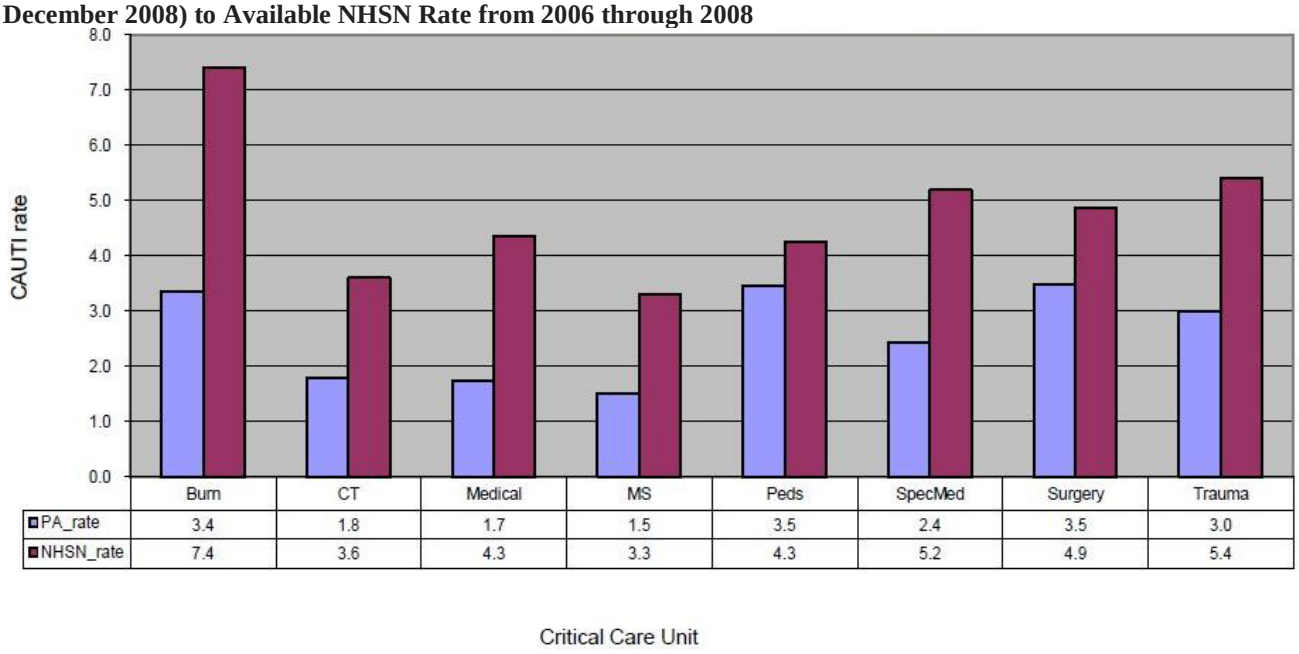
Out of 254 Pennsylvania hospitals, 177 reported a total of 2,357 CAUTIs from July 1 to December 31, 2008. This number represents 17% of all reported events for the time period. The remaining hospitals either had no CAUTIs, or information was missing (23 hospitals) on event counts, catheter days, and/or patient days. The hospitals in the latter category are generally psychiatric facilities, substance abuse treatment facilities or rehabilitation units.

Pooled Device Utilization Ratios (DURs)—a measure of how often catheters were used—were calculated for all hospitals and unit types. The pooled DURs were highest for critical care units (0.25 – 0.84) and lowest for non-critical care units (0.0 – 0.24). For comprehensive details of CAUTI rates in Pennsylvania including device utilization, refer to: Pennsylvania Department of Health. 2008 Report: Healthcare-Associated Infections (HAI) in Pennsylvania Hospitals at http://www.portal.state.pa.us/portal/server.pt/community/department_of_health_home/17457.

CAUTI National Comparison

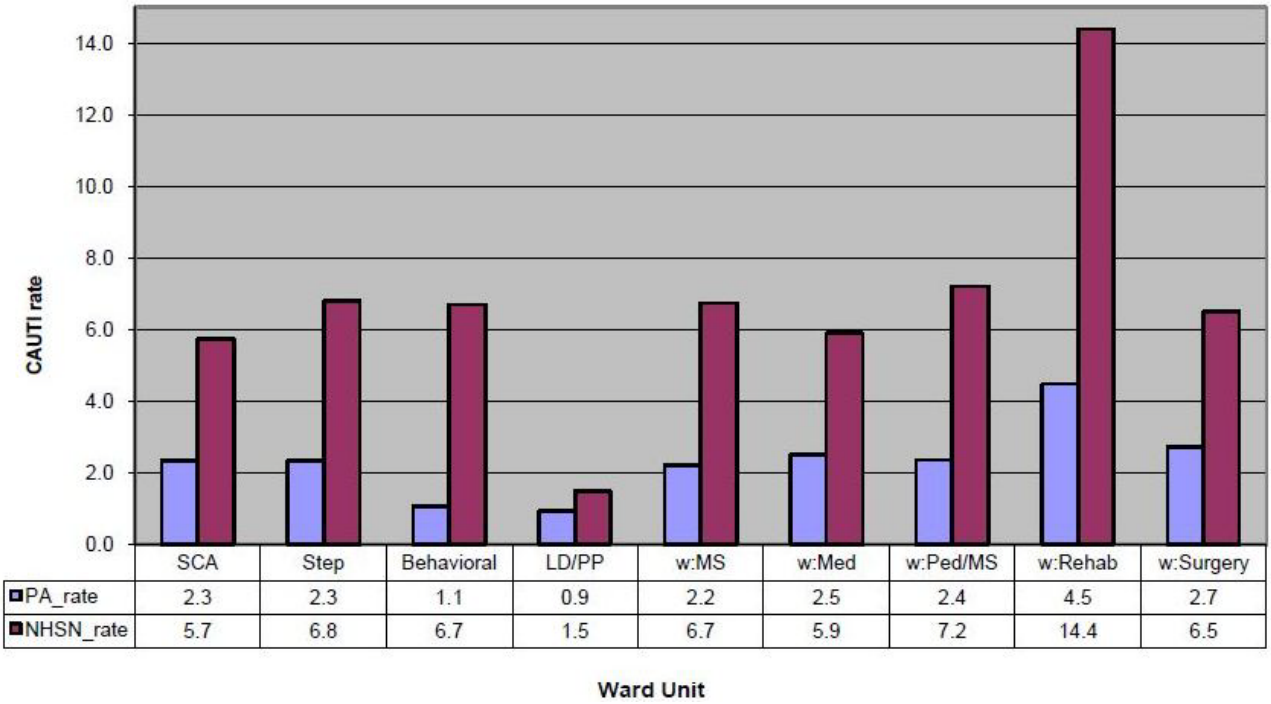
Pooled statewide CAUTI rates of CDC-defined ward types that exist in Pennsylvania hospitals were compared to the national pooled rates for like ward types calculated by the CDC. These ward types were divided into critical care and non-critical care wards. Among all critical care and inpatient units in Pennsylvania, CAUTI infection rates were lower than national estimates (see Tables11 and 12).

Table 11. Comparison of CAUTI Rates in PA Hospitals by Selected Critical Care Locations at Baseline (July to December 2008) to Available NHSN Rate from 2006 through 2008



	Burn	CT	Medical	MS	Peds	SpecMed	Surgery	Trauma
PA_rate	3.4	1.8	1.7	1.5	3.5	2.4	3.5	3.0
NHSN_rate	7.4	3.6	4.3	3.3	4.3	5.2	4.9	5.4

Table 12. Comparison of CAUTI Rates in PA Hospitals by Selected Ward Locations at Baseline (July to December 2008) to Available NHSN Rate from 2006 through 2008



	SCA	Step	Behavioral	LD/PP	w:MS	w:Med	w:Ped/MS	w:Rehab	w:Surgery
PA_rate	2.3	2.3	1.1	0.9	2.2	2.5	2.4	4.5	2.7
NHSN_rate	5.7	6.8	6.7	1.5	6.7	5.9	7.2	14.4	6.5

Central Line-Associated Bloodstream Infections (CLABSI)

Among the 254 Pennsylvania hospitals, 149 reported a total of 1,356 CLABSIs from July 1 to December 31, 2008, which represents 9.85% of all reported events for that period The remaining hospitals either had no CLABSI, or information was missing (31 hospitals) on event counts, central line days, and/or patient days. The hospitals in the latter category are generally psychiatric facilities, substance abuse treatment facilities, or rehabilitation units that would be unlikely to have patients with central lines in place.

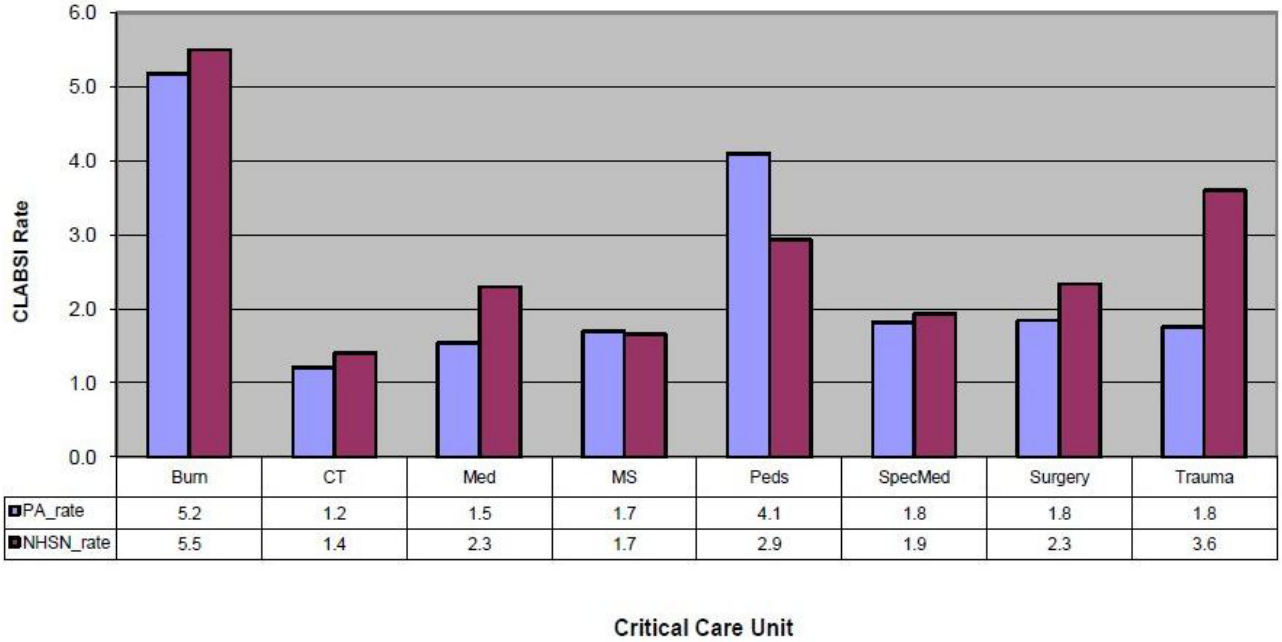
Pooled Device Utilization Ratios (DURs) – a measure of how often catheters were used - were calculated for all hospitals. The pooled DURs were highest for the critical care units (0.08 – 0.67) and lowest for the non-critical care units (0.0 – 0.18).

For comprehensive details of CLABSI in Pennsylvania Hospitals, refer to the Pennsylvania Department of Health 2008 Report: Healthcare-Associated Infections (HAI) in Pennsylvania Hospitals at http://www.portal.state.pa.us/portal/server.pt/community/department_of_health_home/17457.

CLABSI National Comparison

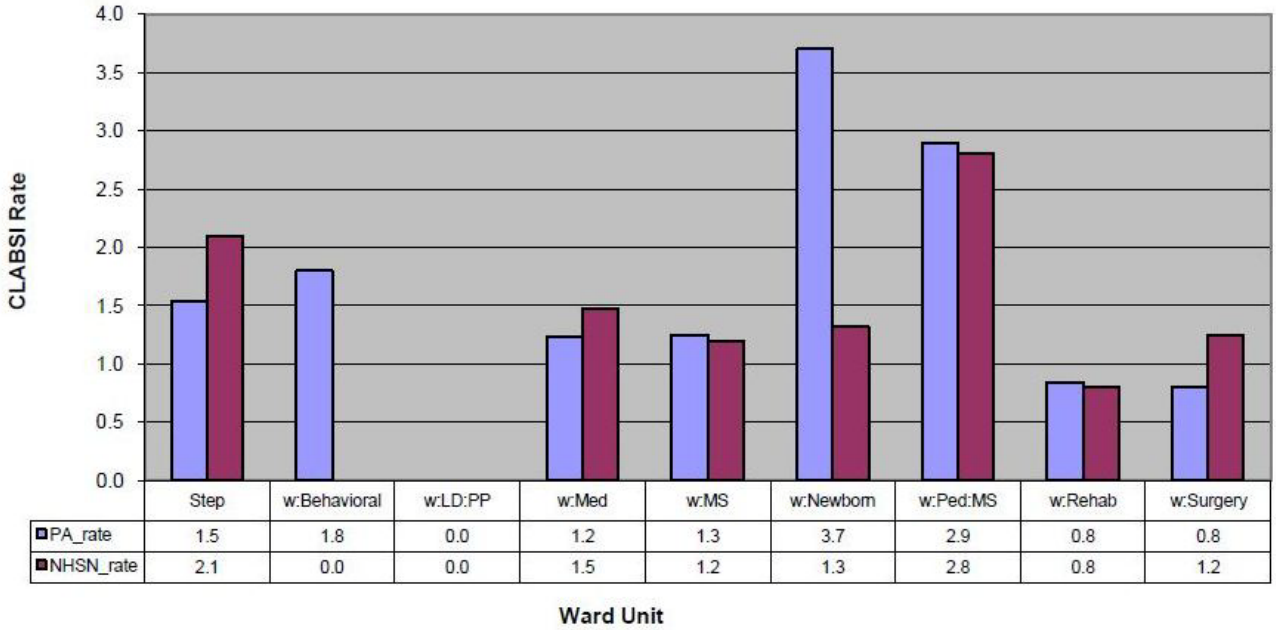
Pooled statewide CLABSI rates of CDC-defined ward types that are present in Pennsylvania hospitals were compared to the national pooled rates for like ward types calculated by the CDC. These ward types were divided into critical care and non-critical care wards. In most unit types, Pennsylvania's infection rates were lower than national estimates (see Table 13 and 14)

Table 13. Comparison of CLABSI Rates in Pennsylvania Hospitals by Selected Critical Care Locations at Baseline (July to December 2008) to Available NHSN Rate from 2006 through 2008



	Burn	CT	Med	MS	Peds	SpecMed	Surgery	Trauma
PA_rate	5.2	1.2	1.5	1.7	4.1	1.8	1.8	1.8
NHSN_rate	5.5	1.4	2.3	1.7	2.9	1.9	2.3	3.6

Table 14. Comparison of CLABSI Rates in PA Hospitals by Selected Ward Locations at Baseline (July to December 2008) to Available NHSN Rate from 2006 through 2008



	Step	w:Behavioral	w:LD:PP	w:Med	w:MS	w:Newborn	w:Ped:MS	w:Rehab	w:Surgery
PA_rate	1.5	1.8	0.0	1.2	1.3	3.7	2.9	0.8	0.8
NHSN_rate	2.1	0.0	0.0	1.5	1.2	1.3	2.8	0.8	1.2

Nursing Homes

During 2009, the Authority concentrated much of its effort together with guidance and support from the HAI Advisory Panel and the Department of Health on nursing home mandatory reporting of HAIs. Act 52 of 2007 required that the Authority develop a unique list of infections and set of criteria for nursing homes, which was accomplished in 2008, and that reporting was to begin as determined by the agencies in 2009.[8]

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

- First, 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.

- Second, to maintain the quality of the data through monthly validation.

- Third, to analyze the data to support *Advisory* articles, educational programs, and the Annual Report.

- Fourth, to 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.

To collect HAI reports from nursing homes, the Authority commissioned a new module to its existing Pennsylvania Patient Safety Reporting System (PA-PSRS). In preparation for entering infections and subsequent data analysis, the nursing homes were required to classify their care areas into five unit types:

- Nursing Unit
- Skilled Nursing/Short-Term Rehabilitation Unit
- Dementia Unit
- Ventilator Unit
- Mixed Unit

During the months of February and March, the Authority conducted 30 live training sessions in various locations throughout Pennsylvania. Approximately 1,150 nursing home staff members registered for the training. The DOH was in attendance to assist with any issues that may have potentially arisen that were unrelated to the Authority and best handled by the DOH staff.

---

[8] 0Pennsylvania Bulletin. Reporting Requirements for Health Care Facilities under the Medical Care Availability and Reduction of Error (MCARE) Act [final notice]. [Online]. 2008 Sep. [Cited 2010 Feb 23]. Available from Internet: http://www.pabulletin.com/secure/data/vol38/38-38/1740.html

After the training sessions were completed, a pilot program of the reporting system was instituted, using six nursing homes who volunteered to test the system. Mandatory reporting began in three rollout phases with eastern Pennsylvania required to report beginning June 1, 2009, followed by central Pennsylvania on June 15 and western Pennsylvania on June 22. The PA-PSRS help desk expanded their scope to include assistance with both clinical and computer/technical issues. The annual survey for 2009 which included feedback from nursing homes regarding the reporting system, yielded favorable results, with nearly 95% of nursing home respondents saying it was easy to submit a report into PA-PSRS, and 78% saying it was very easy. Only one person of the 361 respondents felt it was difficult.

Analysis

From July through December 2009, 16,729 HAI events were entered into PA-PSRS by Pennsylvania nursing homes. The following analysis includes 645 of the 720 facilities (89.6%), spanning 992 care areas. Table 15 breaks down the number of Care Areas by type; this breakdown applies to all data to follow, except where specifically noted.

Table 15. Number of Care Units, by Type

Number of Care Units, by Type	Total
Dementia Unit	165
Mixed Unit	222
Nursing Unit	238
Skilled Nursing/Short-Term Rehabilitation Unit	352
Ventilator Dependent Unit	15
Total	992

Analysis was performed only on those nursing homes that met standard validation criteria[9] for the six-month period of analysis. This period was chosen even though mandatory reporting began in June 2009, because facilities came on to the system in a staged rollout throughout the month of June, so we did not collect a full month's data from all facilities. Further, this first month served as a learning curve as nursing home staff became familiar with the system.

Nursing homes throughout the state have invested substantial efforts in complying with the HAI reporting requirements of Act 52. This is a commendable achievement as many of the facilities had limited experience with such intensive data collection.

[9] Criteria for inclusion for analysis:

1. Facility reported more than 0 resident days for each month
2. Facility reported resident and catheter days for each care unit for each month, 0 being acceptable
3. Facility had aggregate monthly occupancy rates between 50% -100% throughout the period of analysis; occupancy was calculated by dividing total number of resident days for the period by the number of beds in the nursing home, further divided by the number of days in the period (184 days from July through December 2009)

Pennsylvania nursing homes reported 16,729 HAIs for a rate of 1.41 infections per 1000 resident days. In the overall summary of HAIs in Pennsylvania nursing homes, the following were reported in order, as the three most common infections (see Figure 17):

- Respiratory Tract Infections (RTI) – subcategory Lower Respiratory Tract Infections (LRTI) reporting the highest rates within the RTI category.
- Skin and Soft Tissue Infection (SSTI) – subcategory Cellulitis reporting the highest rates within the SSTI category.
- Gastrointestinal Infection (GI) – subcategory Clostridium difficile Infection reporting the highest rates within the GI category.

