

GOVERNMENT OF THE DISTRICT OF COLUMBIA

DEPARTMENT OF HEALTH



HEALTH REGULATION AND LICENSING ADMINISTRATION

Patient Safety Reporting Program District of Columbia

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Executive Summary

Improving Healthcare Delivery in the District of Columbia

In December 2006, the District of Columbia passed the Medical Malpractice Amendment Act of 2006. The Act requires that any licensed healthcare provider or medical facility must report adverse events, which includes the 28 Serious Reportable Events defined by the National Quality Forum (NQF) as events that are unambiguous (identifiable and measurable), serious (resulting in death or significant disability), and usually preventable. In 2009, the Act was amended to require that adverse event reports must be reported within 60 days of their occurrence. In January 2010, a web-based adverse event reporting system was implemented in the ongoing effort to improve healthcare delivery. Adverse event reports are submitted to the Department of Health's (the Department) subcontractor, ECRI Institute (ECRI), and are confidential with patient information de-identified. From there, ECRI analyzes these reports, identifies patterns or trends, recommends methods to reduce systematic adverse events, provides technical assistance to healthcare providers and medical facilities, and disseminates information and advice on best practices.

This third annual report provides an update on the District's Patient Safety Reporting Program including an overview of the program offerings, analysis of adverse event reports and descriptions of the most significant findings from the reporting period October 1, 2009, through September 30, 2010. The Department continues to focus on educating reporting facilities by providing custom feedback on specific reported events and trends, corrective action plans, and root cause analyses.

Data Collection—Patterns and Trends in Adverse Event Reports

Collecting and analyzing reports of adverse events is a vital component of the District of Columbia's goal to improve healthcare delivery. During the reporting period October 2009 through September 2010, the District's healthcare providers and medical facilities submitted a total of 310 adverse event reports. Thirteen (4%) of the reports involved a patient death. Acute care hospitals submitted 246 (79%) of the reports, 49 (16%) were submitted by long-term acute care, 10 (3%) by rehabilitation hospitals, 4 (1%) nursing homes, 1 (<1%) by psychiatric facilities and 0 (0%) reports were submitted by ambulatory surgical centers.

The Department has adopted NQF's list of 28 Serious Reportable Events as a classification system for reportable events. In addition to these, the Department collected one type of healthcare-associated infection (HAI): central-line-associated bloodstream infection (CLABSI). The most commonly reported event types were CLABSIs, stage III or IV pressure ulcers, falls and other non-NQF events, representing 294 (95%) of reports submitted.

Highlights of the data submitted to the Department for the reporting period October 2009 to September 2010 include the following:

- A total of 310 adverse event reports were received.
- Thirteen (4%) involved a patient death.
- The majority of reports, 246 (79%), were submitted by acute care hospitals.
- CLABSI, 244 (79%) was the most frequently reported event.

The adverse event reports submitted by healthcare providers and medical facilities in the third year of the District's reporting program represent a sustained effort by District healthcare providers and medical facilities. However, more consistent and reliable data is needed to continue to obtain useful information. The goal is a decrease in the number of adverse events that accurately reflects an improvement in the safety of healthcare delivery in the District. In 2010, the District launched a web-based adverse event reporting system (reporting system) to support the reporting efforts of healthcare providers and facilities. The initial stage of implementation included hospitals and ambulatory surgical facilities.

Guidance for Healthcare Providers and Medical Facilities

One of the chief goals of any reporting program is to prevent the occurrence of similar adverse events in the future. By analyzing the causes of adverse events, we hope to find and repair the weaknesses in clinical processes in order to prevent the same events from happening to other patients or residents. At the facility or provider level, the analysis of an individual adverse event can uncover root causes and contributing factors underlying the event and provide the basis for development of strategies to prevent recurrence. However, at this level of analysis, it may be difficult to determine trends in the data related to the type or volume of adverse events experienced by a provider or facility. When a particular type of adverse event occurs rarely, a facility may view it as a random occurrence, and the potential to implement systems and processes for prevention may be lost.

Aggregating adverse event data gathered from facilities and providers throughout the District is a powerful tool in identifying trends undermining safe and effective healthcare. The web-based adverse event reporting system provides access to aggregate data at the District and ECRI Institute PSO (EIPSO) national level. Analysis of the information received through the District's reporting program will serve as the basis for meaningful insights, lessons learned, and best practices that can improve patient safety. This report focuses on the most frequently reported events: CLABSI, stage III or IV pressure ulcers, falls, and other non-NQF events. For each of these event types, this report discusses what we have learned about the causes of these events and presents strategies for helping to prevent these events from happening again.

Introduction

Adverse Event Reporting and Patient Safety

Medical errors and adverse events are a significant killer in the United States, and most are preventable. According to the Institute of Medicine (IOM), more than 1 million preventable adverse events occur each year in the United States, of which 44,000 to 98,000 are fatal.¹ Although the accuracy of these numbers has been questioned, there is general consensus throughout the healthcare community that safety is a significant problem in virtually all care settings and that the healthcare system frequently puts patients at unnecessary risk.

It has been over 10 years since IOM published *To Err is Human*. Both the healthcare community and the general public have become considerably more aware of and sensitive to the issues surrounding patient safety. One of the principal recommendations of the IOM report was to create a mandatory reporting system for the most serious events. In response, several healthcare error reporting systems have been launched by public and private entities.

Reporting systems are an important mechanism for generating knowledge about errors and their underlying causes. They help healthcare providers learn from experience, share lessons learned, and monitor their progress over time. When reports are shared beyond the four walls of a healthcare facility to an external party that aggregates and analyzes the results, there is a remarkable opportunity to disseminate lessons more broadly.

The importance of collecting of data systematically was recognized at the federal level, leading to the establishment of the National Quality Forum (NQF), a voluntary consensus standards-setting organization. NQF has developed a list of serious reportable events in healthcare that are: (1) clearly identifiable and measurable; (2) of a nature such that the risk of occurrence is significantly influenced by the policies and procedures of the healthcare facility; and (3) of concern to both healthcare providers and the public.²

In addition, to be considered a serious reportable event, an event must be unambiguous, usually preventable, serious, and one or more of the following:

- Adverse
- Indicative of a problem in a healthcare facility's safety systems
- Important for public credibility or public accountability

Requiring that an event be “usually preventable” acknowledges that some of these events are not always avoidable, given the complexity of the healthcare industry. The presence of an event on the list, therefore, is not an *a priori* judgment of either a systems failure or lack of due care. The ability to derive and disseminate good lessons from bad events is a hallmark of an effective reporting system. The primary goals are to prevent harm and enhance public trust. Through the establishment of an adverse

¹ Institute of Medicine Committee on Quality of Health Care in America. Kohn LT, Corrigan JM, Donaldson MS, eds. *To err is human: building a safer health system*. Washington (DC): National Academy Press; 1999 Nov 1:223 p.

² National Quality Forum (NQF). *Serious reportable events in healthcare 2006 update: a consensus report*. Washington (DC): NQF; 2007.

event reporting program that encompasses standardized reporting requirements, the District has taken an important step in achieving this goal.

Data Collection and Analysis

The Reporting Program

The District has mandated the reporting of adverse events by a broad range of healthcare providers and medical facilities. Adverse events that had to be reported include the 28 NQF Serious Reportable Events and one HAI: CLABSIs. Starting in January 2010, hospitals and ambulatory surgical centers have been required to report adverse events using the web-based reporting system. A standardized Adverse Event Reporting Form is available to all other medical facilities and healthcare providers for this purpose. Reports must be submitted within 60 days of the occurrence of an adverse event. A monetary penalty is imposed for failure to report. The Department collects and analyzes the reports, providing an annual report including summary data and recommendations. The Act contains well-defined confidentiality provisions related to reporters and information provided to the system administrator.

Reports by Event Type

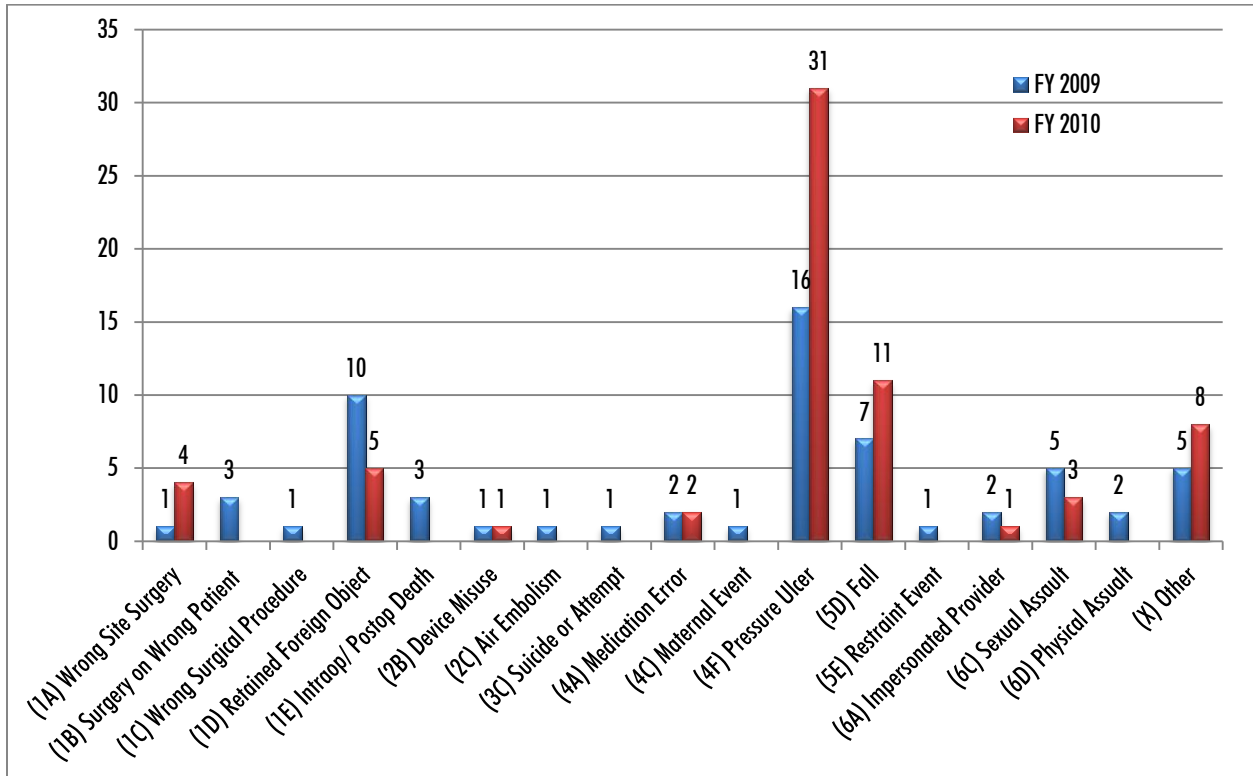
In the third reporting period, which covers events submitted between October 1, 2009, and September 30, 2010, District medical facilities and healthcare providers submitted 310 reports to the Department. The most frequently reported types of events were CLABSIs, stage III or IV pressure ulcers, falls, and other non-NQF events, representing 294 (95%) of reports submitted. Table 1 summarizes the reports submitted by event type. Table 2 provides a comparison between the number of events reported during this reporting period and the previous reporting period.

Table 1. Number and Percentage of Reports by Event Type in FY 2010 (web-based and paper)

Event Category	Event Type	No.	%
Surgical Events	1A - Surgery performed on the wrong body part	4	1%
	1B - Surgery performed on the wrong patient	0	0%
	1C - Wrong surgical procedure performed on a patient	0	0%
	1D - Unintended retention of a foreign object in a patient after surgery or other procedure	5	2%
	1E - Intraoperative or immediately postoperative death in an ASA (American Society of Anesthesiologists) Class I patient	0	0%
Product or Device Events	2A - Patient death or serious disability associated with the use of contaminated drugs, devices, or biologics provided by the healthcare facility	0	0%
	2B - Patient death or serious disability associated with the use or function of a device in patient care in which the device is used or functions other than as intended	1	<1%
	2C - Patient death or serious disability associated with intravascular air embolism that occurs while the patient is being cared for in a healthcare facility	0	0%
Patient Protection Events	3A - Infant discharged to the wrong person	0	0%
	3B - Patient death or serious disability associated with patient leaving the facility without permission	0	0%
	3C - Patient suicide or attempted suicide resulting in serious disability	0	0%