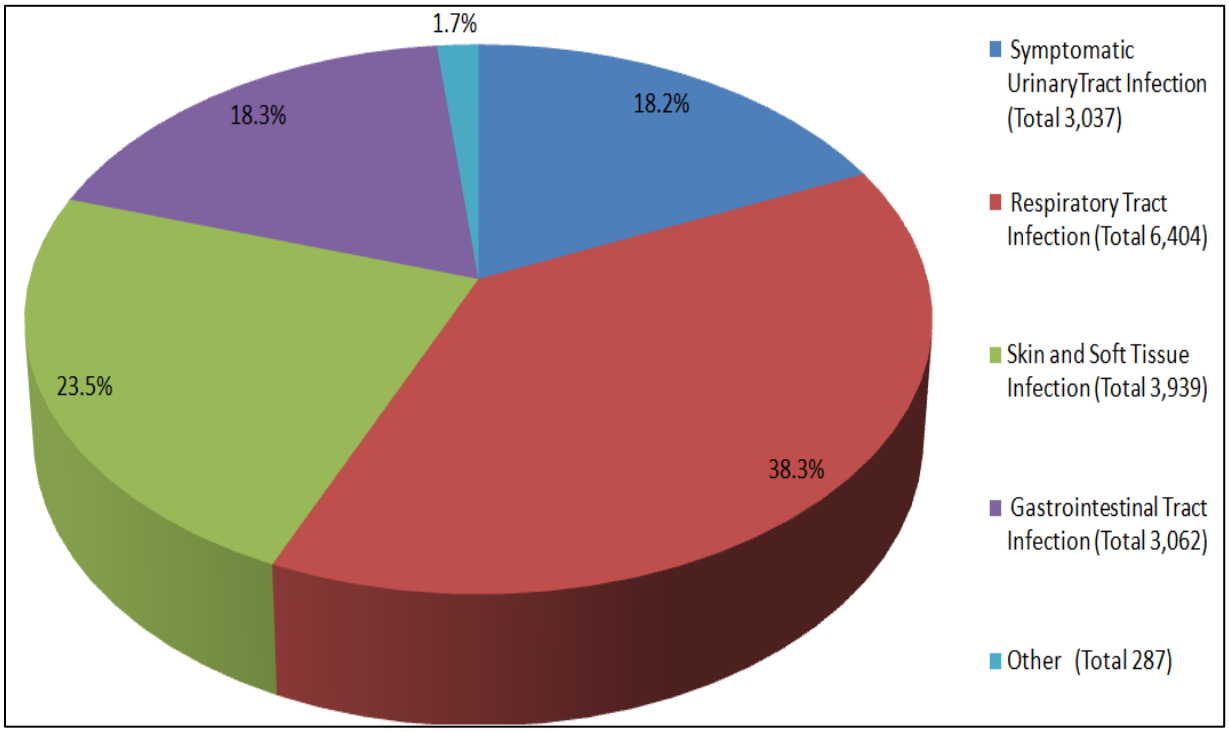


Figure 17. Proportion of Infections Reported by Nursing Homes, by Infection Type, July through December 2009

Respiratory Tract Infections

Of the 6,127 respiratory tract infections reported, 98.5% 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 both LRTI and influenza-like illness (ILI) were highest on the Ventilator Dependant Units (0.79 and 0.03 per 1,000 resident days, respectively) (see Table 16).

Table 16. Respiratory Tract Infections, Pooled Mean Rates, by Subcategory and Care Unit, July through December 2009

Sub-Event Type	Unit Name	Number of Infections	Resident Days	Pooled Infection Rate*
Lower respiratory tract infection (pneumonia/bronchitis/ tracheobronchitis) (LRTI)	Dementia Unit	405	1,074,462	0.38
	Mixed Unit	1,861	3,913,582	0.48
	Nursing Unit	1,802	4,042,711	0.45
	Skilled Nursing/Short-Term Rehabilitation Unit	1,911	4,353,798	0.44
	Ventilator Dependent Unit	54	68,563	0.79
	Total	6,033	13,453,116	0.45
Influenza-like illness (ILI)	Dementia Unit	7	1,074,462	0.01
	Mixed Unit	27	3,913,582	0.01
	Nursing Unit	21	4,042,711	0.01
	Skilled Nursing/Short-Term Rehabilitation Unit	37	4,353,798	0.01
	Ventilator Dependent Unit	2	68,563	0.03
	Total	94	13,453,116	0.01
Total Respiratory Tract Infections	Dementia Unit	412	1,074,462	0.38
	Mixed Unit	1,888	3,913,582	0.48
	Nursing Unit	1,823	4,042,711	0.45
	Skilled Nursing/Short-Term Rehabilitation Unit	1,948	4,353,798	0.45
	Ventilator Dependent Unit	56	68,563	0.82
	Total	6,127	13,453,116	0.46

* Rate calculation: number of respiratory tract infections ÷ number of resident days x 1000

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 more likely to have their PPV status current than the influenza vaccine (see Figure 18). The Centers for Disease Control and Prevention (CDC) Healthy People 2010 goal for vaccinations of elderly individuals is 90%.[10] Strategies to enhance vaccination program success can be found in the 2009 December *Pennsylvania Patient Safety Authority Advisory* article "Increasing Influenza and Pneumonia Vaccination Rates in Long-Term Care" at www.patientsafetyauthority.org.

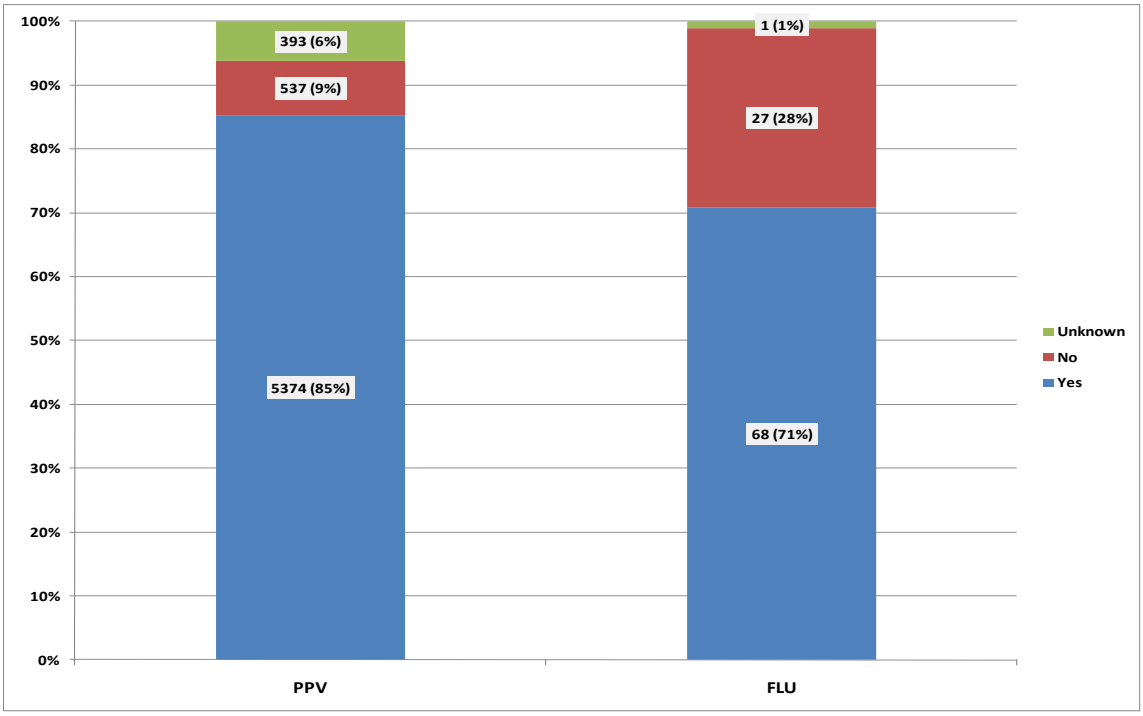


Figure 18. Vaccination Status for Residents with Lower Respiratory Tract Infection

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?"

[10] 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

Urinary Tract Infections

A total of 2,826 urinary tract infections (UTIs) were reported during the analysis period, with 68.5% reported in residents without indwelling urinary catheters, and the highest rates of non-catheter related UTIs were reported in Dementia and Mixed Units (0.15 per 1,000 resident days) (see Table 17). Catheter-associated UTIs (CAUTIs) accounted for 31.5% of the total UTIs, with the highest rates reported from Mixed Units (1.5 per 1,000 catheter days).

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 0.049, meaning that on average residents were catheterized about 4.9% of the time they spent in nursing homes. The DUR was highest in Ventilator Dependent Units (0.256) due to the severity of illness among residents in these units.

Table 17. Urinary Tract Infections, Pooled Mean Rates, by Subcategory and Care Unit, July through December 2009

Sub-Event Type	Unit Name	Number of Infections	Resident Days	Catheter Days	Device Utilization Rate†	Pooled Infection Rate *
UTI-Resident without indwelling urinary catheter	Dementia Unit	162	1,074,462			0.15
	Mixed Unit	598	3,913,582			0.15
	Nursing Unit	574	4,042,711			0.14
	Skilled Nursing/Short-Term Rehabilitation Unit	599	4,353,798			0.14
	Ventilator Dependent Unit	4	68,563			0.06
	Total	1,937	13,453,116			0.14
CAUTI - Resident with indwelling urinary catheter	Dementia Unit	11	1,074,462	14,614	0.01	0.75
	Mixed Unit	286	3,913,582	190,751	0.05	1.50
	Nursing Unit	236	4,042,711	180,571	0.05	1.31
	Skilled Nursing/ Short-Term Rehabilitation Unit	335	4,353,798	253,768	0.06	1.32
	Ventilator Dependent Unit	21	68,563	17,586	0.26	1.19
	Total	889	13,453,116	657,290	0.05	1.35

*UTI rate calculation: number of UTI ÷ number of resident days x 1000
*CAUTI rate calculation: number of CAUTI ÷ number of catheter days x 1000
†Device utilization rate: number of urinary catheter days ÷ number of resident days

Medical justification for the use of urinary catheters was mainly attributed to urinary retention and presence of the catheter on admission (see Figure 19). UTI risk reduction strategies were published in the 2009 September *Advisory* article "Barriers to Urinary Cather Insertion and Maintenance Practices," available at www.patientsafetyauthority.org.

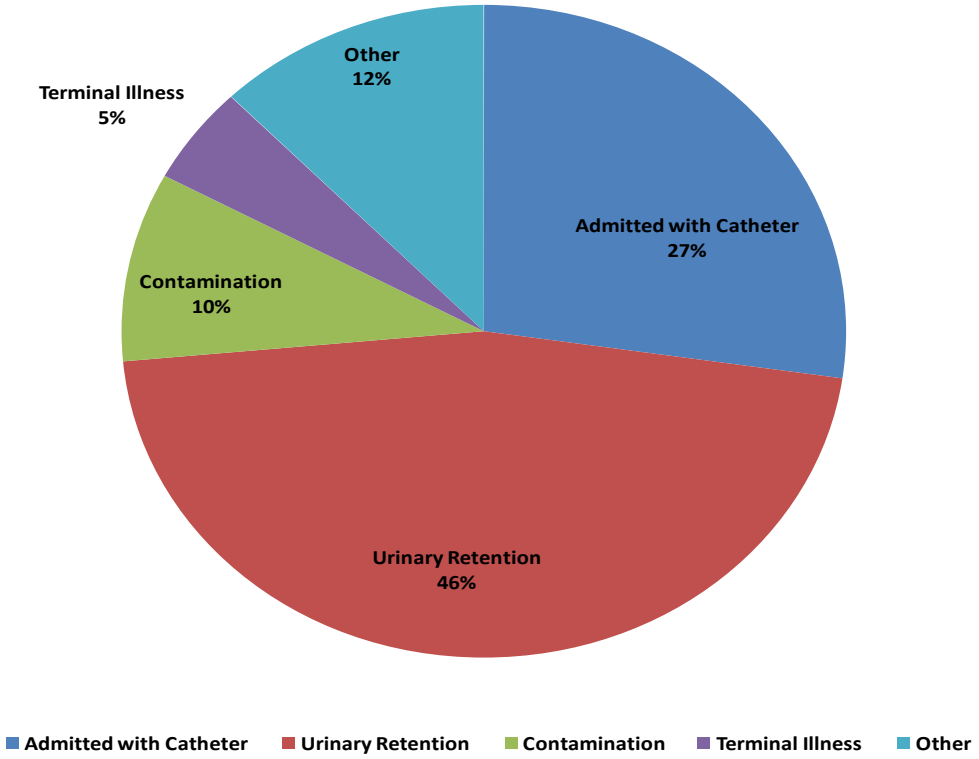


Figure 19. Medical Justification for Indwelling Urinary Catheters (July through December 2009)

Skin and Soft Tissue Infections

Statewide, nursing homes reported 3,730 skin and soft tissue infections (SSTIs) during the six-month analysis period at a rate of 0.28 per 1,000 resident days (see Table 18). The most commonly reported type of SSTI was cellulitis; at 1,768 reports, this infection type accounts for 47% of all SSTIs. The highest rate of infection in all SSTI subcategories was reported from the Ventilator Dependent Units at 0.15 per 1,000 resident days.

Table 18. Skin and Soft Tissue Infections, Pooled Mean Rates, by Subcategory and Care Unit, July through December 2009

Sub-Event Type	Unit Name	Number of Infections	Resident Days	Pooled Infection Rate*
Vascular or diabetic ulcer (chronic/non-healing)	Dementia Unit	8	1,074,462	0.01
	Mixed Unit	57	3,913,582	0.01
	Nursing Unit	67	4,042,711	0.02
	Skilled Nursing/Short-Term Rehabilitation Unit	65	4,353,798	0.01
	Ventilator Dependent Unit	1	68,563	0.01
	Total	198	13,453,116	0.01
Decubitus ulcer (pressure-related)	Dementia Unit	14	1,074,462	0.01
	Mixed Unit	86	3,913,582	0.02
	Nursing Unit	87	4,042,711	0.02
	Skilled Nursing/Short-Term Rehabilitation Unit	87	4,353,798	0.02
	Ventilator Dependent Unit	1	68,563	0.01
	Total	275	13,453,116	0.02
Burn-associated	Dementia Unit	1	1,074,462	0.00
	Mixed Unit	1	3,913,582	0.00
	Nursing Unit	2	4,042,711	0.00
	Skilled Nursing/Short-Term Rehabilitation Unit	4	4,353,798	0.00
	Ventilator Dependent Unit	-	68,563	0.00
	Total	8	13,453,116	0.00
Device-associated	Dementia Unit	4	1,074,462	0.00
	Mixed Unit	31	3,913,582	0.01
	Nursing Unit	30	4,042,711	0.01
	Skilled Nursing/Short-Term Rehabilitation Unit	50	4,353,798	0.01
	Ventilator Dependent Unit	3	68,563	0.04
	Total	118	13,453,116	0.01

Sub-Event Type	Unit Name	Number of Infections	Resident Days	Pooled Infection Rate*
Cellulitis	Dementia Unit	129	1,074,462	0.12
	Mixed Unit	537	3,913,582	0.14
	Nursing Unit	521	4,042,711	0.13
	Skilled Nursing/Short-Term Rehabilitation Unit	571	4,353,798	0.13
	Ventilator Dependent Unit	10	68,563	0.15
	Total	1,768	13,453,116	0.13
Other	Dementia Unit	105	1,074,462	0.10
	Mixed Unit	404	3,913,582	0.10
	Nursing Unit	430	4,042,711	0.11
	Skilled Nursing/Short-Term Rehabilitation Unit	415	4,353,798	0.10
	Ventilator Dependent Unit	9	68,563	0.13
	Total	1,363	13,453,116	0.10
Total	Dementia Unit	261	1,074,462	0.24
	Mixed Unit	1,116	3,913,582	0.29
	Nursing Unit	1,137	4,042,711	0.28
	Skilled Nursing/Short-Term Rehabilitation Unit	1,192	4,353,798	0.27
	Ventilator Dependent Unit	24	68,563	0.35
	Total	3,730	13,453,116	0.28

*Rate calculation: number of SSTI ÷ number of resident days x 1000

Vascular or diabetic ulcers (5% of all SSTIs) and infected decubitus ulcers (7% of all SSTIs) were reported at rates of 0.01 and 0.02 per 1,000 resident days, respectively. Device-associated SSTIs accounted for 3% of all SSTIs. These were most frequently reported related to gastrostomy "feeding" tubes, which accounted for 39% of device-associated SSTIs (see Figure 20).

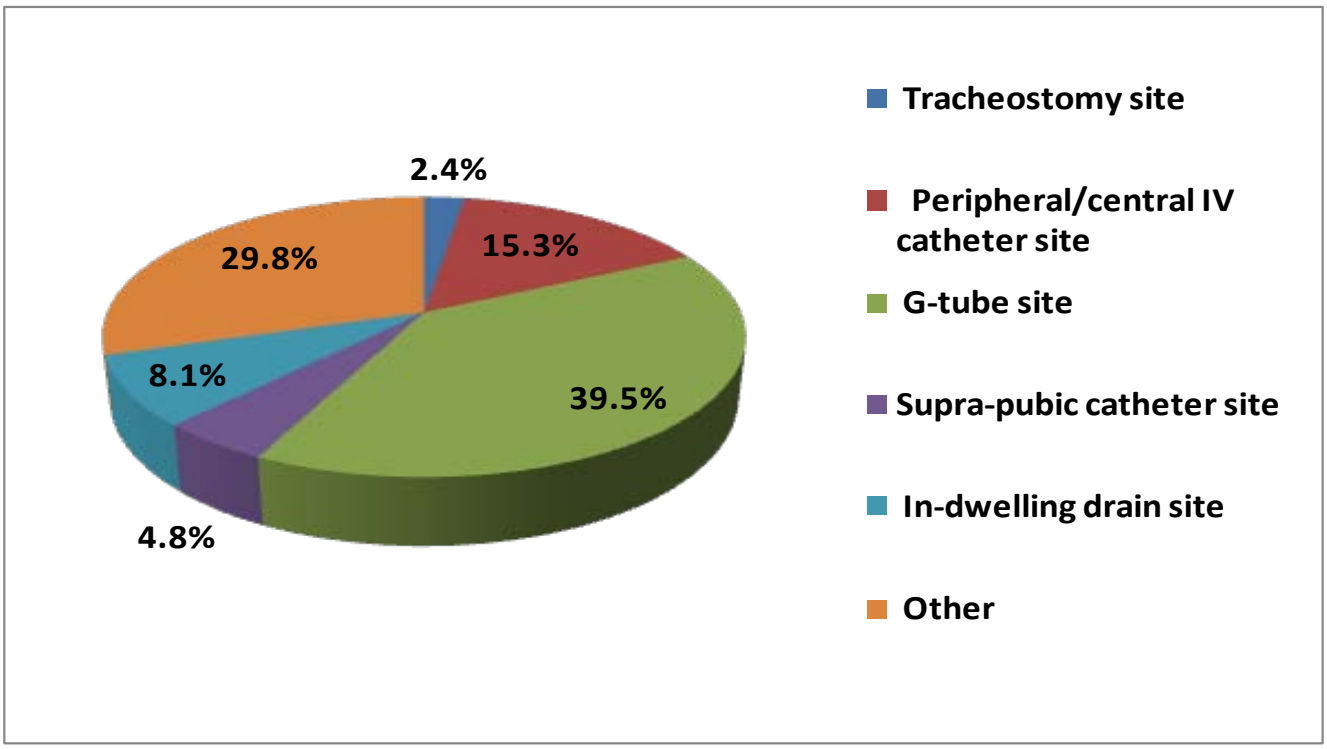


Figure 20. Device-Associated Skin and Soft Tissue Infections by Device Type, July through December 2009

Gastrointestinal Infections

A total of 2,867 gastrointestinal infections (GIs) were reported statewide (see Table 19). Just over 50% of the GI events were identified as positive for Clostridium difficile (C.difficile). The Skilled Nursing/Short-Term Rehabilitation Unit reported the most events in both the sub and overall category. However the highest rates (overall and C. difficile – 0.77 per 1,000 resident days) were reported from the Ventilator Unit.

Table 19. Gastrointestinal Infections, Pooled Mean Rates, by Sub-Event Type and Care Unit, July through December 2009

Sub-Event Type	Unit Name	Number of Infections	Resident Days	Pooled Infection Rate *
Gastrointestinal Infections Reported with Associated Clostridium Difficile	Dementia Unit	39	1,074,462	0.04
	Mixed Unit	377	3,913,582	0.10
	Nursing Unit	395	4,042,711	0.10
	Skilled Nursing/Short-Term Rehabilitation Unit	624	4,353,798	0.14
	Ventilator Dependent Unit	53	68,563	0.77
	Total	1,488	13,453,116	0.11
Gastrointestinal Infections Reported without Associated Clostridium Difficile	Dementia Unit	174	1,074,462	0.16
	Mixed Unit	385	3,913,582	0.10
	Nursing Unit	375	4,042,711	0.09
	Skilled Nursing/Short-Term Rehabilitation Unit	441	4,353,798	0.10
	Ventilator Dependent Unit	4	68,563	0.06
	Total	1,379	13,453,116	0.10
Total Gastrointestinal Infections Reported	Dementia Unit	213	1,074,462	0.20
	Mixed Unit	762	3,913,582	0.19
	Nursing Unit	770	4,042,711	0.19
	Skilled Nursing/Short-Term Rehabilitation Unit	1,065	4,353,798	0.24
	Ventilator Dependent Unit	57	68,563	0.83
	Total	2,867	13,453,116	0.21

*Rate calculation: number of GI infections ÷ number of resident days x 1000

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.

Primary bloodstream infections (BSI) accounted for 71% of all infections in the "Other" category (see Table 20). The highest numbers of events were reported from the Skilled Nursing/Short-Term Rehabilitation Unit. The Ventilator Dependent Unit experienced the highest rates of BSI at 0.22 per 1,000 resident days. Primary bloodstream infections (BSI) and osteomyelitis and viral hepatitis were reported most often in residents from the Skilled Nursing/Short-Term Rehabilitation Units. There were no cases of meningitis reported.

Table 20. Other Infections, Pooled Mean Rates, by Sub-Event Type and Care Unit, July through December 2009

Sub-Event Type	Unit Name	Number of Infections	Resident Days	Pooled Infection Rate*
Intra-abdominal infection (Peritonitis/ deep abscess)	Dementia Unit	-	1,074,462	0.00
	Mixed Unit	6	3,913,582	0.00
	Nursing Unit	4	4,042,711	0.00
	Skilled Nursing/Short-Term Rehabilitation Unit	2	4,353,798	0.00
	Ventilator Dependent Unit	-	68,563	0.00
	Total	12	13,453,116	0.00
Meningitis	Total	-	13,453,116	0.00
Viral hepatitis	Dementia Unit	-	1,074,462	0.00
	Mixed Unit	-	3,913,582	0.00
	Nursing Unit	1	4,042,711	0.00
	Skilled Nursing/Short-Term Rehabilitation Unit	2	4,353,798	0.00
	Ventilator Dependent Unit	-	68,563	0.00
	Total	3	13,453,116	0.00
Osteomyelitis	Dementia Unit	3	1,074,462	0.00
	Mixed Unit	17	3,913,582	0.00
	Nursing Unit	20	4,042,711	0.00
	Skilled Nursing/Short-Term Rehabilitation Unit	23	4,353,798	0.01
	Ventilator Dependent Unit	1	68,563	0.01
	Total	64	13,453,116	0.00
Primary bloodstream infection	Dementia Unit	1	1,074,462	0.00
	Mixed Unit	52	3,913,582	0.01
	Nursing Unit	42	4,042,711	0.01
	Skilled Nursing/Short-Term Rehabilitation Unit	86	4,353,798	0.02
	Ventilator Dependent Unit	15	68,563	0.22
	Total	196	13,453,116	0.01

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

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 prescribing antibiotics as a sign of infection, because antibiotics are overused and are not reliable indicators of infection.

In all infection categories, the numbers of HAI events were reported most often from the Skilled Nursing/Short-Term Rehabilitation units while the highest rates were reported from the ventilator dependent units.

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. GI infections were most likely to receive no treatment. Overall, 76.2% of infections were treated in the nursing home, 18.8% of residents with an HAI were transferred to another facility for treatment, and 5% were not treated. (see Figure 21)

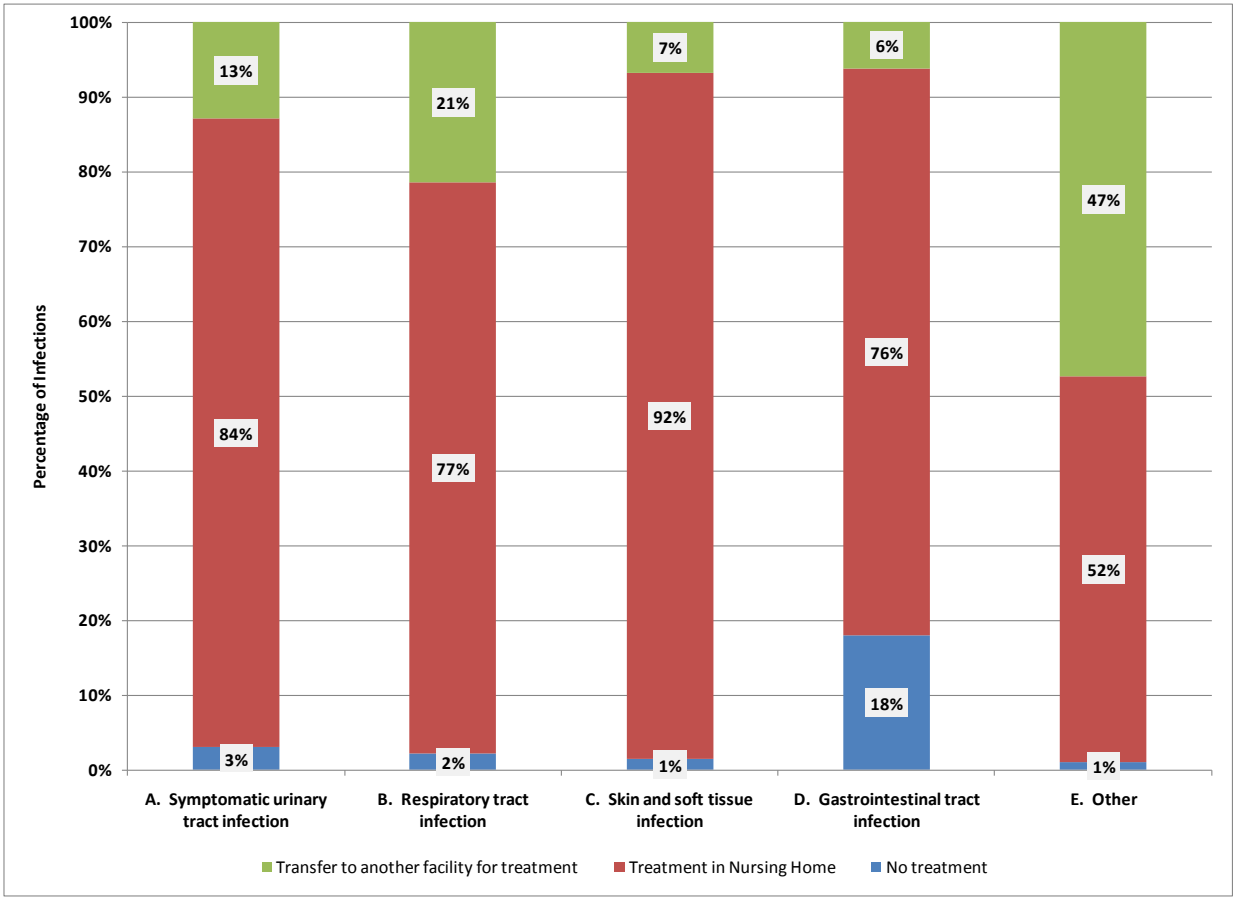


Figure 21. Facility Response to Infection by Infection Type

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. (see Figure 22) The most commonly identified organism was C. difficile, which accounted for 53% of all GI infections. C diff was particularly prevalent in the Ventilator Dependent Units. Seventeen percent of infections in the "Other" category tested positive for MRSA, in which the majority were primary bloodstream infections. (see Table 21)

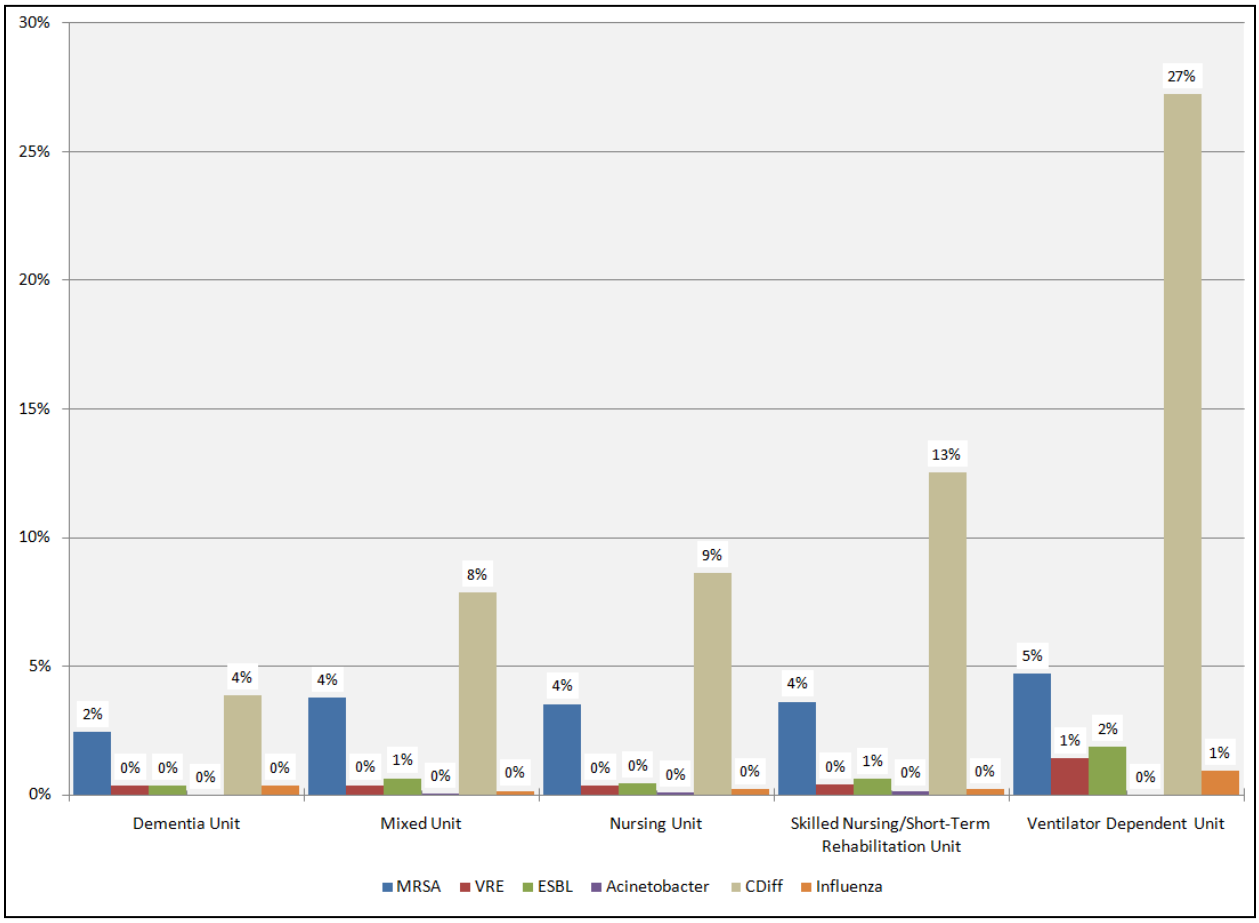


Figure 22. Organisms Identified by Laboratory Testing

Table 21. Number of Organisms by Infection Type and Percentage of Named Organism Found Through Laboratory Testing on Infection Type

Infection Type	MRSA		VRE		ESBL		Cdifficile		Influenza		Overall	
	#	% Tested	#	% Tested	#	% Tested	#	% Tested	#	% Tested	# Tested	% Tested
Symptomatic urinary tract infection	80	3%	32	1%	75	3%	0	0%	0	0%	2625	86%
Respiratory tract infection	68	6%	4	0%	9	1%	1	0%	35	3%	1203	19%
Skin and soft tissue infection	398	41%	16	2%	7	1%	0	0%	1	0%	972	25%
Gastrointestinal tract infection	2	0%	11	1%	0	0%	1614	83%	0	0%	1950	64%
Other - Intra-abdominal infection	0	0%	0	0%	0	0%	0	0%	0	0%	5	42%
Other - Meningitis	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
Other - Viral hepatitis	0	0%	0	0%	0	0%	0	0%	0	0%	3	100%
Other - Osteomyelitis	15	41%	0	0%	2	5%	0	0%	0	0%	37	57%
Other - Primary bloodstream infection	34	16%	5	2%	3	1%	0	0%	0	0%	207	100%
Total Infections	597	9%	68	1%	96	1%	1615	23%	36	1%	7002	42%

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), the number of laboratory tests done on each infection type (# Tested) and the percentage of each infection type that had laboratory testing performed (% Tested).

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 force 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 so that they may be contacted by phone or email.

Nursing Home Analytical Reports

Nursing homes are now able to view and print facility-specific reports for all categories of infections, for the purpose of identifying trends and working towards investigating risk factors for HAIs in their residents. The Authority analysts conducted extensive testing of the nursing home analytical reports in two phases starting in October 2009 and ending in December. The facilities can easily generate a selection of tables and charts to produce infection rates and raw data tables by date range, facility, care area and HAI subcategories.

These reports display the facility-specific data from HAI reports entered into PA-PSRS and can be exported to Excel and downloaded for additional customized analysis and committee reports. Footnotes on each report include infection and catheter utilization rate calculation formulas and outlier rationales. Preliminary results from the annual survey showed that 53% of facilities were already using the new analytical tools from phase one just a month after the release of the reports.

Nursing Home Feedback from the Annual Authority Survey

In December 2009, the Authority invited our registered primary contacts at healthcare facilities in the Commonwealth to participate in an online survey. For the first time, Infection Prevention Designees (IPDs) at Nursing Homes were invited to participate (see section "The Authority's Annual Survey of Patient Safety Officers" for results from other participating healthcare facilities). Responses were collected over a 17-day period, with 364 IPDs having responded. The Authority was keenly interested in the IPDs feedback on the use of the Pennsylvania Patient Safety Reporting System (PA-PSRS). Survey questions and summaries of the IPDs responses follow.

How easy or difficult is it to submit a report through PA-PSRS?

Response	#	%
Very easy	283	78.4%
Somewhat easy	59	16.3%
Neutral	18	5%
Somewhat difficult	1	0.3%
Very difficult	0	0%
Total response	361	100%

Have you used the Analytical Data Tools in the PA-PSRS system?

Yes	53.7%
No	43.9%
Don't Know	2.4%

If yes, how useful have you found them?

Report (n = 181)	Very Useful	Somewhat Useful	Not Useful	Not Used / No Opinion
Search Submitted Event Reports	62.4%	26.0%	2.2%	9.4%
Catheter Associated Urinary Tract Infection Rate Report	38.7%	34.8%	3.3%	23.2%
Catheter Utilization Report	44.2%	36.5%	6.6%	12.7%
Respiratory Tract Infection Rate Report	42.0%	30.9%	2.2%	24.9%
Respiratory Tract Infection Vaccination Proportion Report	30.9%	23.2%	3.9%	42.0%
Respiratory Tract Infection Vaccination Failures Report	27.6%	21.0%	5.0%	46.4%
Skin and Soft Tissue Infection Rate Report	37.0%	30.4%	1.1%	31.5%
Gastrointestinal Infection Rate Report	35.4%	27.6%	1.7%	35.4%
Data Export	19.9%	14.9%	2.8%	62.4%

Pennsylvania Patient Safety Advisory Infection Articles

A major focus of the Authority's activities under Act 52 2007 is to analyze the reports submitted by hospitals and nursing homes to identify successful reduction efforts, profile facilities that have made progress in reducing HAIs, and convey lessons learned and ways some facilities have overcome obstacles in implementing best practices. The following are summaries of the HAI-related *Pennsylvania Patient Safety Advisory* articles published this year.

Successful Reduction of Healthcare-Associated MRSA Infection Rates

Volume 6, Number 1—March 2009

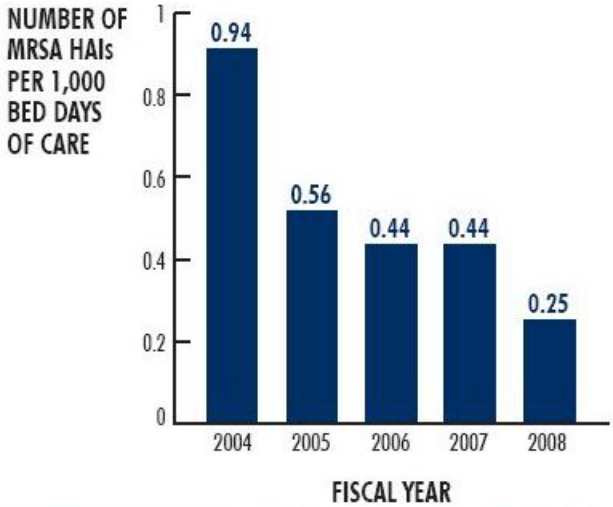
Approximately 70% of healthcare-associated infections (HAIs) in the United States are caused by antibiotic-resistant bacteria such as methicillin-resistant *Staphylococcus aureus* (MRSA), which is one of the most predominant and virulent pathogens in healthcare today. The Centers for Disease Control and Prevention (CDC) estimates that more than 126,000 hospitalized patients are infected with MRSA annually, with approximately 5,000 deaths. Hospitalized MRSA patients experience an increased length of stay approaching 9.1 days, associated with roughly $30,000 in additional costs per patient infection.

This article profiled two Pennsylvania healthcare systems that have reduced and sustained a reduction in MRSA-related HAIs: the VA Pittsburgh Healthcare System (VAPHS), an integrated healthcare system of nearly 700 beds serving a veteran population of nearly 59,000, and Albert Einstein Healthcare Network (AEHN), a 1,200-bed integrated delivery network serving North Philadelphia and Montgomery County.

In October 2002, working in partnership with the Pittsburgh Regional Healthcare Initiative (PRHI) and CDC, VAPHS designed and implemented the MRSA Prevention Initiative. Key content and procedural strategies were identified using evidence-based guidelines proposed by the Society for Healthcare Epidemiology of America, APIC and the CDC.

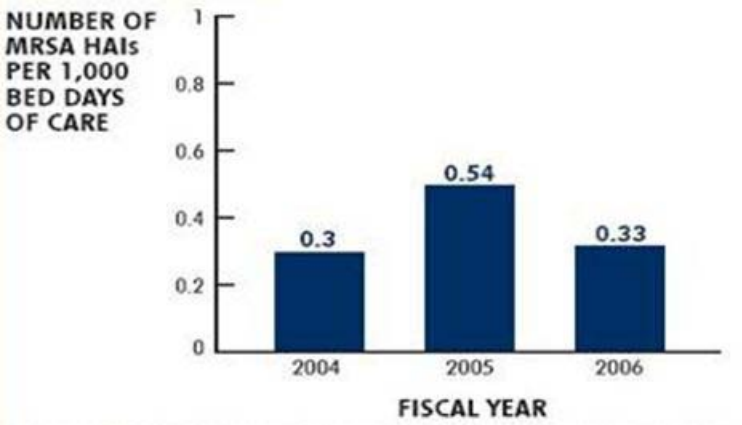
Process Improvement: The key process monitors were hand hygiene and contact precaution compliance. Active surveillance culture compliance rose significantly in both acute and long-term care settings.

Nursing-Sensitive Quality Indicators: The outcome measures were MRSA HAIs and MRSA transmissions. From 2004 to 2008, the infection rate in acute care decreased from 0.94 per 1,000 bed-days of care (BDOC) to 0.25 per 1,000 BDOC. (see Figure 23) Long-term care rates decreased from 0.54 per 1,000 BDOC in 2005 to 0.33 per 1,000 BDOC in 2006.(see Figure 24)



Reprinted with permission from VA Pittsburgh Healthcare System, Pennsylvania.

Figure 23: VAPHS Acute Care Campus MRSA Healthcare-Associated Infections, 2004 through 2008 Fiscal Years



Reprinted with permission from VA Pittsburgh Healthcare System, Pennsylvania.

Figure 24: VAPHS Long-Term Care Campus MRSA Healthcare-Associated Infections, 2004 through 2006 Fiscal Years

During 2006, in Albert Einstein Healthcare Network (AEHN) 107 patients developed MRSA-related HAIs at the medical center. These patients had an 8.3% higher mortality, an increase in average length of stay of 19.75 days, and an increase in average variable costs of $33,347 compared to matched patients who had not acquired a MRSA-related HAI.

In May 2006, the medical center implemented a MRSA reduction program known as SMASH (Stop MRSA Acquisition and Spread in our Hospital) by using the Positive Deviance Approach, which encourages the kinds of cultural changes that help people consistently adhere to practices known to control infections.

During 2006, a rate of 0.535 infections per 1,000 patient-days was reported. Sixty-five cases of alcohol-based gel and 33,000 gowns were used per quarter. By 2007, the number of MRSA-related HAIs had decreased to 0.408 infections per 1,000 patient-days. In the first quarter of fiscal year 2008, the rate decreased by 27%, or 0.39 infections per 1,000 patient-days (2008 data not reflected in Figure 25). Alcohol-based gel use had increased to 125 cases, and 80,000 gowns were used per quarter.