Event Category	Event Type	No.	%
	while the patient is being cared for in a healthcare facility		
Care Management Events	4A - Patient death or serious disability associated with a medication error	2	<1%
	4B - Patient death or serious disability associated with a hemolytic reaction (abnormal breakdown of red blood cells) due to the administration of ABO/HLA-incompatible blood or blood products	0	0%
	4C - Maternal death or serious disability associated with labor or delivery in a low-risk pregnancy while the patient is being cared for in a healthcare facility	0	0%
	4D - Patient death or serious disability associated with hypoglycemia, the onset of which occurs while the patient is being cared for in a healthcare facility	0	0%
	4E - Death or serious disability associated with failure to identify and treat hyperbilirubinemia in newborns	0	0%
	4F - Stage III or IV pressure ulcers acquired after admission to a healthcare facility	31	10%
	4G - Patient death or serious disability due to spinal manipulative therapy	0	0%
	4H - Artificial insemination with the wrong donor sperm or wrong egg	0	0%
Environmental Events	5A - Patient death or serious disability associated with an electric shock while the patient is being cared for in a healthcare facility	0	0%
	5B - Any incident in which a line designated for oxygen or other gas to be delivered to a patient contains the wrong gas or is contaminated by toxic substances	0	0%
	5C - Patient death or serious disability associated with a burn incurred from any source while the patient is being cared for in a healthcare facility	0	0%
	5D - Patient death or serious disability associated with a fall while the patient is being cared for in a healthcare facility	11	4%
	5E - Patient death or serious disability associated with the use of restraints or bedrails while the patient is being cared for in a healthcare facility	0	0%
Criminal Events	6A - Any instance of care ordered by or provided by someone impersonating a physician, nurse, pharmacist, or other licensed healthcare provider	1	<1%
	6B - Abduction of a patient of any age	0	0%
	6C - Sexual assault on a patient within or on the grounds of a healthcare facility	3	1%
	6D - Death or significant injury of a patient or staff member resulting from a physical assault that occurs within or on the grounds of a healthcare facility	0	0%
Healthcare Associated Infections	7 – Central-catheter-associated bloodstream infection	244	79%
'Other' Event Type Reported	X – 'Other' non-NQF type of event reported	8	3%
Total		310	100%

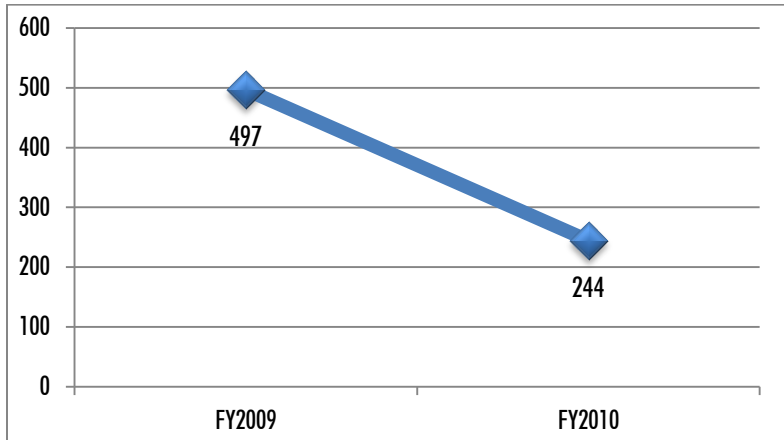
Table 2. Comparison of Number of Event Types (Non-CLABSI)



This bar chart details the event type that had one or more events reported in that category and makes a comparison between FY 2009 and FY 2010. Overall, the most significant increase in the number of events reported occurred in the Pressure Ulcers, Falls and Other and event type categories. District facilities reported almost twice as many Pressure Ulcers and Falls and also had an increase in Other events for this reporting period. A change in the number of event reports may reflect increased reporting or a difference in the number of events that occurred.

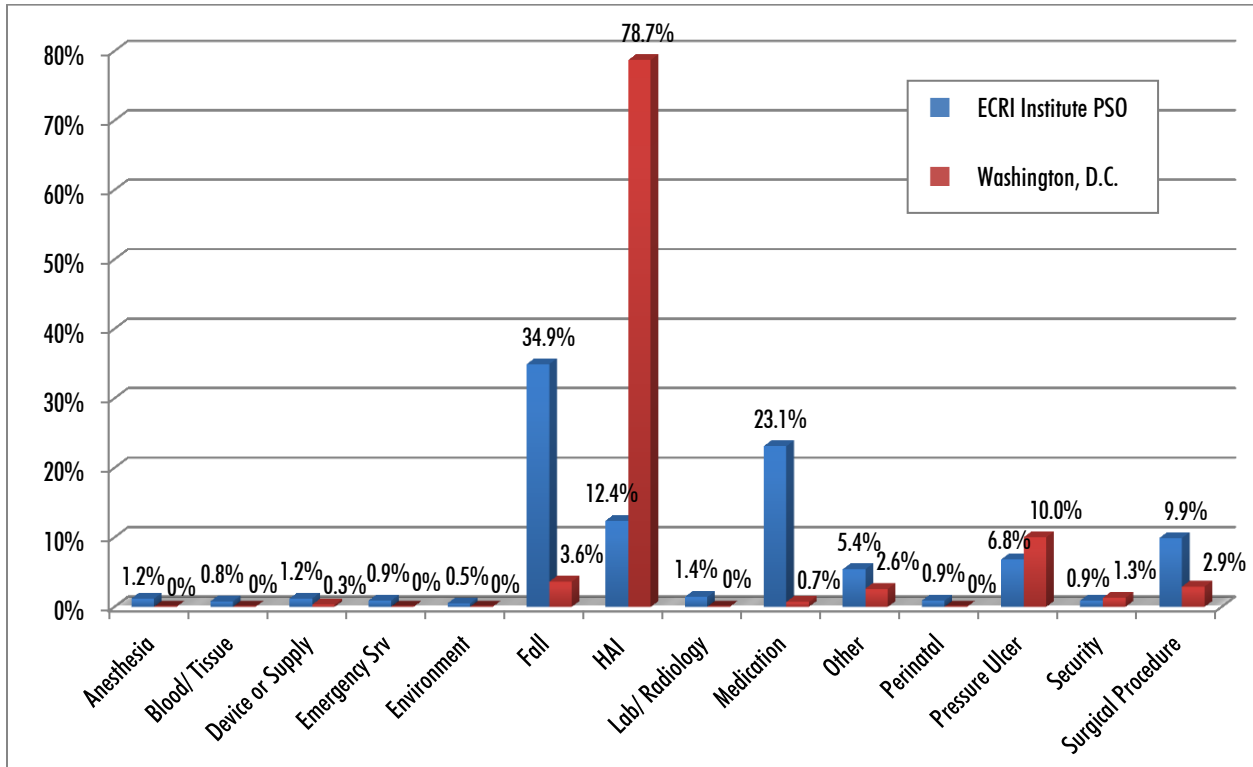
During the current reporting period there was also a decrease in the total number of event types reported, from 17 event types in FY 2009 to only 9 event types this past year. Also, the number of Retained Foreign Object event reports decreased, from 10 in FY 2009 to 3 in FY 2010.