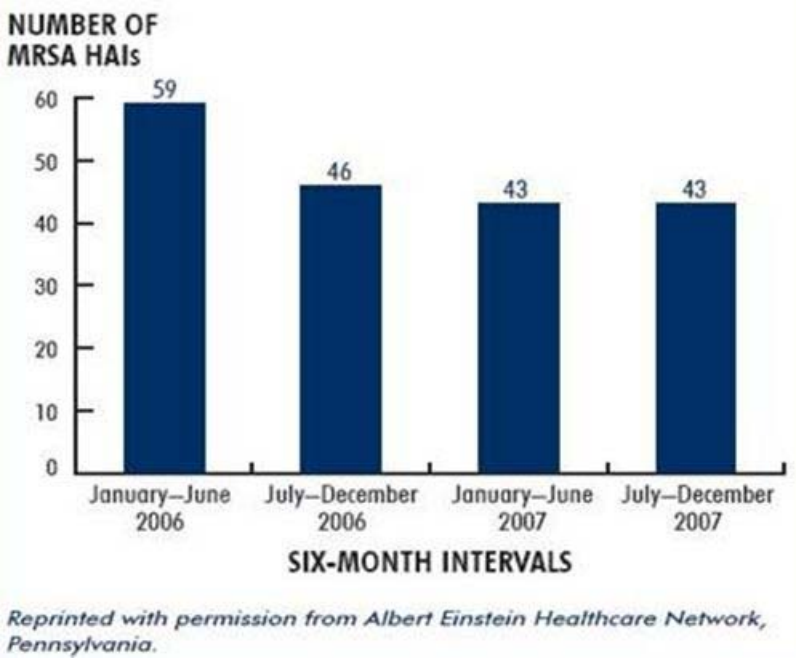


Figure 25: AEHN MRSA Healthcare-Associated Infections, 2006 through 2007

The full article details the preventive strategies used by both VAPHS and AEHS. Among them are:

- MRSA surveillance cultures were obtained. Nares swabbing was conducted on every patient on admission, discharge, or transfer, followed by notification to the unit staff in a timely fashion of positive results.
- Prompt isolation precautions were instituted for staff and visitors. Contact precautions were initiated for colonized and infected patients.
- Weekly MRSA briefings were conducted, which included the executive team, unit staff (e.g., nursing environment management), and infection prevention and control, to share the unit's successes and to identify resources and barriers needing administrative intervention.

- Aggressive hand hygiene protocols before and after patient contact were instituted. A hospital wide education campaign on hand hygiene was developed for the benefit of staff and visitors. Posters were visibly placed on each unit.
- Barriers to hand hygiene were removed. Alcohol handrub dispensers were placed at the entry/exit of patient rooms and other staff-identified locations.

Successful Reduction of Ventilator-Associated Pneumonia

Volume 6, Number 2—June 2009

Ventilator-associated pneumonia (VAP) is defined as healthcare-associated pneumonia in a patient who is on mechanical ventilatory support (by endotracheal tube or tracheostomy) for more than 48 hours. Patients at high risk for VAP include those who have chronic obstructive pulmonary disease, burns, neurosurgical conditions, acute respiratory distress syndrome, and witnessed aspiration; those who are reintubated; and those who receive paralytic agents or enteral nutrition. A prospective study over 22 months in a 500-bed community nonteaching hospital showed that 15% of mechanically ventilated patients developed VAP. Approximately 34% of patients who received mechanical ventilation died during hospitalization.

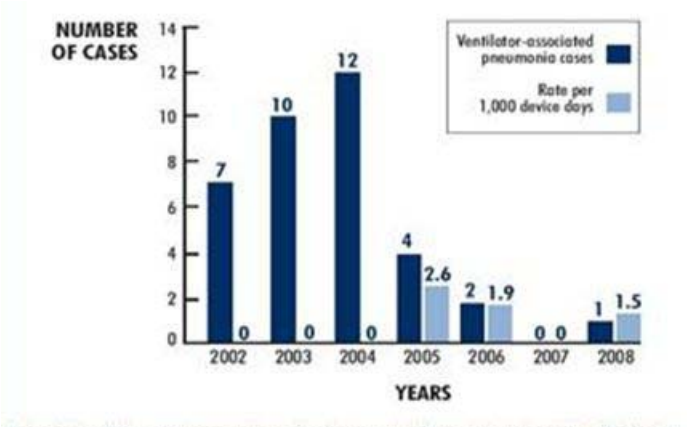
The Institute for Healthcare Improvement's (IHI) 5 Million Lives Campaign involved a nationwide effort to reduce mortality and morbidity associated with hospital care by recruiting healthcare institutions to implement "bundles" of evidence-based practices, including one bundle associated with ventilator care. Components of the ventilator bundle include the following:

- Elevation of the head of the bed (HOB) between 30 and 45 degrees
- Daily "sedation vacation" (i.e., lightening or weaning of sedation for the purpose of allowing patients to assist themselves to breathe and hence be ready for extubation as soon as possible)
- Daily assessment for readiness to extubate
- Peptic ulcer disease (PUD) prophylaxis
- Deep vein thrombosis (DVT) prophylaxis

This article profiled two hospitals' success stories: Roxborough Memorial Hospital (RMH), a 137-bed community teaching hospital, and St. Christopher's Hospital for Children, a 189-bed pediatric teaching hospital, both located in Philadelphia.

In RMH, during 2003, the 10-bed combined medical-surgical ICU identified 10 cases of VAP, and in 2004, the number rose to 12. Internal rate calculation and collection strongly suggested a problem with a rising number of VAP infections. In 2005, the first year for which device-days were collected, there were four cases, for a rate of 2.6 cases per 1,000 device-days. While the absolute numbers were small, a single VAP has the potential to significantly affect patient morbidity and cost of care. In January 2005, the ventilator bundle was introduced to the ICU.

In 2006, two VAP cases were documented, for a rate of 1.9 per 1,000 device-days. (see Figure 26) From November 2006 through June 2008, there were zero cases of VAP. In July 2008, an intubated patient who was on a sedation vacation extubated himself and caused an aspiration pneumonia. This incident resulted in one case of VAP for 2008. Nursing compliance with all aspects of the ventilator bundle was documented with marked improvement. These results demonstrate the value of the ventilator bundle strategy as well as the dramatic effect of a collaborative, multidisciplinary performance improvement process on patient care.



Adapted with permission from Roxborough Memorial Hospital, Philadelphia, Pennsylvania.

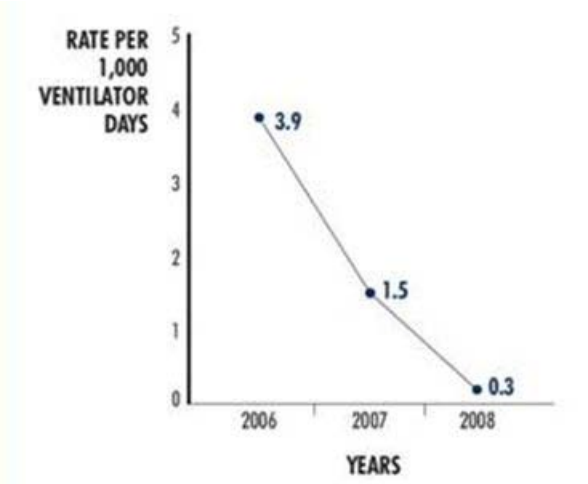
Figure 26: Roxborough Memorial Hospital: Ventilator-Associated Pneumonia Trends, 2002 through 2008

During 2006, St. Christopher's identified that the VAP rate in its neonatal ICU (NICU) was high in comparison to national NICU rates. Its baseline VAP rate was 3.9 per 1,000 ventilator-days in 2006, compared to a national range of 0.8 to 3.3, depending on birth weight. At the time that this increased rate was discovered, ventilator bundling was beginning to gain popularity in the adult population, but scientific evidence was lacking regarding its use in neonates. A specialized team of experts modified its previous ventilator bundle to include the neonatal population.

Following a literature review and networking with other pediatric hospitals, the multidisciplinary team implemented a series of revisions to an existing pediatric ventilator bundle to better serve the neonate population. Some of the changes included the following:

- Elevating HOB 15 to 30 degrees for NICU patients
- Using neonatal oral hygiene care kits for patients of more than 25 weeks' gestational age
- Implementing neonatal oral hygiene with sterile water for patients of less than 25 weeks' gestational age
- Securing endotracheal tubes using standard procedures
- Discarding all tubing and circuits from standby ventilators
- Altering the frequency of ventilator circuit, tubing, and disposable oxygen equipment changes
- Adopting a standard for depth of suctioning and suction pressures
- Implementing a patient flow sheet to document completion of bundle elements
- Following implementation of the bundle, the VAP rate decreased by 60% to 1.5 per 1,000 ventilator-days in 2007 and 0.3 in 2008. The following further summarizes the results of implementation:

As a result, the NICU VAP infection rate (number of VAP cases per 1,000 ventilator-days) decreased to 0.3 (1/3,396) in 2008 as compared with 1.5 (4/2,641) in 2007 and 3.9 (10/2,523) in 2006. (see Figure 27) Following implementation of the bundle, the NICU had zero cases of VAP between June 2007 and December 2008. NICU hand hygiene compliance, a bundle component, continued to increase after implementation of the revised ventilator bundle. NICU staffing ratios increased from 13.5 hours per patient-day in 2006 to 15 in 2007 and remained at 15 hours in 2008.



Reprinted with permission from St. Christopher's Hospital for Children, Philadelphia, Pennsylvania.

Figure 27: St. Christopher's Hospital for Children: Neonatal Intensive Care Unit Ventilator-Associated Pneumonia Rates, 2006 through 2008

Barriers to Urinary Catheter Insertion and Management Practices

Volume 6, Number 3—September 2009

Despite evidence that catheter-associated urinary tract infections (CAUTIs) and accompanying adverse outcomes can often be prevented, these infections remain among the most predominant healthcare-acquired infections in the United States. Between 12% and 25% of all hospitalized patients are catheterized during their hospital stay, and as many as 80% of all hospital-acquired urinary tract infections can be attributed to indwelling urinary catheters.

In May 2009, hospital infection preventionists (IPs) across Pennsylvania participated in a detailed survey of implementation of urinary catheter insertion and management practices. The survey was designed to measure the level of adoption of practices and tools useful to overcome obstacles to uniform implementation of CAUTI prevention practices. The majority of IPs indicated that their hospitals have fully implemented the requirement that a Foley catheter securement device be used on all patients, have a CAUTI prevention program in place with a designated physician champion, have a written plan that is communicated to clinical staff, and have adopted criteria for Foley catheter use.

About 40% of the IPs indicated that their hospitals have fully implemented assessment of annual competency for clinical staff on CAUTI prevention practices and use of silver-coated Foley catheters on all catheterized patients. Forty-five percent of the IPs indicated that their hospitals have formally discussed and considered a hospital policy on standing orders allowing nurses to discontinue or remove catheters that no longer meet criteria.

Prevention practices that the majority of participating hospitals have not implemented include changing of chronic Foley catheters on admission, a hospital policy to prohibit catheter insertion if criteria are not met, and automatic reminders to nursing for routine maintenance activities, and use of a catheter-insertion checklist. IPs from these hospitals also indicated that there was no activity to implement the following practices: incorporate catheter criteria into the physician's order form, provide written Foley catheter education materials for patients, require physicians to document catheter necessity on a daily basis, and periodically educate physicians about CAUTI prevention strategies. Responses on implementation of a monitoring system for documentation of Foley criteria on physician orders are spread across the categories of fully implemented, formally discussed but not yet implemented, and no activity to implement this item.

The Authority polled attendees of its June 2009 Webinar "Getting Past the Policy: Overcoming Barriers to CAUTI Prevention Practices" about the most significant barriers to implementation of CAUTI prevention practices (see Figure 28). Poll results indicated that the predominant barriers among the attendees are lack of accountability by members of the healthcare team for appropriate and safe practice and active resistance to prevention strategy implementation from staff and/or physicians.

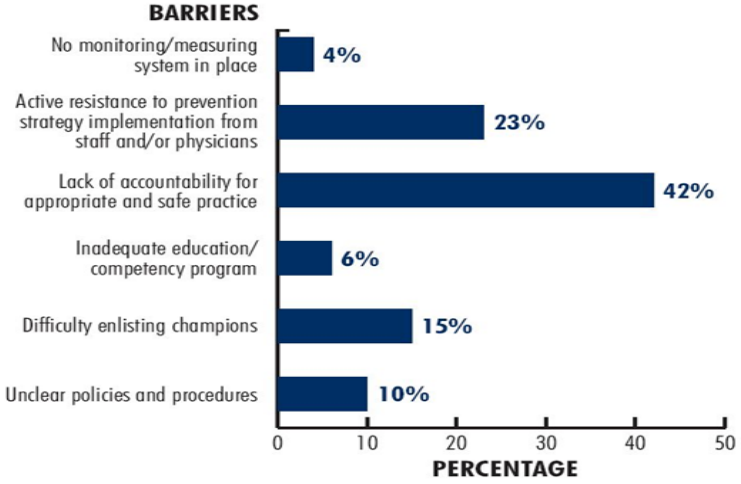


Figure 28. Barriers to CAUTI Prevention Practices

Several evidence-based guidelines summarize the most up-to-date, significant prevention and implementation strategies and provide a road map for development of institutional policy and practices to address CAUTIs:

- The ***Compendium of Strategies to Prevent Catheter-Associated Urinary Tract Infections in Acute Care Hospitals*** which summarizes specific expert implementation and monitoring methods and addresses accountability as well as detailed process and outcome measures.

- The ***Guide to the Elimination of Cather-Associated Urinary Tract Infections (CAUTIs*)** published by the Association for Professionals in Infection Control, outlines evidence-based practice guidance to CAUTI prevention in acute and long-term care facilities, including antimicrobial stewardship, surveillance and data dissemination, as well as how to perform a CAUTI risk assessment.
- **The *Getting Started Kit: Prevent Catheter-Associated Urinary Tract Infections: How-to Guide*** from the Institute for Healthcare Improvement focuses on four components of patient care recommended for all patients and outlines specific methods to translate research into practice change at the bedside.
- ***Guideline for Prevention of Catheter-Associated Urinary Tract Infections 2008*** emphasizes specific recommendations for all aspects of CAUTI prevention and implementation initiatives, updates surveillance definitions, and lists clear indications for Foley catheter use.

Practice-Proven Strategies to Increase Influenza and Pneumonia Vaccination Rates in Long-Term Care

Volume 6, Number 4—December 2009

Influenza and pneumonia remain a significant cause of mortality from vaccine preventable diseases, with 90% of these deaths occurring in adults 65 and over, including those residing in long-term care (LTC) facilities. Improving the delivery of currently available vaccines decreases exacerbation of underlying disease and should be a priority to prevent hospitalizations and deaths in this population.

Despite the Advisory Committee for Immunization Practices recommendations for adult immunization, recent national studies show that on average only 42% to 66% of LTC residents received these vaccinations. Healthcare workers self-report a low 45% acceptance of influenza immunizations, and unvaccinated healthcare workers risk spreading influenza. Immunization is the primary method of preventing invasive pneumococcal diseases as well as influenza and its more severe complications. Despite documented vaccine safety and numerous regulatory efforts, the rate of vaccination among high risk institutionalized elderly has not substantially improved.

Risk Reduction Methods

Methods to increase vaccine availability and acceptance outlined in the article include:

-Standing orders for these vaccines which no longer require a physician's signature
-Encouraging belief in the importance and effectiveness of vaccines
-Development of institutional policies related to assessment, consent, and orders
-Identification of a staff vaccine advocate.

Concentration on effective practices rather than basic information about the vaccine, a resident management system prompting staff to assess vaccination status and order vaccines and knowledge of financial reimbursements are also effective strategies.

Vaccination program success can be enhanced and sustained by applying facility-specific strategies such as standardized documentation, standing orders, provider reminders, vaccine champions and replacing complicated written consent procedures with informed consent via use of the Centers for Disease Control and Prevention (CDC) Vaccine Information Statement available at www.cdc.gov.

Nursing homes can extend the benefits of vaccinations to all recommended residents and improve their vaccination rates by approaching the resident immunization program as a regulatory and patient safety priority. (see Figure 29)

The Agency for Healthcare Research and Quality and the CDC offer immunization toolkits detailing development and implementation of an LTC immunization program, sample guidelines, education brochures, campaign materials, and customizable standing order forms. (see Figure 30) The American Medical Directors Association (AMDA), published the *Immunizations in the Long Term Care Setting Tool Kit* in 2006 offering guidance, information and tools to enable medical directors and other practitioners to take the lead in initiating and implementing activities to address and prevent influenza and pneumococcal disease in LTC facilities. The document is available at http://www.amda.com.

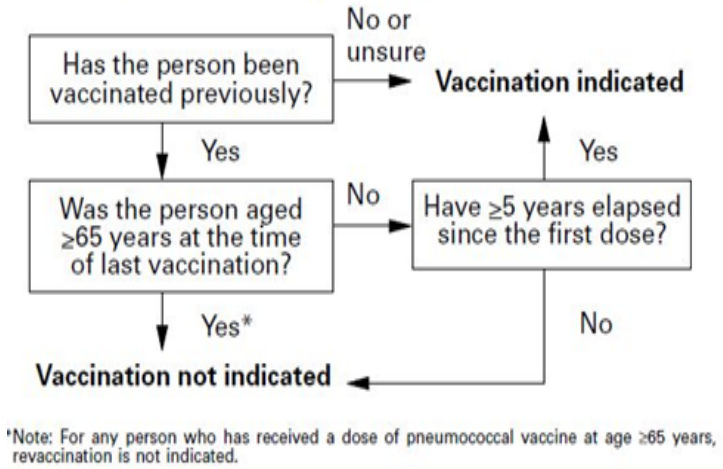
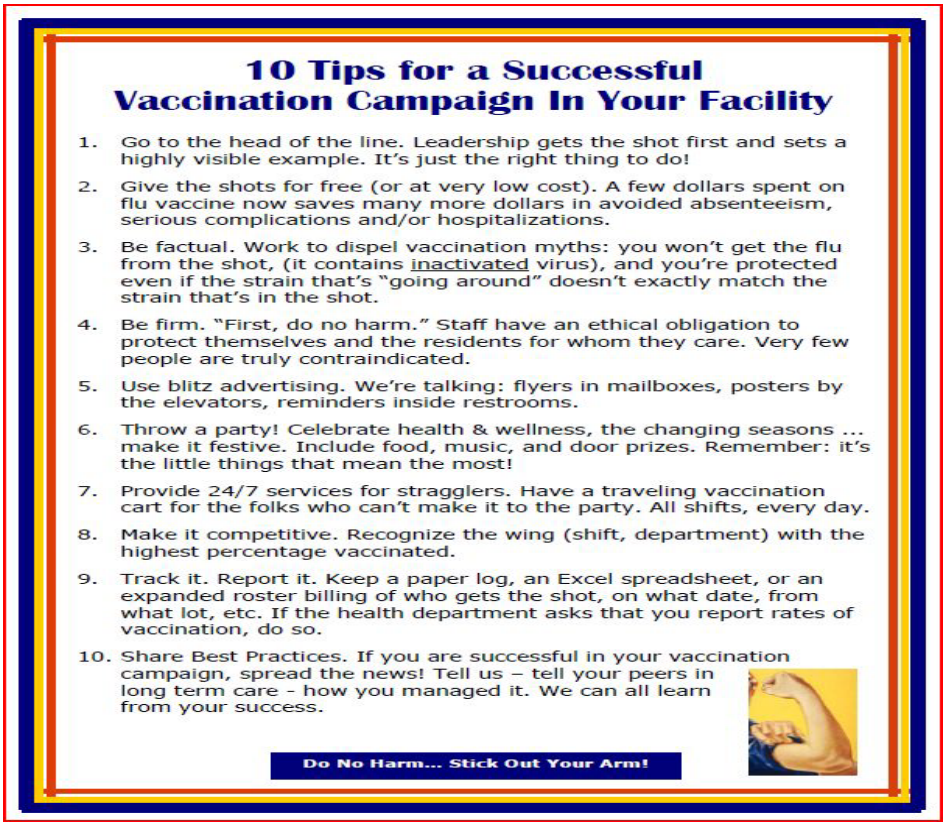


Figure 29: Algorithm for Pneumococcal Polysaccharide vaccination of People ≥ 65 Years



10 Tips for a Successful Vaccination Campaign In Your Facility

1. Go to the head of the line. Leadership gets the shot first and sets a highly visible example. It's just the right thing to do!
2. Give the shots for free (or at very low cost). A few dollars spent on flu vaccine now saves many more dollars in avoided absenteeism, serious complications and/or hospitalizations.
3. Be factual. Work to dispel vaccination myths: you won't get the flu from the shot, (it contains inactivated virus), and you're protected even if the strain that's "going around" doesn't exactly match the strain that's in the shot.
4. Be firm. "First, do no harm." Staff have an ethical obligation to protect themselves and the residents for whom they care. Very few people are truly contraindicated.
5. Use blitz advertising. We're talking: flyers in mailboxes, posters by the elevators, reminders inside restrooms.
6. Throw a party! Celebrate health & wellness, the changing seasons ... make it festive. Include food, music, and door prizes. Remember: it's the little things that mean the most!
7. Provide 24/7 services for stragglers. Have a traveling vaccination cart for the folks who can't make it to the party. All shifts, every day.
8. Make it competitive. Recognize the wing (shift, department) with the highest percentage vaccinated.
9. Track it. Report it. Keep a paper log, an Excel spreadsheet, or an expanded roster billing of who gets the shot, on what date, from what lot, etc. If the health department asks that you report rates of vaccination, do so.
10. Share Best Practices. If you are successful in your vaccination campaign, spread the news! Tell us – tell your peers in long term care - how you managed it. We can all learn from your success.

Do No Harm... Stick Out Your Arm!

Figure 30: Tips for Vaccination Program Success in Long-Term Care).

Ambulatory Surgery Facilities (ASFs)

ASFs are required by Act 52 of 2007 to develop and implement an infection control plan identical to the hospitals and nursing homes. However, Act 52 did not explicitly mandate that ASFs must report infections. The Authority's interpretation of MCare is that the obligation for all MCare-covered facilities to report infections pre-dates Act 52 and existed under the original Act 13 of 2002.

During the first quarter of 2009, the Authority's Patient Safety Liaison for the Northeastern region identified that ASFs in that area were in need of an educational program related to MRSA. The Authority's Infection Prevention Analyst conducted a 3-hour workshop in April 2009 on MRSA as it relates to ambulatory surgery. This workshop was repeated again in the Central and Northwestern regions in September 2009. Representatives from 61 facilities (86 clinicians) attended from the three regions. The Southeastern and Southwestern regions will make the MRSA program available in 2010.

HAI Advisory Panel

During 2009, the HAI Advisory Panel, appointed in 2007 by the Authority, provided input for rate setting and benchmarking of hospital data. In addition, the long-term care subgroup provided input for the nursing home reporting program, and conference calls were held with the panel during the year. A webinar was held during the first quarter of 2009 by the Department of Health in conjunction with the

Authority to discuss methods for determination of HAI rates and benchmarks with the panel. During the second quarter the panel was updated on HAI accomplishments. During the last quarter, a webinar was conducted by the Department of Health, delivering the first set of data and methods used to calculate selected HAI rates for hospitals.

HAI Educational Programs

Webinars

The following webinars were conducted, recorded and posted to the Authority web site during 2009:

- Pennsylvania Nursing Home Reporting of Healthcare-Associated Infections under Act 52 of 2007
- Getting Past the Policy: Overcoming Barriers to Catheter Associated Urinary Tract (CAUTI) Prevention Practices. "Best practice" educational tools were provided as separate attachments for this Webinar
- Catheter Associated Urinary Tract CAUTI Prevention in Nursing home/Long-term care residents. Best practice tools were provided as separate attachments for this webinar.
- Beyond the Bundle – Reduce the risk of Central Line Associated Bloodstream Infection (CLABSI). Best practice tools were provided within the context of the presentation for this webinar.

On-Site Educational Presentations

The Authority conducted a total of 16 on-site educational presentations consisting of nine nursing home related programs, four hospital/general healthcare programs and three ambulatory surgery facility (ASF) related programs.

Comprehensive Unit-Based Safety Program (CUSP) Initiative

During 2009**,** Pennsylvania was selected as one of 10 states to participate in a two-year project funded through the Agency for Healthcare Research and Quality (AHRQ). This national initiative to reduce central line-associated bloodstream infections (CLABSI) in ICUs represents a partnership established between the American Hospital Association's Health Research and Educational Trust (HRET), the Johns Hopkins University Quality & Safety Research Group (JHU), and the Michigan Health & Hospital Association's Keystone Center for Patient Safety & Quality .

AHRQ's goals for this collaborative is to nationally replicate the 2003 success of the Michigan Keystone CLABSI Reduction in ICU project. In this project, Dr. Peter Pronovost from the JHU worked in collaboration with more than 108 Michigan ICUs to reduce the incidence of CLABSI by focusing on the implementation of evidence-based interventions aimed at improving team work and communication between clinicians by enhancing the culture of safety and improving staff satisfaction.

Each participating ICU team will:

- Learn how to apply the CUSP and CLABSI reduction tools.
- Receive tools for measuring CLABSI and safety culture in ICUs.
- Receive ongoing support through monthly calls.
- Have access to expert faculty for conference calls and face-to-face meetings.
- Receive a detailed ICU Operations Manual.

The Authority is providing support to the initiative through analytical support and communication through the PSL program.

Help Desk Inquiries

During 2009, the help desk received and/or made 1,367 telephone calls and 1,259 received or sent e-mails. This volume was mainly due to the technical and clinical inquiries from nursing homes. NHSN hospital-related inquiries were also addressed. A nursing home reporting requirements Frequently Answered Questions (FAQ) document was developed consisting of over 100 questions and answers. This FAQ document will be updated in 2010.

2010 Plan For Infection Prevention Program

The Authority's 2010 goals include strategies to assist hospitals and nursing homes with meeting the requirements of Act 52, namely to decrease and eventually eliminate preventable HAIs. Our upcoming strategies include:

- Conduct a first look at nursing home data webinar – first quarter 2010
- Implement an automated alert tracker system with best practice guidance for nursing homes to notify them when unusual trends are detected
- Conduct ongoing in-depth data analysis
- Identify high and low performing facilities
- Visits to hospitals and nursing homes to identify best practices in high performing facilities and lack of practices in low performing facilities. We plan to conduct these visits by doing observations, reviewing records and utilizing additional methods that are being developed at the time of this report.
- Develop best practice tools based on facility visits
- Develop educational programs including webinars based on facility visits
- Develop *Pennsylvania Patient Safety Advisory* articles based on findings

(Page left intentionally blank)

EDUCATION, OUTREACH AND COLLABORATION

THE PATIENT SAFETY LIAISON PROGRAM – ENGAGING IN CONVERSATION

Fulfilling a critical component of its mission, the Authority hired a director of Educational Programs in 2008 to oversee its educational initiatives including the Patient Safety Liaison (PSL) program. At the request of Patient Safety Officers for "more of a presence" from the Authority, the Patient Safety Liaison program was developed. The PSL acts as a non-regulatory consultant for Pennsylvania's healthcare facilities to ensure they are aware of the numerous educational resources available to them from the Authority. 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 Patient Safety Liaison program began in August 2008 in northeastern Pennsylvania and has been completed at the time this annual report went to press with two recent hires in the Southeast region. A total of six liaisons are located throughout Pennsylvania. 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 Southeast. The liaisons oversee a total of 529 facilities in Pennsylvania including hospitals, birthing centers, ambulatory surgery facilities (ASF) and certain abortion facilities. The PSL's have received overwhelming support and enthusiasm for the program from Pennsylvania's healthcare facilities since it began.

Several educational initiatives have been developed by the Authority due to the PSL program. Topics discussed at the PSL visits are varied but consistent with themes related to patient safety. These conversations include identified opportunities for improvement, preventive strategies being implemented, successes, barriers and sharing of information. The PSL also takes the opportunity to share with the Patient Safety Officers resources available to them through the Authority. These resources include items such as educational toolkits, *Pennsylvania Patient Safety Advisory* articles, patient safety information from other entities, consumer tips sheets, brochures and availability of continuing education credits in patient safety. The PSL also solicits feedback from its Patient Safety Officers to understand what they need from the Authority to improve patient safety in their specific facility.

The Authority developed a basic patient safety program called the "Patient Safety Officer Basic Foundation Course I" to discuss the specifics behind patient safety and Act 13 of 2002. Hospital staff attending the program included CEOs, facility leadership, management staff and PSOs from hospitals, birthing centers, ambulatory surgical facilities and certain abortion facilities. Feedback was very positive and there were numerous requests for additional educational sessions. Another course called "Beyond the Basics" was added to elaborate on issues important for improving patient safety such as disclosure, root cause analysis and teamwork. Topics of other educational programs developed from PSO feedback include MRSA (methicillin resistant *Staphyoloccus aureus*), patient safety leadership and insights, human factors, highly reliable organizations (HRO), Just Culture, crew management and proactive risk reduction strategies (FMEA). (Figure 31) Collectively, we have educated well over 200 PSOs in these educational programs.

These educational programs will be offered repeatedly throughout the year. New educational programs will be developed as the program continues to grow. A complete list and description of the educational programs offered to date is below.

Region	PSO Basics Curriculum		Beyond Basics		MRSA (ASF Only)		Other*	
	Offerings	Attendance	Offerings	Attendance	Offerings	Attendance	Offerings	Attendance
Northeast	1	11	0	0	1	33	8	N/A
Northwest	1	39	0	0	1	18	2	N/A
South Central	1	42	1	42	1	35	3	N/A
Southwest	PSL not in place until late December 2009							
Southeast A	PSL not in place until February 2010							
Southeast B	PSL not in place							

***Other Presentations**

Who We Are	Just Culture
Patient Safety Committee	Event Investigation
Living Wills/DNR	Theory U
RCA	Near Miss Reporting
PSL Programs	Human Factors
So We Have a Problem	Reliable Design
Buidling a Case	Gracious Space

Figure 31. Educational Programs

PSL Mission: Educating Healthcare Facilities by Collaborating

Throughout 2009, 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 that submit reports to the Authority. PSLs in the southwest, northwest, south central, northeast and southeast 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.

Along with reaching out to healthcare facilities on an individual basis, another goal of the PSL program is to facilitate collaboration between facilities and the Authority staff to develop guidance for reporting Serious Events and Incidents, preventing medication errors and wrong-site surgery.

When facilities have a problem, through the PSL program 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, medication safety, monitoring or checklist tools. To enhance this type of communication, the Authority is developing an electronic forum called the Patient Safety Knowledge Exchange (PassKey). Details about PassKey will be given later in this section of the annual report.

A Complete PSL Program

The PSL program began in August 2008 with its first PSL hired in the Northeast region. The director of Educational Programs was hired in October of 2008. In May 2009, the Northwest PSL was hired, followed by the South Central PSL in June. In December 2009, the Southwest PSL was hired and in the first quarter of 2010, the Authority completed its PSL program by hiring two PSLs for the Southeast region. (see Figure 32) Two PSLs were hired in Western Pennsylvania and Southeast regions due to the large number of healthcare facilities in Pittsburgh and Philadelphia. Each PSL consults with approximately 90 facilities. Figure 32 provides more detailed information about the PSLs and the regions they represent.

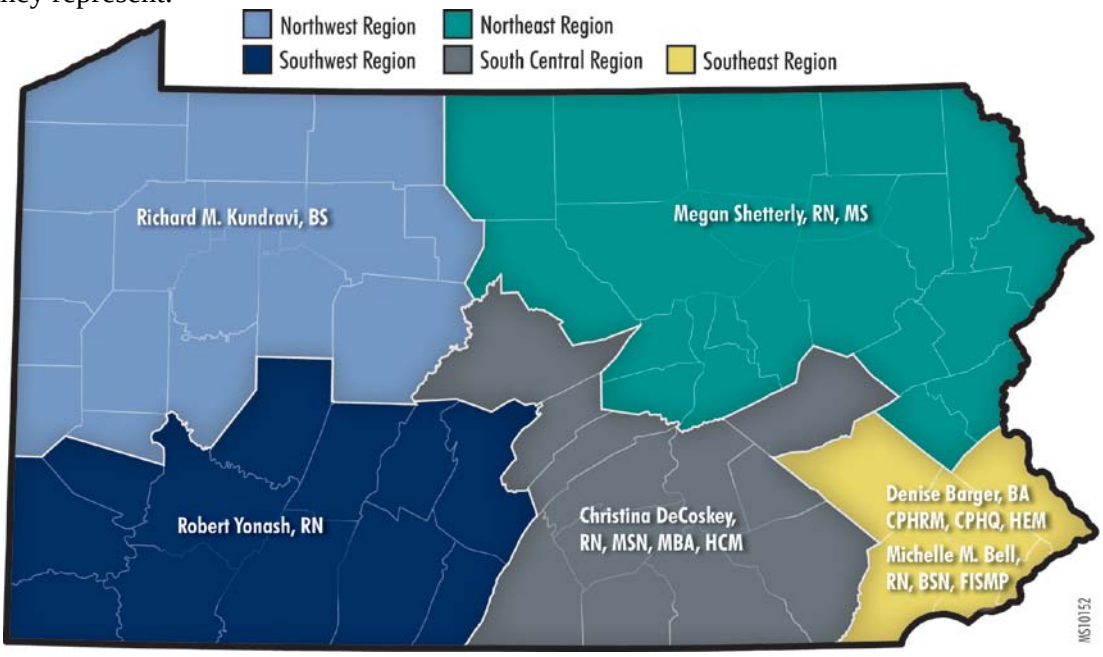


Figure 32. Patient Safety Liaison Regional Map

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

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

The Authority and PSLs must educate and bridge the gaps that exist between healthcare facilities and their staff, healthcare facilities within their regions and healthcare facilities across the state by sharing information they've learned from *Pennsylvania Patient Safety Advisories* and networking with each other. With the PSL program complete and the PassKey Web site scheduled to go live in June 2010, the gaps should narrow because of the increased communication provided by these two programs.

Successes for the PSL Program

- The PSL program has fostered an increased awareness for the need to be proactive by instituting preventative strategies to reduce the likelihood of events as well as to report and learn from those unfortunate adverse events in order to generate a culture of safety. The PSLs have assisted facilities in looking at the redesign of systems and processes in order to enhance their patient safety programs.

- The PSL's have been able to foster the development of a culture of safety by emphasizing the benefits of the resources available through the Patient Safety Authority's Web site such as the *Pennsylvania Patient Safety Advisory* and *Supplementary Advisories*, consumer tips and educational tool kits. Specific toolkit materials such as the wrong-site surgery error analysis form and the wrong-site surgery prevention monitoring tool are now being used by facilities to create safer practices.

- The PSL's have encouraged facilities to include patients as active participants on their healthcare team distributing consumer tips on a broad range of topics such as, but not limited to, fall prevention, medication safety, hand washing and preventing wrong-site surgery in order to further advance the PSL Program mission of reducing/eliminating medical errors through communication, education and collaboration.

- Patient Safety Officers have utilized the information provided by PSLs to enhance their overall patient safety programs. As an example, several ambulatory surgical centers identified the need to address fall prevention during post procedure care. However, they did not have a formal fall prevention program in place that identified the "at risk" patient, nor the measures outlined to decrease the chance of such an event. But, after reviewing these fall events and providing necessary resources (sample outpatient fall prevention protocols), new strategies were implemented within these ASFs and fall reduction has been noted.

- PSLs recognize that patient safety officers have competing priorities and that they may not have the means and/or ability to access certain resources in a timely fashion. When product recalls occur, facilities are usually seeking out alternative products that will best meet their needs. However, an event occurred in 2009 whereby an alternative product (an infection prevention product for allergy ridden patients) was difficult to find. Through electronic messaging, requests for those with knowledge of an alternate product were sent out to a list serve of PSOs in Pennsylvania. Interestingly, others responded back that they were in need of the same information. In the end, there was one respondent who assisted the group by not only identifying the product, but providing the complete product information whereby each facility had additional information as they moved forward with alternative products. Feedback from those requesting the information was very positive and appreciative.

- Several times in the past year facilities have openly shared their forms, tools, protocols, etc. One such event that impacted many was the sharing of medication reconciliation practices in ambulatory surgical centers. This practice is somewhat new to this setting. In an effort to institute the best practice, facilities have worked with PSLs to find helpful resources and sample forms that are being utilized by other Pennsylvania medical facilities. Several ASFs

have developed medication reconciliation practices and instituted forms after reviewing others' sample policies and forms that were shared via the PSL.

- Another example of the PSL's assistance resulting in changed practice was with a facility that had experienced wrong-site surgery. The PSL visited with the facility and made numerous educational tools available to them. The facility reviewed the provided tools and made process and policy changes due to the information provided to them from the PSL.

The PSL's daily interaction with facilities results in continuous process and system changes. Listed below are a few of those changes that have occurred because of conversations between the PSL and the healthcare facility PSO. They include but are not limited to:

- Communication of information regarding alternative OR Prep Solutions
- Standardizing color-coded wrist banding
- Enhancement of reporting awareness (especially "near miss")
- Adoption of recommended changes to fall prevention programs
- Enhancement of overall patient safety program
- Development of medication reconciliation forms via shared examples
- Advertisement of consumer tips to encourage patient involvement
- Incorporation of *Pennsylvania Patient Safety Advisory* articles in staff newsletters
- Utilization of Authority educational materials (e.g. FMEA) post educational sessions
- Implementation of (World Health Organization) WHO surgery checklist
- Availability of continuing education credits through *Pennsylvania Patient Safety Advisories*
- Implementation of infection reduction strategies
- Clarification of MCare (Act 13 of 2002) reporting requirements
- Utilization of the Pennsylvania Patient Safety Authority educational tool kits
- Implementation of medication dosing guidelines for special needs populations
- Participation in analysis and prevention strategies for wrong-site surgery events

PSL Program Obstacle

While the PSL program has been well received by the majority of hospitals, ambulatory surgical facilities, birthing centers and certain abortion facilities, there are still some facilities that have not responded to calls from PSLs for a first meeting. Initial contact with a PSO begins with a phone call to schedule a date for a face-to-face meeting. If a PSO cannot be reached after three attempts by phone, the PSL sends an introductory letter and other educational materials to the facility. To date, seven facilities have yet to respond to their PSL for a first visit. The Authority recognizes that some facilities may be apprehensive about the PSL program, but in time hopefully these non-responsive facilities will understand the benefits of having a helping hand for their facility in improving patient safety. For these facilities, it may help to include others in the first meeting to alleviate any anxiety in regard to the PSLs role and intentions for meeting. For example, at some of the initial meetings, some PSOs request for additional staff to be present e.g. the facility CEO or legal counsel. These meetings have helped the PSO and other facility staff understand the PSLs role better which alleviated any concerns regarding the PSLs intentions. The Authority will continue to reach out to these non-responsive facilities discussions in regard to obstacles and goals facilities would like to overcome and attain in patient safety.

ADDITIONAL EDUCATIONAL PROGRAMS AND COLLABORATIVES

The primary focus of the Patient Safety Liaison program is to engage Patient Safety Officers in conversation. These conversations begin with the initial visit between the PSL and the PSO. However, throughout 2009, these conversations have generated other educational presentations, more consumer related information, more collaborations and an overall better communication among healthcare facilities and the Authority, healthcare facilities and their staffs, healthcare facilities regionally and statewide. The regional PSL model gives the Authority and healthcare facilities opportunities to learn more from the data submitted through the Pennsylvania Patient Safety Reporting System (PA-PSRS) and from each other.

The Authority is engaged in numerous activities educational programs and collaboratives. Some are based on PSL discussions with facilities while others originate from the Authority board, data analysis or requests of partners. A description of many of these programs and collaboratives are as follows:

PassKey (Patient Safety Knowledge Exchange) - Keeping the Conversation Going

The Patient Safety Knowledge Exchange (PassKey) is an initiative that will provide Patient Safety Officers in Pennsylvania with a confidential electronic forum to share information, ideas and solutions. The Authority developed the PassKey Development Council which is made up of PSOs from across the state to help develop the program. The council has tested the new web site and provided valuable feedback to make the site easy to use. Information on the site will be 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 will also allow facilities to ask questions and search for answers that may already be provided on the site. Specifically, the site includes:

- **PassKey Home Page**
  This page gives a calendar of events for the Patient Safety Liaisons so PSOs can know what other regions are doing to improve patient safety across the state. Contact information for each PSL is also provided along with tabs that direct users to PSL Region information, the Knowledge Center, Collaboratives, search and site map tabs.

- **Knowledge Center Page**
  The knowledge center page contains a knowledge library where PSOs can share policies, procedures, failure mode and effects analysis (FMEA), and other valuable information. Also, located on this page is an area where PSOs can discuss patient safety topics with their peers.

- **PSL Region Page**
  This page explains the PSL program and shows a map of each PSL region. Contact information for each PSL is listed here as well.

- **Collaboratives Page**
  This page gives a calendar list of the collaboratives occurring throughout the PSL regions. This information will keep PSOs in the loop in regard to the latest research and preventative strategies being done by the Authority in partnership with healthcare facilities throughout Pennsylvania.

- **Site Map Page**
  This page at-a-glance gives the sites available in PassKey. The sites are hyperlinks so it allows easy access to each page with a simple click.

Below are some comments from Patient Safety Officers who have had an opportunity to view the new PassKey site.

"I'm really excited about this new resource available to Patient Safety Officers in PA. So much time and effort has gone into its development to ensure that it is useful and user friendly. It is a wonderful forum to share best practices, work on mutual issues, and ask opinions of other professionals. It will surely help take patient safety to another level in PA."