Table 3. Comparison of Number of CLABSIs Events Reported



District facilities showed a decrease in the number of CLABSIs reported from FY 2009 to FY 2010. This drastic change in the number of CLABSIs reported may be due to one or more of the following: a change in the type of units required to report CLABSIs, a decrease in the reporting of CLABSIs, or a decrease in the number of CLABSIs. In January 2010, with the new web-based adverse event reporting system, the CLABSI reporting requirement was changed to include only those CLABSI events occurring in the intensive care units (ICU). It is unknown if there was an actual decrease in events versus a decrease in the reporting of events. However, during the first three months of the FY 2010 reporting period, prior to the new ICU reporting requirement, there were 122 reported CLABSI events, 93 (76%) of which were reported in ICUs suggesting that the majority of CLABSIs occurred in ICUs. Patients in an ICU are also more likely to have a central line for access than other medical or surgical floors.

Table 4. Comparison of Event Type Frequency



This table shows a comparison of event types reported in the District with those in the EIPSO system, a national event reporting database. The District’s top events are HAIs (which in the District are all CLABSIs), Pressure Ulcers, Falls and Other Events. The top reported events in EIPSO were Falls, Medication Errors, HAIs and Surgical Procedures. Although HAIs and Falls are within the top three most frequently reported events in EIPSO and in the District, HAIs are the most frequently reported event in the District (78%), whereas HAIs were reported 12.4% of the time in the EIPSO aggregate. Medication errors were apparent 23.1% of the time in EIPSO and only make up 0.7% of the District’s reports. However, it is difficult to draw conclusions when comparing District reporting efforts to EIPSO national figures. The District would obtain a true baseline if each facility reports every NQF event that occurs in a year. The goal then will be to compare this data to the next year’s data, to show improvement as reflected by a decrease in events.

Reports by Level of Harm

The Department interprets the submitted list of NQF’s Serious Reportable Events to represent an event that was unanticipated and may not have been preventable. For example, the list does not require reporting of all patient falls; yet, it does require those resulting in serious disability or death.³ The term used to describe harm is “*serious disability*” which includes any type of harm, mental or physical. NQF defines the term “*serious*” as resulting “in death or loss of a body part, disability or loss of bodily

³ National Quality Forum (NQF). NQF Serious Reportable Events in Healthcare 2006 Update [online]. 2006 [cited 2010 Nov 24] Available from the internet: http://www.qualityforum.org/Publications/2007/03/Serious_Reportable_Events_in_Healthcare%E2%80%932006_Update.aspx.

function lasting more than seven days or still present at the time of discharge from an inpatient healthcare facility.” They define the term “*disability*” as “a physical or mental impairment that substantially limits one or more of the major life activities of an individual.” Therefore, here are some examples of events that may be considered reportable:

- Fall resulting in a hip fracture, subdural hematoma or semi-permanent or permanent harm
- Surgery on correct body part but wrong location
- Wrong site surgery even if corrected intraoperatively
- Retained foreign object at any point after the surgery ends, regardless of setting, or whether object removed
- Administration of medication to patient with a known allergy that causes anaphylaxis
- Air embolism that results in semi-permanent or permanent change in mental status
- Hypoglycemic event that results in semi-permanent or permanent change in mental status
- Spinal manipulative therapy that results in nerve damage
- Maternal event that occurs up until 42 days post-delivery

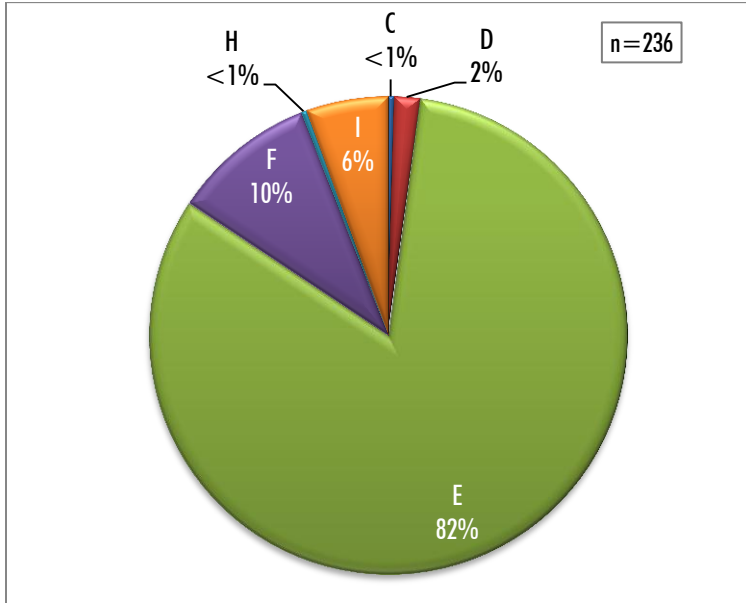
Not all reportable events necessarily imply the same degree of harm, and it is often useful to distinguish among degrees of harm. To this end, a harm scale developed by the National Coordinating Council for Medication Error Reporting and Prevention was applied to the event reporting system, and 236 events (76%) could be categorized based on the information provided. Table 5 summarizes the level of harm among those reports. Table 6 provides a comparison of the percentage of the level of harm identified in reports.

Table 5. Number and Percentage of Reports by Harm Score for FY 2010

Harm Score	Description	Reports	%
C	An event occurred that reached the individual but did not cause harm and did not require increased monitoring (an error of omission such as a missed medication dose does reach the individual)	1	<1%
D	An event occurred that required monitoring to confirm that it resulted in no harm and/or required intervention to prevent harm	4	1%
E	An event occurred that contributed to or resulted in temporary harm and required treatment or intervention	194	63%
F	An event occurred that contributed to or resulted in temporary harm and required initial or prolonged hospitalization	23	7%
G	An event occurred that contributed to or resulted in permanent harm	0	0%
H	An event occurred that resulted in a near-death event (e.g., required ICU care or other intervention necessary to sustain life)	1	<1%
I	An event occurred that contributed to or resulted in death*	13	4%
Paper reports with harm score not identified		74	24%
Total		310	100%

* (There were 13 total deaths—9 (69%) of those were potentially related to a CLABSI)

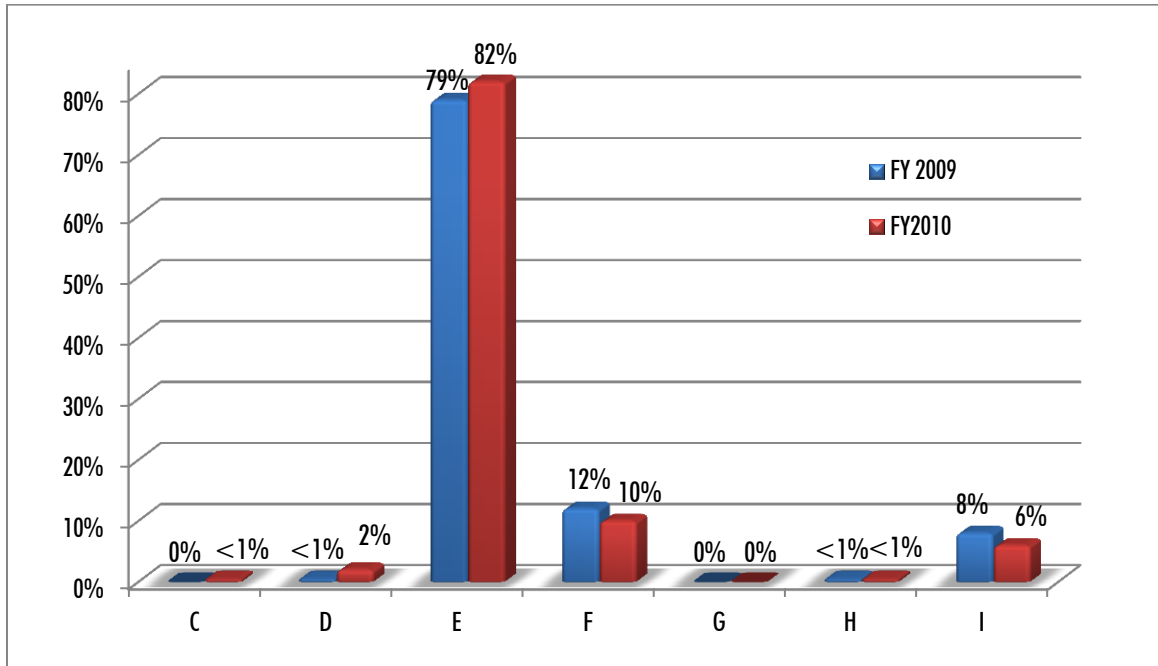
Table 6. Percentage of Level of Harm for Reports with Harm Scores



The reports submitted ranged from a harm score of C, an event that reached the patient and did not cause harm or any additional monitoring, to I, an event that contributed to or resulted in death. The majority of the events were categorized as a harm score of E, an event that resulted in temporary harm and required treatment or intervention, which is consistent with the minimal harm score severity level described in the NQF events.

Harm score frequency during this reporting period is similar to last year; however, this year there were fewer deaths reported, more level E reports and a slight increase in reported events of harm score level C and D.

Table 7. Comparison of Harm Score Frequency



Report Quality

During the current reporting period, there was an increase in the overall quality of reports in terms of overall completion of the web-based event report form as well as the quality of the information provided. Event description is a question on the web-based form and can capture the most important details of the event when completed. Of the 310 reports, 74% had adequate or thorough event descriptions.

Root Causes and Corrective Action Plans in Reports

The District requires the submission of a Corrective Action Plan (CAP), and a Root Cause Analysis (RCA) if applicable, as a follow-up to the reported adverse event. Ideally, an adverse event is handled in the following manner:



A CAP describes how the facility or provider plans to prevent or reduce the risk of similar events in the future. Any CAP should be based in part on the root cause or causes of the event. The provision of healthcare involves complex systems of people and technology and presents virtually unlimited opportunities for errors with many possible causes and contributing factors. Without a structured way to approach the investigation of errors, it would be easy to overlook important causative factors and miss the opportunity to put systems in place to eliminate error. Analysis of the cause or causes of an event helps ensure that all possible causes of medical error are considered and that appropriate, effective, CAPs are developed and implemented.

Failure in the performance of any one physician, nurse, or other practitioner is seldom the sole cause of an adverse event. The investigation of an event must look beyond the direct patient care provider to identify causes embedded in the system. Of the 310 reports submitted, approximately 1.5% included an RCA submission. Table 8 indicates both the percent of RCAs and CAPs submitted for the total reports for FY 2010. Table 9 is a comparison between Corrective Action Plans (CAP) submitted for paper versus electronic reports.