Lee Patrick, RN, MBA, CPHRM, Patient Safety Officer, Good Shepherd

---

"The PassKey project has the potential to serve Pennsylvania Patient Safety Officers and their representatives as a valuable networking resource promoting patient safety within the commonwealth. A recent overview of the planned site was impressive and exceeded expectations. Participating members will have a central location to share efforts already implemented within their organizations as well as "discuss" relevant topics in a colloquial setting."

Gene Mushak, RN, BSN, Patient Safety Officer, Allied Services Rehabilitation Hospital

---

Mislabeled Specimen Collaborative

The first PSL region (Northeast) began its first collaborative in 2009. At the request from a facility in the Northeast, the region is working to eliminate mislabeled blood specimens. According to Authority data received from January 2008 through April 2009, specimen mislabeling occurred in 11,800 reports statewide. The facility in the Northeast was concerned about a near miss that occurred in their facility regarding mislabeling so they asked their PSL if the Authority would work with them on the problem. The Authority suggested having a regional collaborative so that best practices can be established and passed on to other regions within the state. Specific objectives of the collaborative include: learning how to identify opportunities for improvement associated with specimen mislabeling processes; understanding the importance of selecting an appropriate interdisciplinary team to maximize success; and recognizing a variety of practices that can help improve specimen mislabeling processes. The Authority is working with nine facilities in the northeast to strengthen and improve patient safety by decreasing or eliminating mislabeled blood specimens in individual northeast hospitals and laboratories. During the collaborative, a series of workshops and other educational resources are being used to help the participating facilities determine best practices that can be shared with other PSL regions across the state. The collaborative is expected to continue for about one year.

Wrong-Site Surgery Collaborative

The Authority has been working progressively for the last few years to reduce wrong-site surgery in Pennsylvania. In 2009, the number of wrong-site surgeries has decreased. In collaboration with the Health Care Improvement Foundation, the Authority continues to monitor the progress of the hospitals in the southeast that are working in the collaborative. The collaborative hospitals had no wrong-site surgeries for the first three quarters in 2009. In 2010, a consultation program will begin with PSLs working with facilities to analyze wrong-site surgery reports on-site. The PSLs will assist facilities in assessing their policies and procedures, measuring staff compliance, and conducting a thorough analysis of any events. Although the intent of this project was to assist facilities who have experienced or had a near miss regarding wrong-site surgery, facilities have contacted the PSLs to do observations and introduce facility leaders and care teams to the wrong-site surgery tools to proactively review their processes and prevent wrong-site surgery in the future.

Falls Collaborative

The Authority and the Healthcare Improvement Foundation (HCIF) are working together to improve fall prevention in Delaware Valley hospitals. Beginning October 1, 2008, many Southeastern Pennsylvania hospitals committed to reporting falls and falls with harm using common definitions as a basis for developing meaningful comparison reports among these organizations. The Authority produces a quarterly comparison report for those organizations that indicated agreement, commitment, and participation with this patient safety initiative. The data here is de-identified by hospital name although each organization can identify its own ranking in the region.

The measures that were used to track and to monitor progress with this patient safety initiative are:

- Falls per 1,000 patient days, and
- Falls with harm per 100,000 patient days

CUSP/CLABSI Collaborative

In 2009, the Authority began 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 to implement the comprehensive unit-based safety program (CUSP) into 10 hospitals will focus on reducing central line-associated bloodstream infections (CLABSI) in intensive care units. For this collaborative, the Authority provides data that will be used to develop further educational initiatives and prevention strategies for Pennsylvania's healthcare facilities. We also serve as an educational resource and provide educational webinars for the hospitals involved in this initiative. The Authority and HAP will be visiting these participating facilities in the upcoming months to assist in addressing successes, opportunities and barriers which they are currently experiencing. The Authority and HAP will also link facilities together for networking and shared learning throughout this collaborative.

Patient Safety Officer Basic Foundation Course I

In 2009, the Authority sponsored PSO Basic Foundation courses in the South Central and Northwest regions. This education program was created to educate PSOs on patient safety, Act 13 of 2002 and Act 52 of 2007. This program provides a historical perspective of patient safety; examines the importance of infrastructure in patient safety; applies Act 13 of 2002 and Act 52 of 2007 to the culture of safety; and recognizes the importance of communication in patient safety. The basic foundation course was designed for new PSOs or individuals in facilities that assist the PSO with reporting and patient safety initiatives. Both programs were well attended with positive feedback. In 2010, the Authority plans to hold this program in each PSL region.

Beyond the Basics Course II

In November 2009, the Authority developed the Beyond the Basics course to educate PSOs about human factors, communication, just culture, disclosure, failure modes and effects analysis (FMEA), root cause analysis (RCA), data collection and management, and teamwork. The objectives include: exploring the culture that enhances event reporting; discussing the patient safety officer's role in process change; applying tools for proactive and reactive system change; and reviewing and applying human factor principles. The course was well attended with positive feedback.

In April 2010, the program will be presented as a two-day course in the Northwest region to provide more interactive demonstrations. The first day will offer the attendees lecture materials and the second day will offer a workshop to apply the material learned the previous day.

MRSA Presentation

A request from ambulatory surgical facilities (ASF) prompted the Authority to develop and present a program that focuses on methicillin-resistant *Staphylococcus aureus (*MRSA) patients. The objectives of the course are: discussing the clinical features of MRSA; understanding the mode of transmission; learning infection prevention strategies; recognizing high risk patients; identifying surveillance measures; and reviewing general care guidelines. This program was offered in the Northeast, Northwest and South Central regions. It was well attended in all regions with positive feedback.

Patient Safety Training for Trustees

In 2009 the Authority continued to partner with the Hospital and Healthsystem Association of Pennsylvania (HAP) and the American Hospital Association (AHA) to pilot the education program for executive management and Boards of Trustees. Overall there were approximately 300 executives and trustees that attended the training sessions. In 2010 the Authority plans to review and revise the program with HAP & the American Hospital Association to meet the needs of hospitals in Pennsylvania.

(Page left intentionally blank)

THE AUTHORITY'S ANNUAL SURVEY OF PATIENT SAFETY OFFICERS

In December 2009, the Authority invited our registered primary contacts at healthcare facilities in the commonwealth to participate in an online survey. Those contacts at Nursing Homes are Infection Prevention Designees (IPDs) and Patient Safety Officers (PSOs) at facilities such as hospitals and ambulatory surgical centers. 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 Authority's web site since its redesign.
- Their use of the Patient Safety Liaisons program.

Responses were collected over a 17-day period. Of the 1,206 invitees, PSOs and IPDs from 100 hospitals (HSPs), 100 ambulatory surgery facilities (ASFs), two birthing centers (BCs), two abortion facilities (ABFs) and 364 nursing homes (NHs) responded, resulting in a 47.1% 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%), relevance (96%), readability (99%), scientific quality (100%) and educational value (100%) 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 33 breaks out the response ratings in detail.

Another line of questioning regarding the *Advisory* focused on the de-identified narrative examples used in articles. A vast majority (98%) of those who responded to the question were at least somewhat confident that the *Advisory* contains no information that could be used to identify the patient, provider, or facility. Almost all respondents (99%) thought these narrative examples were useful.

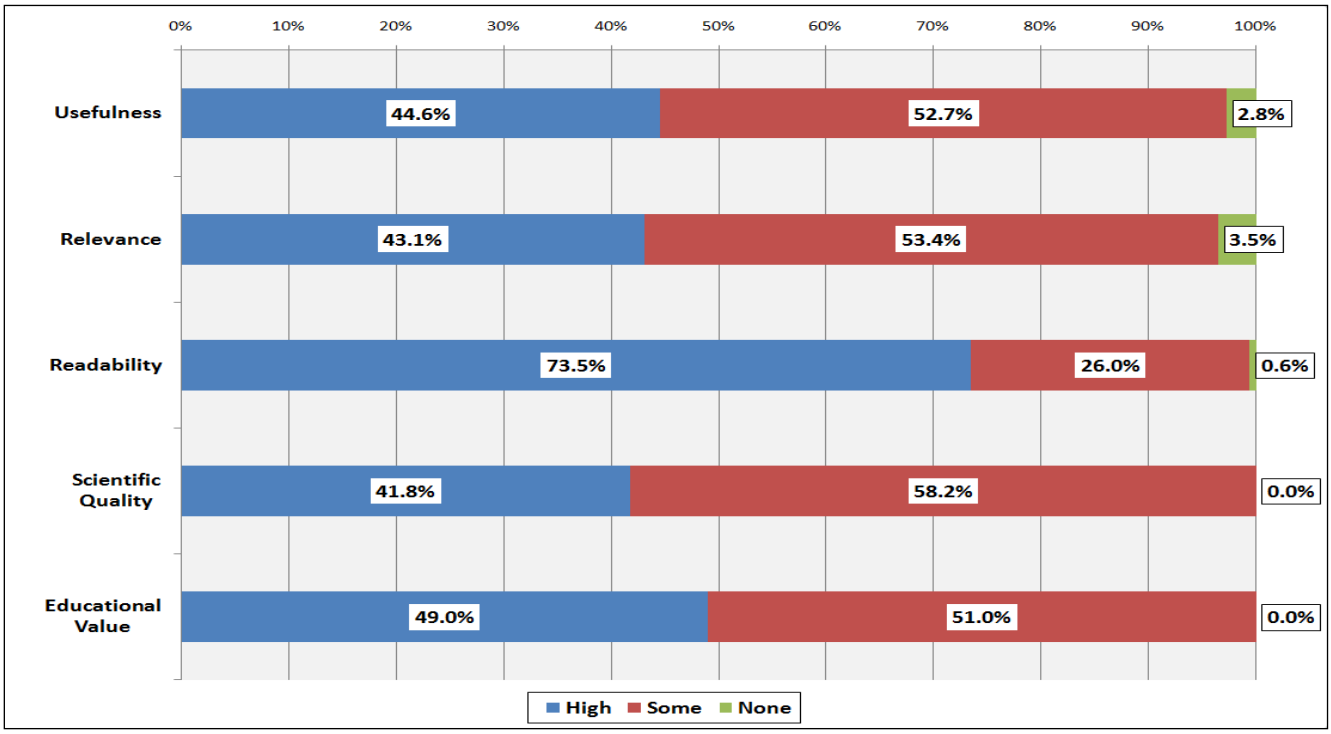


Figure 33. Responses by percentage in quality categories of the *Pennsylvania Patient Safety Advisory*.

THE PATIENT SAFETY AUTHORITY STRIVES TO EDUCATE

Among PSOs responding to the survey question, 70% report making or planning to make changes based on a *Patient Safety Advisory* article. 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 participants of the survey reported making 633 changes in their facilities as a result of specific *Advisory* articles, as seen in Figure 34.

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

- We had a pressure wound lab recently, where staff were educated on staging & measuring of wounds. The feedback was positive. (Pressure Ulcers: New Staging, Reporting, and Risk Reduction Strategies)
- Revised our surgical site marking to comply with recommendations. (Surgical Site Markers: Putting Your Mark on Patient Safety)

- Having weighing litters available in several departments and requiring an accurate patient weight for any weight based medication (Medication Errors: Significance of Accurate Patient Weights)
- Look at sleep apnea studies prior to surgery. New H&P forms developed. Review of pre-operative patients chart 72 hours prior to surgery. (Patient Screening and Assessment in Ambulatory Surgical Facilities)
- Increased hand washing, extended information to families and residents. Infection control information given throughout the facility to other departments (Successful Reduction of Healthcare-Associated MRSA Infection Rates)
- Developed and gave presentation to medical staff and other healthcare personnel on DNR orders and living wills using the *Advisory* as a reference. (Understanding Living Wills and DNR Orders)

We have numerous initiatives going on related to many of the articles listed above. We distribute the articles to our department managers. They are very helpful.

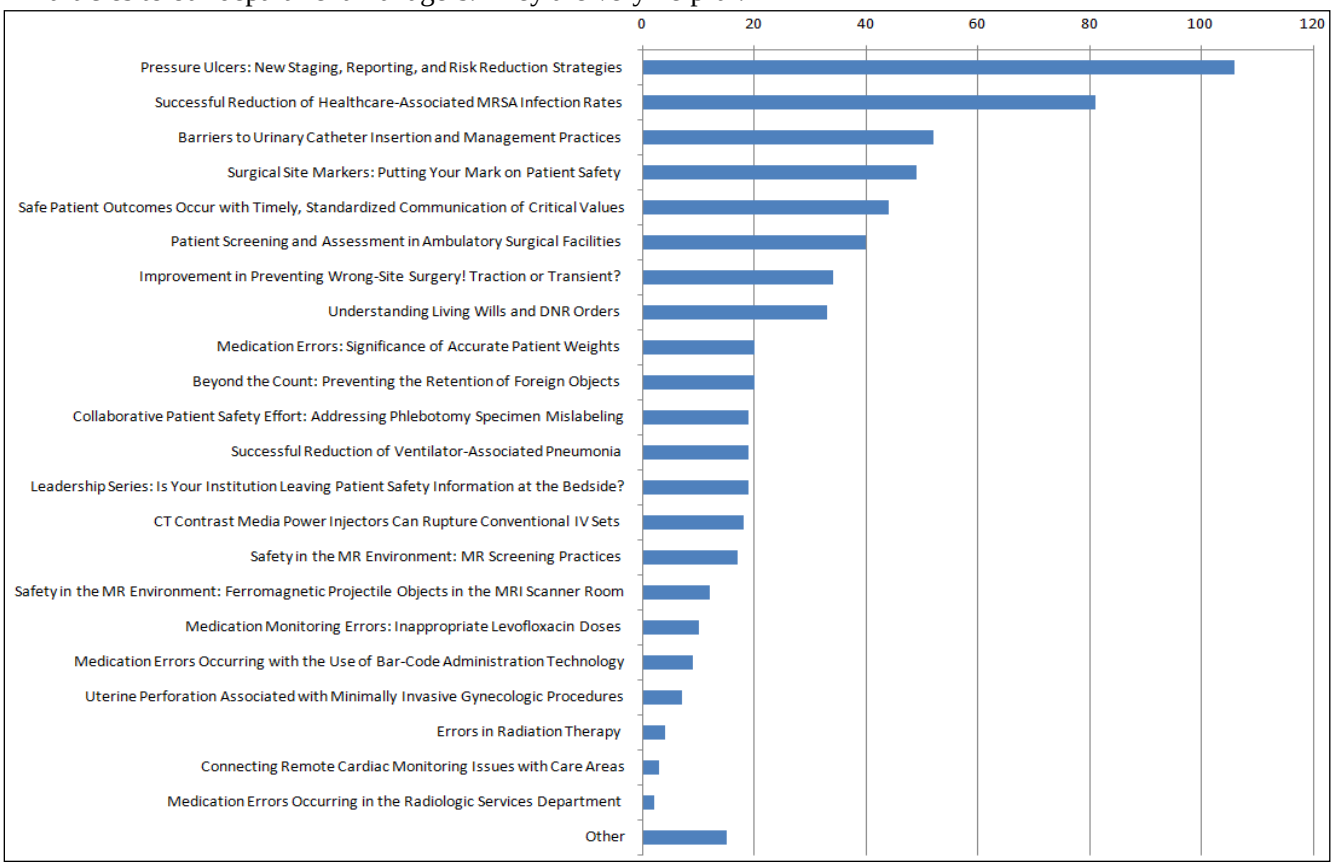


Figure 34. *Patient Safety Advisory* Articles Cited by PSOs as Prompting Them to Make Changes in 2009

WEB SITE REDESIGN

Last year, the Authority redesigned its web site, www.patientsafetyauthority.org, in part by using feedback from PSOs, along with the Authority's desire to increase awareness of the *Pennsylvania Patient Safety Advisory* and use of the many resources based on it. The effort seems to have paid off, since the percentage of respondents to frequent the web site at least two or three times per month has risen to 43.9% in 2009 from 34.4% in 2007 when the question was last posed (see Figure 35).

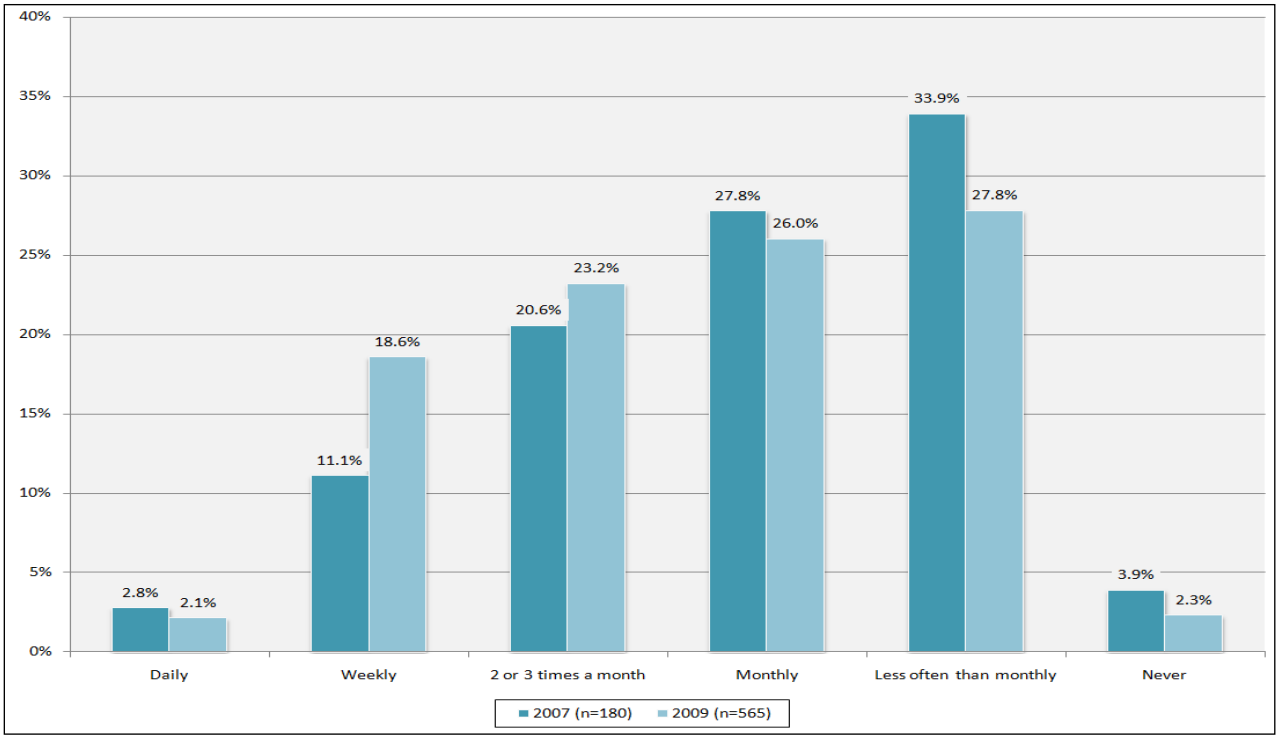


Figure 35. Responses by percentage of usage frequency of the Pennsylvania Patient Authority Web site.

Among the features added to the web site were tools to help locate articles of interest in the *Pennsylvania Patient Safety Advisory*. Asked the rate of how often they used these features, respondents ranked the web site's search engine as the one most used. (Table S1).

Table S1. Ranked Use of Means of Locating Advisory Articles

Means of Locating Advisory Article	Rank of Use
Search Engine	1
Articles grouped with Educational Tools	2
Articles promoted on the Authority's homepage	3
Articles archived by volume/issue in the Advisory Library	4
Browse-by-Topic	5

The web site is maintained to afford rapid, easy access to the *Pennsylvania Patient Safety Advisory* and the Authority's educational material. PSOs and IPDs were asked whether they agreed with statements regarding the web site's ability to deliver on specific points of access. The response was generally favorable from those who used or responded to the statements. The balance of respondents who didn't at

least mildly agree mainly fell into a category of those who never used the features or did not respond to the statement (Table S2). For the statement regarding the "e-mail to a friend" feature, the latter respondents outnumbered the former.

Table S2. Web Site Access to Advisory and Educational Material

Ease of Web Site Access Statements	Strongly Agree /Agree	Never Used / No Response
The Web site provides information in an easy-to-read format.	91.7%	7.4%
The Web site offers helpful ways to search for information.	87.5%	10.4%
When searching for information, I usually find relevant material.	83.3%	13.6%
The "e-mail-to-a-friend" feature makes it easier to share patient safety information.	48.4%	49.3%
The collection of educational tools and resources on the Web site are easily accessible.	83.6%	14.8%

The Authority offered new educational material on its web site and PSOs were asked whether they had used it. Almost half of those who responded using this material noted using the Patient Safety Practices. Other material heavily used include the Infection Prevention Screensaver, the ASF Patient Screening and Assessment Toolkit, the snapshots and updates to the wrong-site surgery toolkits.