Table 8. Frequency of RCA and CAP Submissions

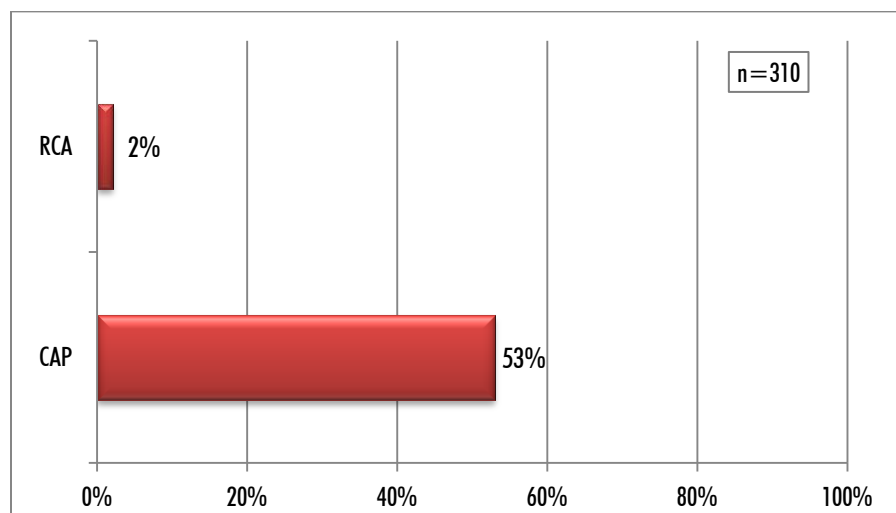
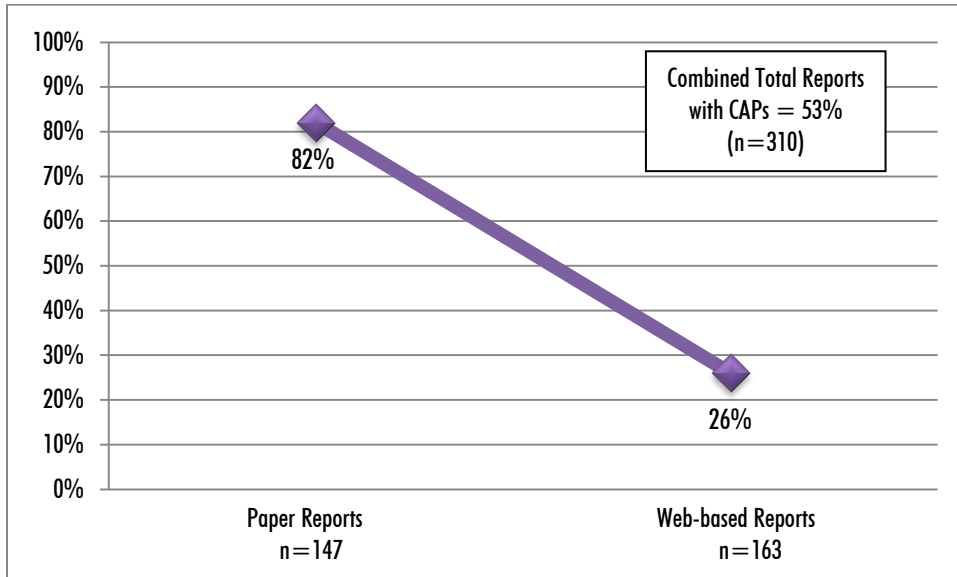


Table 9. Details of CAP Submission Frequency



A total of 165 (53%) of the reports submitted had a CAP included. When broken out by paper versus web-based reports there was a significant difference in compliance. At the beginning of the 2010 fiscal year, before the web-based reporting system was initiated, reports were still being submitted via paper to the Department. During those few months from October 2009 to February 2010, CAPs were included with 122 (83%) of the 147 paper reports; whereas, during the web-based reporting period 43 (26%) of the 163 electronic reports identified a CAP. The significant decline in the CAPs occurred when the event submission changed from paper to electronic. This may encourage a discussion of process improvement. There are additional fields under “Factors and Causes” within the reporting system that may be considered for use to enhance facility completion of these action plans. This way the event details and the action plans are stored in the same location.

Guidance and Recommendations

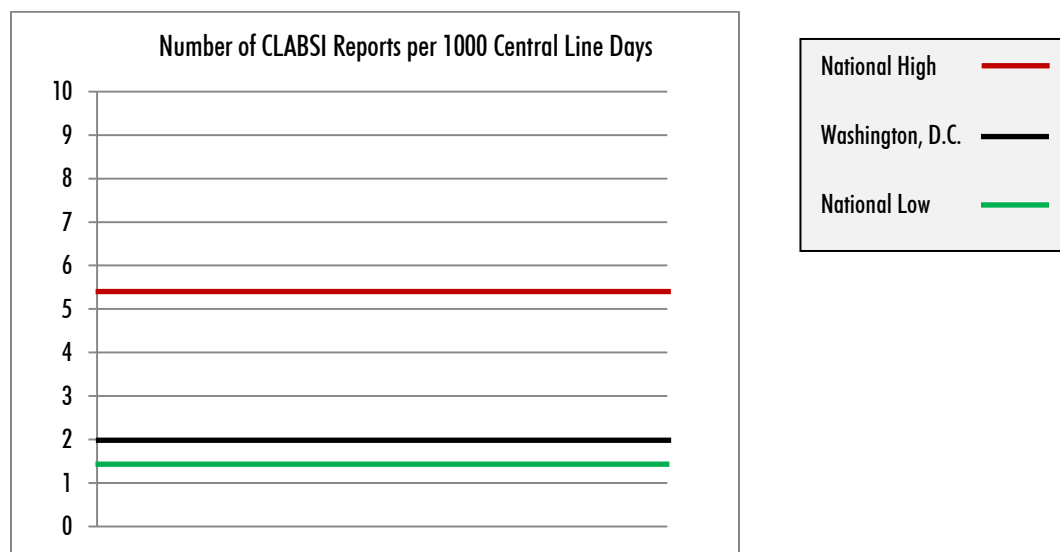
The Department is charged with providing facilities and providers with recommended methods to reduce systematic adverse events and disseminating information and advice on best practices. During this reporting period, in order to provide meaningful feedback to facilities, each reporting facility received an individualized report analyzing the quantity and quality of its reporting. Where possible, while preserving a facility's confidentiality, a comparison was provided to the District as a whole.

The following is a summary of the most commonly reported event types. As required by the Act, the information is de-identified and anonymous with regard to the facility, provider, and patient. Root causes/contributing factors and preventive strategies identified by healthcare facilities and providers are shared. Finally, recommended best practices are provided to further assist facilities and providers in improving healthcare delivery in the District.

Central-Line-Associated Bloodstream Infections

The National Healthcare Safety Network (NHSN) reports the national incidence (or infection rate) of CLABSIs in hospital intensive care units (ICU) ranges from 1.4 to 5.5 infections per 1,000 central-line days,⁴ depending on the type of hospital unit.⁵ Comparing the FY 2010 CLABSI rate in District ICUs with NHSN national figures required collecting data not only on the infections, but also on the number of patients in each District ICU that had central line catheters during the same time period. During the third annual reporting period the Department did require facilities to report this information.

Table 10. Comparison of CLABSI Rates



⁴ Central-line days are calculated on each critical care unit by counting the number of patients with a central line each day. At the end of the month, the daily totals for each unit are added up for monthly totals.

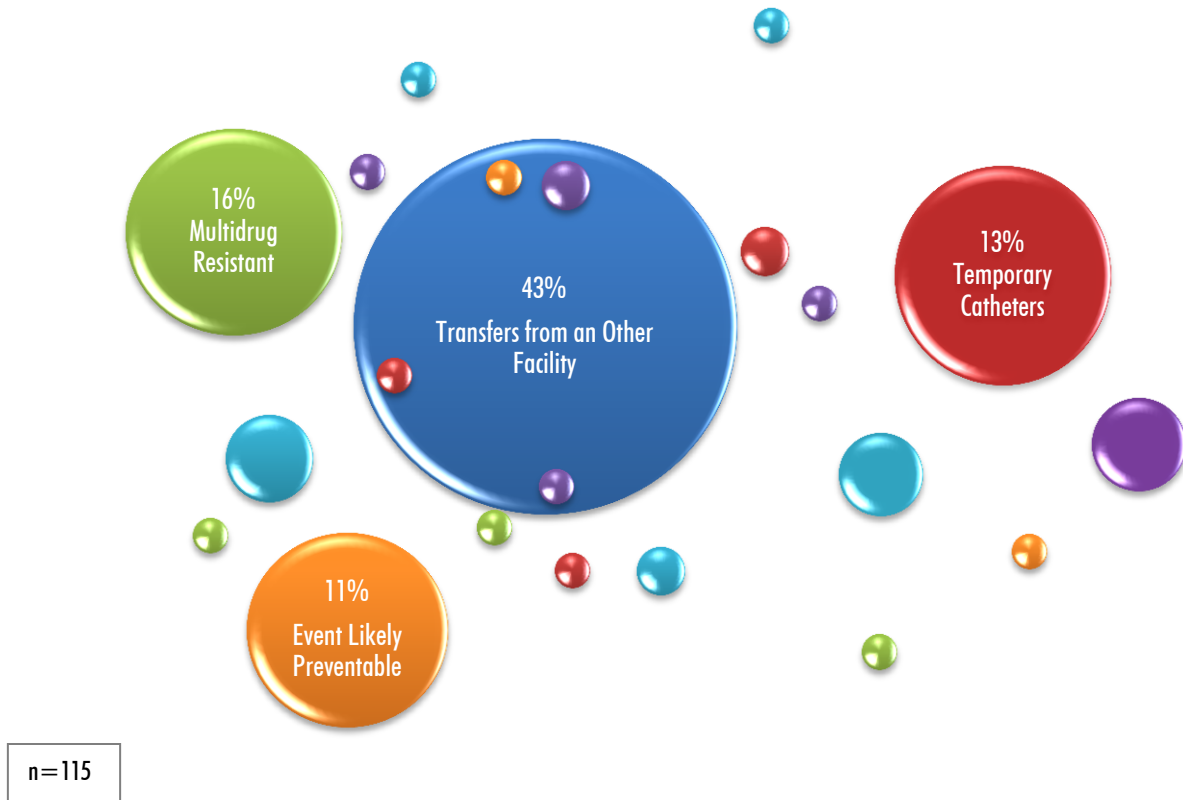
⁵ Edwards JR, Peterson KD, Banerjee S, et al. National Healthcare Surveillance Network (NHSN) Report, data summary for 2006 through 2008, issued December 2009. *Am J Infect Control*. 2009;37(10):783-805.

The CLABSI rate was based on FY 2010 CLABSI events attributed to ICUs and the central-line days submitted by facilities. District healthcare facilities reported 83,538 central line days in their ICUs and 171 CLABSIs in ICUs, resulting in a CLABSI rate of 2.0 during FY 2010. Those paper-based reports submitted, prior to the web-based system, which did not specify the unit in which the CLABSI occurred were not included. The NHSN reported a national average of 1.4 to 5.5 CLABSIs per 1,000 central-line days⁴ in ICUs.⁵ Although not directly comparable to NHSN figures for this reporting period; the district CLABSI rate may nonetheless serve as an approximate baseline. Starting in October 2010, District facilities were required to report CLABSIs in ICUs through the NHSN system. This initiative allows the epidemiologists at the Department of Health to monitor infection rates for District facilities and also contributes to the CDC's National database.

CLABSI in ICUs were reported from the 26 ICUs in the District which included:

- 2 Cardiac Intensive Care Units
- 7 Medical Intensive Care Units
- 6 Medical/Surgical Intensive Care Units
- 3 Neonatal Intensive Care Units
- 1 Neurosurgical Intensive Care Units
- 2 Pediatric Intensive Care Units
- 5 Surgical Intensive Care Units

Table 11. CLABSI Analysis of Web-based Events



Focusing on web-based CLABSI reports revealed some interesting trends. The most significant trend was that 43% of CLABSI patients were originally transfers from other facilities. Most noted these transfers were from other acute care facilities. Analysis of the catheter type revealed that temporary central lines were the most common (13%); most reports did not provide this information. Those that indicated the type of temporary catheter were further analyzed. These reports revealed 50% were peripherally inserted central catheters (PICCs) and 33% were multi-lumen catheters.

Varieties of organisms were identified throughout the CLABSI reports and fell in the following major types: *Staphylococcus*, *Enterococcus*, *Candida*, *Acinetobacter*, *Klebsiella* and Other. Within these categories the most common species seen were:

- *Staphylococcus epidermidis*
- *Staphylococcus aureus*
- Methicillin-resistant *Staphylococcus Aureus* (MRSA)
- *Enterococcus Spp.*
- *Vancomycin-resistant Enterococcus* (VRE)
- *Candida Spp.*
- *Acinetobacter Spp.*

In addition, 16% of web-based CLABSI reports indicated that the organisms were multidrug-resistant; however, 63% did not include this information. The following table shows the frequency of species type based on CLABSI reports that listed organisms.