REPORTING SYSTEMS

In a question directed only at PSOs from hospitals, the question was posed as to whether their facilities used electronic reporting systems other than PA-PSRS. Thirty-nine percent responded that PA-PSRS was their sole patient safety event collection system (Table S3). Of the remainder, that is, those who utilize other systems in addition to PA-PSRS, 9% use multiple systems and 10% use "homegrown" or self-created custom systems.

Table S3. Electronic Reporting Systems Used by Hospital PSOs

System	%
Risk MonitorPro (rL Solutions)	15%
MIDAS	9%
RiskMaster (CSC)	8%
MedMarX	6%
STARS (Marsh)	5%
Patient Safety Net (UHC)	4%
Safety and Risk Management (Quantros)	3%
Peminic Incident Manager	1%
QA Sys	0%
Excalibur (SCS)	0%
Homegrown/Custom System	10%
Other	9%
None of the above (PA-PSRS only)	39%

REACTION TO PSL PROGRAM

The Authority has established regional Patient Safety Liaisons (PSLs) who interact more directly with reporting facilities. PSOs from areas that have been assigned PSLs were asked to indicate how often their facility had interacted with their respective PSL in a variety of formats (Table S4). They were also asked about the usefulness of their experience with the PSLs (Table S5). Further, 29% responded that they have made or are planning changes based on the interaction with the PSL.

***Table S4. Electronic Reporting Systems Used by Hospital PSOs**

Interaction with PSL (# responses)	Often	Several times	Once or twice	Not at all
Engaged in a phone call (n=107)	2.8%	34.6%	50.5%	12.1%
Engaged in a facility visit (n=108)	0.9%	7.4%	80.6%	11.1%
Attended a Authority sponsored educational offering (n=106)	0.0%	7.5%	46.2%	46.2%
Requested education regarding PA-PSRS or other patient safety information and/or resources (n=106)	0.9%	11.3%	51.9%	35.8%
Participated in group collaborative moderated by a PSL (n=106)	0.9%	2.8%	17.9%	78.3%
Requested guidance on a failure mode and effects analysis (FMEA) at your facility (n=106)	0.0%	0.9%	5.7%	93.4%
Requested guidance on communication of best practices regarding patient safety at your facility (n=106)	0.0%	3.8%	30.2%	66.0%
Engaged Authority representatives to speak to frontline practitioners on clinical topics (n=106)	0.0%	0.0%	9.4%	90.6%

****It should be noted that only the Northeast region of Pennsylvania had accessibility to a PSL for an entire year. The Northwest and South Central regions had access for less than one year. The Southwest PSL was hired in December 2009 after the survey was complete and the Southeast PSLs were hired in 2010. Each PSL has approximately 90 facilities and as the program develops we expect the numbers to increase.***

Table S5. Perceived Usefulness of PSLs by Hospital PSOs

Response (n=109)	%
Very Useful	51.4%
Somewhat Useful	35.8%
Not Useful	2.8%
No Opinion	1.8%
No Contact	8.3%

SUMMARY

In our 2009 survey of Patient Safety Officers and Infection Prevention Designees, respondents voiced their opinion that they find the *Patient Safety Advisory* a top-notch publication, giving high assessments across the board. Positive reviews were given for the evolving Authority web site as well.

PSOs indicated that Patient Safety Liaisons are useful in stirring positive change in their facilities. They have also expressed some reliance on the PA-PSRS electronic reporting system.
As with previous years' surveys, our 2009 survey finds that the *Patient Safety Advisory* and the associated online toolkits are still highly regarded and benefits Pennsylvania healthcare facilities by:

- Generating useful patient safety information.
- Providing material to be used in education.
- Spurring process assessment and improvement.

To increase awareness and use of other resources based on the *Pennsylvania Patient Safety Advisory*; the Authority redesigned its web site and has introduced a process to provide immediate feedback based on submitted reports. Along with successful expansion of the Authority's Patient Safety Liaison program, the Authority has established an extended reach to provide patient safety guidance to Pennsylvania healthcare facilities.

(Page left intentionally blank)

PATIENT SAFETY GUIDANCE BASED ON REPORT ANALYSIS AND RESEARCH

The primary way the Patient Safety Authority communicates with healthcare facilities about the significant trends identified in PA-PSRS reports is through the *Pennsylvania Patient Safety Advisory*, a quarterly research publication with periodic supplements. The *Advisory* is widely distributed via e-mail and is also available online at the Authority's web site www.patientsafetyauthority.org. Since the first *Advisory* was issued in March 2004, the Authority has published nearly 300 articles on a variety of clinical issues. In 2009, the Authority published four quarterly issues of the *Advisory* and two supplements, comprising more than 40 articles. Following are summaries of selected articles published during 2009. Refer to the original articles for more detail and for sources from the clinical literature.

ERRORS IN RADIATION THERAPY

Volume 6, Number 3—September 2009

Although rare, radiation therapy errors can result in devastating and sometimes fatal injuries, especially when misadministration results in injury to vital organs or structures. Delivering radiation therapy requires collaboration and clear communication between the radiation oncologist, medical physicist, dosimetrist, and radiation therapist/technologist. Preventing errors in the delivery of radiation therapy involves understanding and appropriately using new advances in technology, as well as using established patient safety procedures that optimize safe healthcare delivery.

In Pennsylvania, radiation therapy events are reported to two statutory bodies: the Pennsylvania Patient Safety Authority and the Pennsylvania Department of Environmental Protection (DEP). Similar events may have been reported to both organizations.

The Authority analysts identified 25 reports of radiation oncology events reported from June 2004 through January 2009. (see Table 22) Twenty-four involved external beam therapy and one involved brachytherapy. The majority of events involved a patient receiving the wrong dose of radiation (40%), with a wrong patient (16%), wrong location (12%), wrong side (12%), and wrong setup (8%) being the most predominant treatment errors.

Table 22. Radiation Oncology Events Reported to the Pennsylvania Patient Safety Authority, June 2004 through January 2009

MEDICATION	TOTAL
Levofloxacin	416
Heparin	387
Vancomycin	180
Insulin	170
Warfarin	141

From February 2004 through January 2009, 35 medical events were reported to DEP. Analysis reveals the predominant event type involved the patient receiving radiation therapy to an incorrect site (46%), followed by a wrong patient being treated (27%), and a patient being given the wrong dosage of radiation therapy (21%), which is consistent with the Authority's data.

Consider the following risk reduction strategies to address radiation therapy errors:

- Use computerized systems.
  - Computerized record and verify (RV) systems are employed by most linear accelerators. RV systems are successful at reducing the number of misadministration errors while allowing for delivery of complex treatment plans. RV systems verify that treatment parameters entered are the same that are set to be delivered to a patient. If these parameters do not match, then the external beam is inhibited from firing.
  - Use of computer-controlled delivery systems can lead to reduction of errors while allowing for more complex treatment plans, without increasing the time involved. Three aims of computer-controlled delivery systems are (1) make treatment delivery more efficient, (2) improve accuracy of treatment, and (3) make new and more complex treatment modalities possible.
- Double check before delivery radiation therapy.
  - Perform independent checks of the therapy treatment plan.
  - Ensure proper patient identification procedures are in place and strictly followed.
  - Consider an in vivo dosimetry program for quality assessment of machine calibration, planning dosimetry and dose calculation, patient setup, and influence of beam modifying components.

For the complete article, go to www.patientsafetyauthority.org.

MEDICATION ERRORS: SIGNIFICANCE OF ACCURATE PATIENT WEIGHTS

Volume 6, Number 1—March 2009

Unknown or inaccurate patient weights can result in doses of prescribed medications that differ significantly from appropriate doses. Oncologic, olderand pediatric/neonatal patients are especially vulnerable to the effects of such errors; furthermore, these patient types often undergo rapid weight change over short durations.

Pennsylvania Patient Safety Authority analysts identified 479 events reported to the Authority from June 2004 through November 2008 that indicated medication errors resulting from process breakdowns during obtaining, documentingand/or communicating patient weights. (see Table 23) Six events resulted in patient harm that required additional treatment. Four hundred forty-eight events (93.5%) represented the five predominant medication error types reported to the Authority: wrong dose/overdosage, wrong dose/underdosage, wrong rate (intravenous), extra dose and "other." The top three care areas associated with the events were emergency departments (EDs), pharmacies, and medical care/surgical units. (Note, if patients are admitted to the hospital through the ED, inaccurate patient weights obtained in the ED can perpetuate throughout the patient's stay, if not rectified in other departments.)

Table 23. Top Five Medication Error Event Types Associated with Wrong Weights (n= 448)

EVENT TYPE	TOTAL	% OF TOTAL REPORTS (N=479)
Wrong dose/ overdosage	208	43.4%
Wrong dose/ underdosage	102	21.3%
Wrong rate (intravenous)	47	9.8%
Extra dose	12	2.5%
Other	79	16.5%

The predominantly reported medications revealed two findings: (1) all could be dosed on patient weight and (2) five of top 10 medications involved (about 50% of the total events) were high-alert medications (i.e., drugs that, if used in error, can cause significant patient harm).

Furthermore, the analysts identified two predominant process breakdowns: (1) problems in obtaining accurate, current patient weight (e.g., lack of scales, estimating weights) and (2) errors arising from misuse of the obtained patient weight (e.g., weight measured in pounds or kilograms erroneously documented in kilograms or pounds).

Consider the following risk reduction strategies to address medication errors associated with patient weights:

- Obtain the patient's correct and current weight when he or she arrives at the facility. Avail admitting areas (e.g., ED) with necessary equipment to weigh all patients (e.g., floor scales to weight patients on stretchers). Establish procedures for regularly reweighing patient populations in which weight fluctuation is anticipated.

- Standardize measurement systems to kilograms throughout the facility.
- Address the following issues associated with weight documentation:
  - Review all documentation entry locations (e.g., printed order forms, computerized order-entry systems, infusion pumps).
  - Require entry in computer systems *before* processing pediatric patient orders.
  - Make patient weight a required field in all computerized order-entry systems.
  - Test alerts in order-entry systems associated with maximum and subtherapeutic medication doses.
  - Include the date when documenting patient weight to prompt recognition of old weight information.
- In the facility's medication-use policies, mandate that all weight-based medications are *not* prescribed, dispensed, or administered unless the patient's weight is available and has been considered by all practitioners.

For the complete article, go to www.patientsafetyauthority.org.

BEYOND THE COUNT: PREVENTING THE RETENTION OF FOREIGN OBJECTS

Volume 6, Number 2—June 2009

Failure to account for all sponges, sharpsand instruments may lead to the inadvertent retention of a foreign object. Retained foreign objects (RFOs) may lead to serious complications (e.g., sepsis, fistula or small bowel obstruction, visceral perforation) and associated costs can be significant. Furthermore, the retention of a foreign object is considered a serious reportable event by the National Quality Forum. Surgical counts are intended to prevent the retention of a sponge, sharpor instrument during a surgical procedure, yet despite the highly regulated nature of the process, discrepancies in the surgical count occur.

From the 2008 reporting period, Pennsylvania Patient Safety Authority analysts identified 2,228 events involving an incorrect, sponge, sharp, or instrument count, of which 1,040 (47%) involved incorrect needle counts, 731 (33%) involved incorrect equipment counts, and 454 (20%) involved incorrect sponge counts. Of the 2,228 event reports, 1,564 indicated that a radiograph was performed, and 417 did not indicate whether one was performed. Of the events in which a radiograph was performed, the radiograph was negative for an RFO in 1,123, and positive in 24. An additional 233 reports involved an incomplete count or the failure to perform a count.

From the same reporting period, Authority analysts identified 194 reports of RFOs reported as a separate event category. Of these reports, 160 (84%) indicate that a radiograph was done. In 43 (22%) reports, the RFO was discovered after the patient left the OR.

According to the medical literature, risk factors associated with RFOs include emergent surgery, unexpected changes in the operative procedure, high patient body mass index and breakdowns in communication.

Preventing RFOs requires a multipronged strategy that includes reliable counting methods. For example, guidelines recommend that counting occurs before the procedure (i.e., baseline), before closure of a cavity within a cavity, before wound closure begins, at skin closure, and at the time of permanent relief of either the scrub person or circulating nurse. Published best practices include the following:

- Perform counts according to national standards and facility policy.
- Conduct wound exploration before closure and whenever a discrepancy occurs.
- Document the count outcome, items used for packing, and actions taken in response to a discrepancy.
- Collaboratively develop count policies and procedures to promote interdisciplinary and consistent application.
- Ensure policies and procedures are readily available.

Consider the following, additional strategies:

- Conduct routine postoperative radiographs. Note that radiographs are likely to detect stainless steel items; however, radiographs are less sensitive in detecting sponges and needles, the latter because of size.

- Approach RFO prevention through multidisciplinary, multiphase means. For example, identify patterns of failure, then educate about the problem (e.g., daily reminders about counting techniques), and finally monitor and communicate good results (e.g., use posters to track days since last RFO event).
- Augment manual counts through assistive technology such as radio-frequency detectable sponge systems, radio-frequency identification-detectable sponge systems, and bar-coded sponge systems.

For the complete article and associated patient safety tool, go to www.patientsafetyauthority.org.

SAFETY IN THE MR ENVIRONMENT: FERROMAGNETIC PROJECTILE OBJECTS IN THE MRI SCANNER ROOM

Volume 6, Number 2—June 2009

To avoid serious or fatal injury from projectiles, magnetic resonance (MR) personnel must understand the principles of the projectile effect and properly screen individuals for ferromagnetic objects before they enter the scanner room. The projectile effect is what occurs when ferromagnetic materials are influenced by translational (linear) and torque (rotational) forces exerted by the static magnetic field of the magnetic resonance imaging (MRI) scanner. These forces draw unrestrained objects, making them airborne, into the magnet's bore.

In the majority of MRI systems, the magnet is always on. The magnetic field is present even when no scan is being performed. Precautions are necessary when bringing any item into the MRI scanner room.

Pennsylvania Patient Safety Authority analysts identified 44 events reported between June 2004 and December 2008. The event reports described 27 ferromagnetic items that became projectiles, 16 ferromagnetic items that were brought into the MRI scanner room without becoming projectiles, and five ferromagnetic items that were almost brought into the MRI scanner room. (Forty-eight items were cited in 44 event reports: in two projectile reports, an oxygen tank and a ventilator were reported; and in two other reports, an oxygen tank and a stretcher were reported.) Of the 44 events, three minor injuries were reported. (see Table 24)

Awareness about what items are safe in MR environments is important. In 2005, terminology for MRI-specific medical devices was updated from the previous, 1997, terminology. Now, three terms are to be used for permanently marking medical devices: (1) MR SAFE (no known hazards in all MR environments), (2) MR CONDITIONAL (no known hazards in specified MR environments with specified conditions for use), and (3) MR UNSAFE (known to pose hazards in all MR environments). Facilities can reduce confusion between the old and new terminologies by consulting with equipment suppliers to obtain the information needed to relabel equipment with the new markings as soon as possible.

Table 24. Ferromagnetic Items That Were Almost Brought into the MRI Scanner Rooms Reported to the Pennsylvania Patient Safety Authority, June 2004 through December 2008

FERROMAGNETIC ITEMS	QUANTITY OF ITEMS
Oxygen tank	2*
Stretcher	2*
Wheelchair	1
Total	**5**

* One oxygen tank and one stretcher were recorded on the same report submitted to the Authority.

Strategies to reduce the risk of projectiles include screening and establishing protocols for identifying and labeling equipment. In addition to MR personnel checking to ensure that ferromagnetic objects do not make their way into the MRI scanner room, any facility personnel with access to the scanner room must be aware of which objects are permitted and restricted from entering the scanner room. Use of ferromagnetic detection systems, a recommended practice, can warn MR personnel of the presence of ferromagnetic detectors external to the body.

For the complete article and associated patient safety tool, go to www.patientsafetyauthority.org.

PREVENTING MATERNAL AND NEONATAL HARM DURING VACUUM-ASSISTED VAGINAL DELIVERY

Volume 6, Supplementary 1—December 2009

While vacuum-assisted vaginal delivery (VAVD) is viewed as a safe alternative to forceps deliveries, there are known maternal and fetal risks associated with vacuum devices, including maternal perineal injury and fetal cranial hemorrhages. Indications for VAVD include termination of a prolonged second stage of labor, suspicion of immediate or potential fetal compromise and shortening of the second stage of labor for maternal benefit. Also, VAVD is indicated when maternal expulsive effort is medically contraindicated (e.g., severe cardiac disease, cerebral aneurysm, maternal exhaustion).

Contraindications include gestational age of less than 34 weeks, the presence of fetal bleeding disorders, predisposition to fracture, incomplete cervical dilation or when there is suspected cephalopelvic disproportion.

Pennsylvania Patient Safety Authority analysts identified 367 event reports of problems related to VAVD reported from July 2004 through April 2009. Sixty-four event reports (17%) documented maternal injury (e.g., perineal tears, cervical lacerations, hematomas), and 221 (60%) documented neonatal injury (e.g., scalp lacerations, cephalhematomas). (see Table 25)

Table 25. Maternal and Serious Neonatal Injuries by Type

TYPE AND NUMBER OF MATERNAL INJURY		TYPE AND NUMBER OF NEONATAL INJURY	
Perineal or cervical tears or lacerations resulting in hemorrhage and blood transfusion	8	Fractured clavicle or humerus	11
Fourth-degree perineal tears requiring operative repair	4	Respiratory distress	9 (2 deaths)
Miscellaneous lacerations requiring operative repair	3	Cephal, subdural, or subgaleal hematoma or skull fracture	8 (1 death)
Vaginal sulcus tears requiring operative repair	2	Miscellaneous injuries	6 (1 death)

To maximize both maternal and fetal safety during these procedures, practitioners in obstetrics are encouraged to consider all available delivery modes and tailor each delivery to their specific patient. If vacuum-assisted delivery is chosen, patient safety can be maximized through the following:

- Conducting comprehensive preoperative assessment of both the mother and fetus
- Obtaining informed consent;
- Correctly applying technical expertise related to the chosen device
- Maintaining situational awareness
- Performing targeted postoperative maternal and neonatal assessments

For the complete article and associated patient safety tools, go to www.patientsafetyauthority.org.

CONFUSION REGARDING CONCENTRATION OF TAMIFLU® ORAL SUSPENSION

Volume 6, Supplementary Alert —November 2009

In October 2009, the Institute for Safe Medication Practices (ISMP) published about the risk of overdoses and underdoses related to the concentration of pharmacy-compounded Tamiflu® being dispensed in response to shortages of the manufacturer's oral suspension. At that time, the Pennsylvania Patient Safety Authority's reporting system database contained two, pediatric event reports about dosing errors related to the concentration of Tamiflu available from inpatient pharmacies. Both pediatric patients received overdoses without harm; in each case, it was thought that the commercially available 12 mg/mL product and not a pharmacy-compounded 15 mg/mL oral suspension would be dispensed.

Reprinted with permission from the Institute for Safe Medication Practices, Horsham, Pennsylvania.

Figure 36. Tamiflu Oral Suspension 12 mg/mL

Roche manufacturers Tamiflu oral suspension in a 12 mg/mL concentration (oseltamivir base) for pediatric and adult patients who have difficulty swallowing capsules (Figure 36.) During the influenza epidemic, when pharmacies were unable to purchase the commercial oral suspension, pharmacists compounded Tamiflu according to U.S. Food and Drug Administration-approved directions (i.e., emergency compounding of oral suspension; www.tamiflu.com, utilizing the powder in available Tamiflu capsules. This use of the compounding directions results in a 15 mg/mL oseltamivir base concentration, not the commercially available 12 mg/mL base concentration.

Strategies to address this issue include the following:

- Alert healthcare practitioners to this risk. In the event of a shortage, communicate the shortage and mitigation strategies to prescribers.
- Communicate suspension doses in mg rather than by volume.
- Include the patient-specific dose with corresponding number of mL and the concentration of liquid provided on the pharmacy-generated label.
- As an alternative, Tamiflu capsules may be opened and the contents (i.e., 30 mg, 45 mg, 75 mg) mixed with sweetened liquids for single doses.

For the complete supplementary, go to www.patientsafetyauthority.org.

NEUROMUSCULAR BLOCKING AGENTS: REDUCING ASSOCIATED WRONG-DRUG ERRORS

Volume 6, Number 4—December 2009

Neuromuscular blocking agents (NMBAs) render patients unable to move or breathe and are considered high-alert drugs because misuse can lead to catastrophic injuries or death. NMBAs are used to relax skeletal muscles during surgery conducted under general anesthesia. These agents are also used in emergency departments (EDs), intensive care units, interventional radiology areas, and medical and surgical units for patients requiring intubation for airway management.

Pennsylvania Patient Safety Authority analysts identified 154 events reported from June 2004 to June 2009, which mentioned medication errors involving NMBAs. More than 17% (27) of the events involved pediatric patients. The care areas predominantly cited in the event reports in Table 26 included the ED 13.6% (21) and the operating room (OR) 12.3% (19). The predominant medication errors were wrong-drug errors 37% (57) followed by wrong-dose/overdosage errors 16.2% (25). The former error has cause for comment, because 80.7 % (46) reached the patient and 22.8% (13) resulted in harm. Analysis of the prescribed medications in the event reports shows that, of the medications intended for the patients, 47.4% (27) were not NMBAs (e.g., in six cases, the NMBA vecuronium was administered instead of the intended antibiotic cefazolin).

Table 26. Predominant Care Areas Involved in Medication Errors Involving Neuromuscular Blocking Agents (n=120)

UNIT	TOTAL	% OF TOTAL REPORTS (N = 154)
Emergency department	21	13.6%
Operating room	19	12.3%
Pediatric intensive care unit (ICU)	15	9.7%
Anesthesia	15	9.7%
Pharmacy	10	6.5%
Medical/surgical ICU	9	5.8%
Medical ICU	9	5.8%
Neonatal ICU	8	5.2%
Cardiac ICU	8	5.2%
Surgical ICU	6	3.9%

Factors contributing to wrong-drug errors include the following:

- Unsafe storage (e.g., vials of NMBAs placed in adjacent or wrong storage areas)
- Similar product labeling and packaging (e.g., vials of NMBAs confused with look-alike vials of different products, such as heparin)
- Look-alike drug names (e.g., Nocuron® ordered but Narcan® administered)
- Unlabeled syringes (e.g., accidental administration of syringes containing NMBAs that were unlabeled or mislabeled)

To reduce the risk of harm from NMBAs, consider following high- to low-leverage strategies:

Limit access. Allow floor stock of these agents only in the OR, ED, and critical care units where patients can be properly ventilated and monitored.

Segregate storage. When floor stock is necessary, have pharmacy assemble NMBA vials in a distinct, sealed box with affixed warnings, and sequester boxes in refrigerated and nonrefrigerated locations.

Use warning labels. Label vials, syringes, bags, and boxes (i.e., “Warning: Paralyzing Agent—Causes Respiratory Arrest”).

Safeguard pharmacy storage. Sequester and affix warning labels to NMBA vials.

Standardize prescribing. Address ventilation support during and after administration. Stipulate (by protocol) automatic discontinuation after extubation and removal from a ventilator. Never accept orders to continue medications upon patient transfer.

Use computer reminders. Build alerts in the pharmacy computer to verify the patient's location (i.e., question order and verify ventilator assistance if patient is not in ED, OR, or invasive procedure area). Establish computerized crosschecking of the patient's location.

Employ redundancy. Double check medications before dispensing and administering, and check the medication against the original order.

Supervise initial administration. Require bedside attendance of a licensed practitioner who has experience with intubation and airway management during initial administration of an NMBA.

Promptly remove discontinued products. Following patient extubation or discontinuation of the drug, place NMBAs in a sequestered bin for immediate pharmacy pickup.

Increase awareness. Educate staff about the risk of serious errors with these high-alert drugs. Provide staff with a list of all facility-specific NMBAs (generic and brand names).

Clearly communicate orders. Always refer to NMBAs as "paralyzing agents" rather than muscle relaxants. Orders should not be written "prn for agitation" but more specifically as part of an intubation procedure or to maintain a specific level of paralysis while the patient is on a ventilator only.

For the complete article, go to www.patientsafetyauthority.org

DOES YOUR ADMISSION SCREENING ADEQUATELY PREDICT ASPIRATION RISK?

Volume 6, Number 4—December 2009

Healthcare facilities need more standardized aspiration screenings to identify patients upon admission who have swallowing difficulties (i.e., dysphagia) and those at risk for aspiration and silent aspiration. Furthermore, there is an ongoing need for preliminary bedside aspiration screening that accurately predicts patients who need further testing to diagnose dysphagia, aspiration, and/or silent aspiration. Serious respiratory complications (e.g., airway obstruction, aspiration pneumonia) can develop in patients who aspirate. Patient conditions that present a high risk for aspiration include neurologic impairment, intubation (i.e., tracheostomy, endotracheal), advanced age, changes in the oropharyngeal anatomy due to trauma, surgery complications, neoplasm, pneumonia, unexplained weight loss or body position.

Pennsylvania Patient Safety Authority analysts identified 133 nonanesthesia aspiration events reported to the Authority in the reporting period from June 2004 through January 2009. Seventy-three (55%) of the events indicated that patients had been assessed for aspiration risk before the nonanesthesia aspiration event, and 60 events indicated patients had not received aspiration risk screening or assessments before the aspiration events.

Of the 73 events indicating patients were assessed, 15 (11%) of the events indicated patients who required transfers to a higher level of care, and 7 (5%) of the events resulted in patient death. Factors contributing to the aspiration events included the following:

- Inappropriate nutrition delivered to patients (e.g., feeding nothing-by-mouth [NPO] patients)
- Miscommunication between healthcare providers and departments (e.g., failure to communicate NPO status)
- Medication-related issues (e.g., administration of unauthorized doses)
- Misplacement of tubing during insertion (e.g., gastrostomy tubes)

Consider the following mitigation strategies to address patients at risk for aspiration.

- Conduct a swallowing screening on each admission and, as indicated, a full swallowing assessment and/or evaluation.
  - Full bedside swallowing assessment is typically conducted after the admission screening identifies the patient at high risk for aspiration; preliminary swallowing screening conducted during admission assessment can effectively determine whether additional swallowing assessment and/or evaluation is warranted.
  - Preliminary bedside swallowing screening tools can be in checklist or algorithm formats. An example is the Massey bedside swallowing screen, which is available on the Authority's Web site at www.patientsafetyauthority.org.
- Conduct radiologic swallowing assessment.
  - The American College of Chest Physicians identifies a videofluoroscopic swallow evaluation as beneficial for patients at high risk for aspiration or silent aspiration.
  - The fiberoptic endoscopic evaluation of swallowing is a comprehensive screening that includes observation of the anatomy involved with the orpharyngeal stage of swallowing, structures within the hypopharanx, and secretions; assessment of food and liquid swallowing function; and response to therapeutic maneuvers and interventions.
- Review the patient's medications.
  - Some medications exacerbate dysphagia and aspiration; certain side effects may predispose patients to exhibit aspiration symptoms.
  - Besides prescriptions, review should also include over-the-counter drugs, supplements, and herbal formulations.
- Develop individualized treatment plan.
  - An interdisciplinary treatment plan is developed following a bedside screening and radiologic assessment, so the patient can receive safe and adequate nutrition.
  - Interventions for those patients with aspiration and silent aspiration may include exercises and therapy.

For the complete article and associated patient safety tool, go to www.patientsafetyauthority.org.

MEDICATION ERRORS IN LABOR AND DELIVERY: REDUCING MATERNAL AND FETAL HARM

Volume 6, Supplementary 1—December 2009

Practitioners who work in labor and delivery units may administer a variety of high-alert medications during the birthing process that, when used in error, may adversely affect both the mother *and* the fetus. These medications (e.g., oxytocin, magnesium sulfate) are often administered intravenously. Medications used to manage pain, such as morphine and HYDROmorphone, may also be administered intravenously, while others, such as bupivacaine and fentanyl, may be administered via the epidural route.

Pennsylvania Patient Safety Authority analysts identified 2,611 events reported from June 2004 to April 2009, which described medication errors that took place in labor and delivery units. Predominant medication error types were as follows:

- Dose-omission errors comprised 22.5% (587) of the events, of which 34.8% (204) were associated with antibiotics. Antibiotics are often used to prevent neonatal Group B *Streptococcus* infection.
- Wrong-drug errors comprised 10.7% (280) of the events, of which 25% (70) involved high-alert medications, mostly infusions.
- Wrong-dose/overdosage errors comprised 6.4% (n=166), of which 46.4% (77) involved high-alert medications.
- Wrong-rate errors comprised 2.2% (58) associated with intravenous infusions. More than 55% (32) involved high-alert medications. The top three drugs were oxytocin, hydrations, and magnesium sulfate.

Table 27. Predominant Medication Error Event Types Associated with the Labor and Delivery Unit (n equals 2,442), June 2004 to April 2009

EVENT TYPE	NUMBER	% OF TOTAL REPORTS (N = 2,611)
Dose omission	587	22.5%
Wrong drug	280	10.7%
Medication error—other	272	10.4%
Wrong time	213	8.2%
Wrong patient	177	6.8%
Wrong dose/overdosage	166	6.4%
Prescription/refill delayed	145	5.6%
Unauthorized drug	136	5.2%
Extra dose	120	4.6%
Wrong route	103	3.9%
Wrong dose/underdosage	99	3.8%
Monitoring error—documented allergy	86	3.3%
Wrong rate (intravenous)	58	2.2%

Strategies to prevent medication errors in the labor and delivery unit, and mitigate any patient harm as the result of errors, include the following:

- Standardization
  - Establish standardized concentrations, dosing regimens, administration protocols and order sets for high-alert medication infusions.
  - Specify protocols for bolus doses.
- Infusion pumps and administration sets
  - Adopt policy stipulating that all IV medications are administered via infusion pump (e.g., smart pump).
  - Use different pumps for epidural versus IV infusions; avoid duel-channel pumps for simultaneous administration of both types of drugs.
- Labeling
  - Differentiate (e.g., use bold fonts) IV infusion bags of high-alert infusions.
  - Label infusion pumps and nearby IV tubing according to the solution being infused.
  - Verify infusions by tracing tubing from the bag, through the pump, to the patient.
  - Label epidural bags, syringes, and pumps (i.e., "For Epidural Use Only").
- Storage
  - Store separately high-alert IV drug infusions, epidural infusions, and fluids
  - Designate separate areas for different medications needed during different phases of the birthing process.
  - Restrict access to unneeded medications.
  - Never store look-alike products side by side.
- Verbal orders
  - Reserve verbal orders for emergent situations or when prescriber is physically unable to write or transmit orders.
- Double checks
  - Require independent double check (drug, concentration, infusion rate, pump settings, line attachmentsand patient) before administration of high-alert medications.
- Monitoring
  - When infusing high-alert medications, monitor patients' vitals, oxygen saturation, and level of consciousness, as well as fetal heart tones, maternal uterine activity, and other patient parameters.
  - If mother or fetus status changes, check infusing solution against intended medication.
  - When giving drug boluses, monitor the patient at the bedside.
  - In the event of overdoses, establish rescue procedures, and ensure necessary medications are available in emergency supplies.

For the complete article, go to www.patientsafetyauthority.org.

PATIENT SCREENING AND ASSESSMENT IN AMBULATORY SURGICAL FACILITIES

Volume 6, Number 1—March 2009

Undetected medical conditions among patients at ambulatory surgical facilities (ASFs) may place patients at increased risk for postoperative complications requiring hospital admission. Identifying these medical conditions through a thorough preoperative screening and assessment process is integral to safe patient care in the ASF setting.

Risk factors associated with increased risk for hospital admission or death following outpatient surgery include the following:

- Patient age greater than 85 years
- Cardiovascular disease
- Peripheral vascular disease
- Obesity
- Obstructive sleep apnea
- Hyperactive reactive airway disease
- End-stage renal disease
- Malignancy
- Positive HIV status
- Operating room time greater than one hour
- A requirement for general anesthesia

Pennsylvania Patient Safety Authority analysts identified 467 ASF events associated with potential issues during the preoperative screening or assessment process, reported from June 2004 to December 2008. Two hundred three events (43%) were reported as a Serious Event, of which most indicated a complication that required patient transfer to an acute care setting. Two hundred thirty-four events (50%) involved a patient older than 65, and 23 events (5%) involved a pediatric patient. One hundred twenty-four event reports (27%) indicated that screening and assessment processes required improvement. In 85 reports (18%), a patient condition was present (e.g., arrhythmia, sleep apnea) that may have put the patient at increased risk during the procedure, but no improvement to the ASF's screening and assessment process was recommended.

Preoperative assessment starts when a case is scheduled and continues until the surgery begins. The goal is to identify and manage any associated risks as soon as possible. Guidance to evaluate a patient's risk for anesthesia and surgery includes the American Association of Anesthesiology (ASA) patient classification system, available at www.asahq.org.

Consider the following strategies for screening and assessment:

- Preoperative screening
  - This screening can occur by means of a telephone call or during a preadmission interview and serves as the initial identification of issues that could cause intra- or postoperative problems.

  - The Association of periOperative Registered Nurses (AORN) recommends that a registered nurse assess components that includes baseline physical condition; allergies; signs of abuse; cultural, emotional and socioeconomic status; pain; medication history; anesthetic history; preoperative test results; discharge planning; referrals; physical conditions that may require additional equipment/supplies; informed consent; care plan; and documentation/communication of all gathered information.
  - Successful strategies engaged by Pennsylvania ASFs also include use of comprehensive admission packets with automated address of trigger responses, as well as a cultivated relationship with the patient's primary care physician office.
- Preoperative nursing assessment
  - This assessment, which AORN recommends to occur on the day of surgery, is an opportunity to verify existing information and obtain any missing or incomplete information.
  - Components involved in this assessment include verifying patient identity; reviewing preadmission screening/assessment; assessing baseline physical status; assessing NPO (nothing by mouth) status; identifying any advance directives; identifying the procedure; verifying site, side or level of procedure; implementing prescribed surgical preparation; assessing for prosthetics or implants; evaluating postoperative transport and aftercare; obtaining contact information of proxy; and assessing patient's understanding of the information and discharge planning.
- Preoperative anesthesia assessment
  - This assessment identifies issues related to perioperative anesthesia management.
  - ASA endorses preanesthesia care components that include preoperative instruction; evaluation and examination by an anesthesiologist; verification of information (if nonphysician personnel are involved); conduct of preoperative studies and consultation, as indicated; and discussion of the anesthesia plan with the patient.
  - One Pennsylvania ASF approaches preanesthesia assessment with two goals: (1) assess whether the patient's condition is optimal, and (2) determine whether the planned procedure and anesthesia are appropriate for the patient.

For the complete article and associated patient safety tools, go to www.patientsafetyauthority.org.

(Page left intentionally blank)

OTHER ITEMS

FEDERAL LEGISLATION

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. The final rule at 42 C.F.R. § 3.102(a) (2) provides: *Exclusion of certain entities.* The following types of entities may not seek listing as a PSO:
(ii)(D) An entity that operates a Federal, state, local or Tribal patient safety reporting system to which health care providers (other than members of the entity's workforce or health care providers holding privileges with the entity) are required to report information by law or regulation. (III) A component of an entity listed in paragraph (q) (2)(ii) may seek listing as a component PSO subject to the requirements and restrictions of paragraph (c)(1)(ii) of this section. 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.

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 that allow 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. The 18 qualifying facilities began reporting in early 2007, in accordance with the law.

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 Web site, 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 received one anonymous report in 2009 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 2008. However, it is important to note that the Patient Safety Authority is unlikely to receive information related to a referral to a licensure board. 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.

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. Current members, as of April 2010, 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 2009, 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 2009:

January 27, 2009
March 10, 2009
April 28, 2009
June 9, 2009
July 28, 2009
September 8, 2009
October 27, 2009
December 8, 2009

Minutes of the public meetings are available on the Authority's Web site at www.patientsafetyauthority.org or through PA PowerPort, Keyword: Patient Safety

(Page left intentionally blank)

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, certain abortion facilities, and recently, nursing homes 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 data 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 with comprehensive analysis and guidance given based upon actual adverse events and near misses reported by Pennsylvania healthcare facilities through PA-PSRS. Finally, the Authority has provided numerous training and education programs including topics such as regional root cause analysis, failure mode effect and analysis, reduction of MRSA in ambulatory surgical facilities, and enhanced patient safety officer training to name a few. These programs are generally offered for free to reporting facilities. 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 that occurred in Pennsylvania, the Authority provides a valuable "return on investment" 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 of healthcare facilities for any one year, beginning in 2002, plus an annual increase based on the Consumer Price Index for each subsequent year. During the Authority's first year of operation (FY2002-2003), at the Authority's recommendation, the Department of Health issued a facility assessment for the full $5 million. The Authority had very little expenditure in this fiscal year and was able to establish a funding surplus. Therefore, in several subsequent years, the Authority had recommended a partial assessment of $2.5 million each year because that reduced amount had been adequate for ongoing operations, including numerous new programs, of the Patient Safety Authority. This partial assessment reduced the cost to Pennsylvania's healthcare facilities.

The assessment was kept at $2.5 million for four years. This amount was lower than the actual expenditures for each of those years. This level of assessment was possible due to the significant surplus that had built up in the first year of operation. However, this policy led to the Authority getting close to eliminating all surpluses in FY 06-07 and on the verge of a funding deficit. Therefore, the FY 07-08 assessment of $5.4 million was significantly higher than in previous years and more closely reflected the budget for the fiscal year.

In 2009, the Patient Safety Authority recommended that the FY 2008-2009 surcharge assessment total $4,000,000. This amount is approximately 26% less than the surcharge assessment from the previous fiscal year and is approximately 33% less than the total annual amount that could be assessed for the year. The Patient Safety Authority Board took several points into account in developing their recommendation including the balance of the Patient Safety Trust Fund, understanding the economic environment, and anticipated expenditures.

Act 13 requires that the Annual Report include a summary of fund receipts and expenditures, including a financial statement and balance sheet. Following are several tables detailing this information.

Facility Assessments

Fiscal Year	Number of Facilities assessed by DOH	Total value of assessments	Total Assessments received by DOH[11]
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[12]
2005-06	450	$ 2,499,906	$ 2,500,149
2006-07	270	$ 2,500,034	$ 2,500,034
2007-08	526	$ 5,400,000	$ 5,391,583
2008-09	524	$ 4,000,000	$ 3,972,677

[11] 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.

[12] Total Assessments received are greater than assessments made because some funds received were late payments for the previous year's assessment.

FUNDING RECEIVED FROM NURSING HOMES

Chapter 4 of the MCare Act provides the ability for the Department of Health to assess the nursing homes up to $1.0 million per year on behalf of the Patient Safety Authority. This money can only be spent on activities related to the reduction and elimination of HAI. The Department of Health assessed 725 facilities $1.0 million for FY 2008-09 during calendar year 2008. For FY 2009-2010, the Authority's Board suggested a 20% decrease in the nursing home assessment. The Department of Health assessed the nursing homes $0.8 million in calendar year 2009 for FY 2009-2010.

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 2009, the Authority spent approximately $5.4 million. Please see the table below.

Actual Expenditures for 2009

Major Object Code	Amount
100: Personnel	$ 818,115.11
300: Operating	$ 4,604,265.23
400: Fixed Assets	$ 0
TOTAL	$ 5,422,380.34

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 calendar year 2009, the Authority received services under the following contracts. Please note: While contract amounts are given based on fiscal year(s), actual amounts expended are given for the calendar year.

ECRI FC # 4000013036 dated November 2008 to June 30, 2013
(Five-year contract for Program Administration, Clinical Analysis, Training and Data Collection and Reporting Infrastructure Services)
Contract Amount $20,170,670 over 5 years
Amount Expended in 2008: $496,373.04 (November and December)
Amount Expended in 2009: $3,664,012.67 (January through December)

Ikon Office Solutions (Color Copier Lease)
PO #4300182251, dated 10/01/2009 to June 30, 2010 @ $414.30/month
Amount Expended in 2009: $1,242.90 (paid 3 months)

Ikon Office Solutions (Black and White Copier Lease)
PO # 4500509140, dated 02/01/2009 to June 30, 2010 @ $232.03/month
Amount Expended in 2009: $1,160.15 (paid 5 months)

PRK MOR Inc.
FC#490001139
Parking at the Forum Place – yearly commitments
4 at $130 each or $520/month and 1 at $65/month
Amount Expended in 2009: $4,420.00

PATIENT SAFETY AUTHORITY BALANCE SHEET

The following Balance Sheet reflects the status of the Patient Safety Trust Fund as of December 31, 2009

Patient Safety Trust Fund Balance Sheet (Unaudited)
As of December 31, 2009

ASSETS	
Cash	$ 0
Cash in Transit	0
Temporary Investments	3,882,926
TOTAL ASSETS	$ 3,882,926
LIABILITIES AND FUND BALANCE	
Liabilities:	
Accounts Payable and Accrued Liabilities	$ 121
Invoices Payable	318,717
Accrued Payables Goods Receipt	8,876
TOTAL LIABILITIES	$ 327,714
FUND BALANCE	
Reserved for Encumbrances	$ 3,228,613
Unreserved - Undesignated	326,599
TOTAL FUND BALANCE	$ 3,555,212
TOTAL LIABILITIES AND FUND BALANCE	$ 3,882,926

The Authority acknowledges the assistance provided by the Central Services Comptroller Office, Governor's Office of the Budget, in preparation of the Balance Sheet.