Table 12. Frequency of Species Type for Web-based CLABSIs Including Organisms

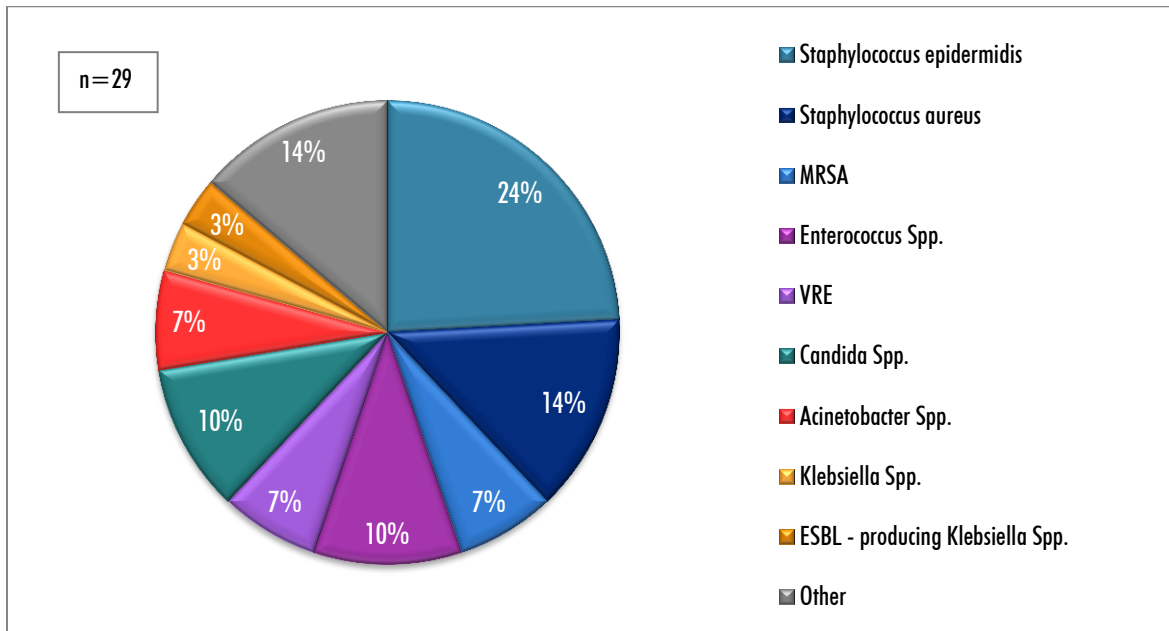
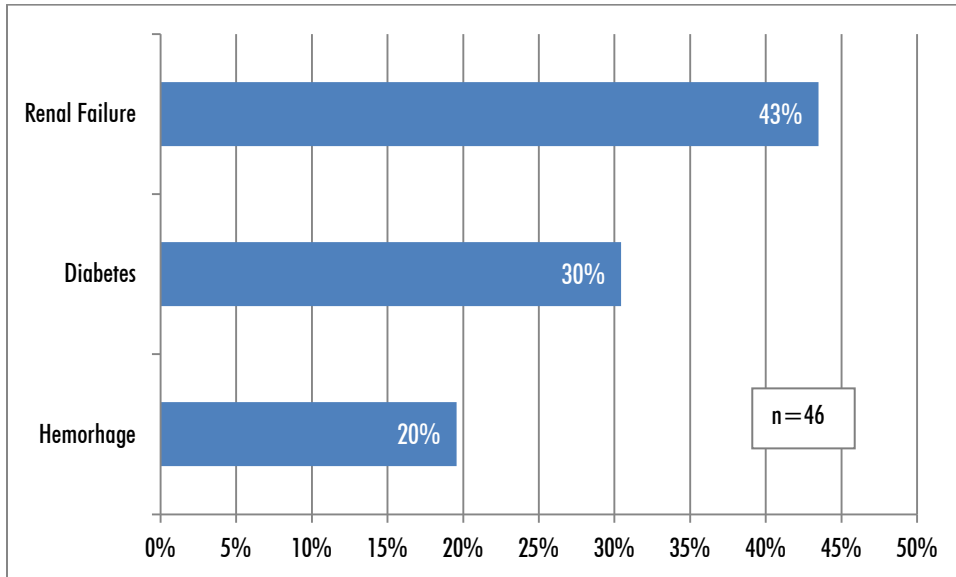


Table 13. Frequency of Illnesses for Web-based CLABSI with History or Diagnosis



Review of the CLABSI reports with events that included patient history or diagnosis revealed a few common trends. Of those reports, 43% involved patients whose diagnoses included acute or chronic renal failure, 30% involved patients with a history of diabetes, and 20% involved patients with hemorrhage or bleeding. Although reports do not indicate why these diagnoses were more common, one may speculate that with renal failure dialysis catheters are typically required and with patient's hemorrhaging it is likely that a triple lumen catheter is likely needed.

Prevention of CLABSI

To combat the District's most common central line infections, healthcare providers should constantly be aware of their surroundings and ensure that their hands and environment are clean.⁶ Proper hand hygiene continues to be one of the top strategies for preventing most CLABSI events, particularly infections related to methicillin-resistant *Staphylococcus aureus* and vancomycin-resistant *Enterococcus*.^{6,7}

In addition, consider assessing your facility's practices for disinfecting equipment and patient rooms as these processes, when done correctly, help prevent the spread of infection.⁶ Skin flora includes organisms that healthcare providers can prevent from colonizing (e.g., *S. epidermidis*) by properly disinfecting the patient's skin with chlorhexidine before line insertion.^{6,7,8} In addition to how well we use disinfectants in our environments and on our skin, the care and maintenance of central lines play a role in CLABSI prevention. Contamination is commonly due to the constant manipulation of intravenous lines

⁶ Joint Commission. Goal 7: reduce the risk of health care-associated infections. In: National Patient Safety Goals. Accreditation program: hospital [online]. 2010 [cited 2010 Aug 18]. Available from Internet: http://www.jointcommission.org/NR/rdonlyres/868C9e07-037f-433d-8858-0d5faa4322f2/0/revisedchapter_HAP-NPSG_20090924.pdf.

⁷ Ryder M. Improve CRBSI prevention: target intraluminal risks [online]. *Exec Healthc* 2009 Jul [cited 2010 Aug 17]. Available from Internet: <http://www.executivehm.com/article/Improve-CRBSI-Prevention-Target-Intraluminal-Risks>.

⁸ O'Grady NP, Alexander M, Dellinger EP, et al. Guidelines for the prevention of intravascular catheter-related infections. *MMWR Recomm Rep* 2002 Aug 9;51(RR-10):1-29. Also available: <http://www.cdc.gov/mmwr/PDF/rr/rr5110.pdf>.

and connections.^{6,7} CLABSIs due to candida infection are commonly the result of administering total parenteral nutrition, which is high in lipids and glucose, through a central line.^{7,9} Appropriate disinfection of catheter hubs, needleless connectors, injection ports, and intravenous tubing can help prevent these infections, as well as many others.^{6,7,8} Assessing the need for central lines is an evidenced-based practice that should be integrated into daily multidisciplinary rounds, if it is not already done.¹⁰

In summary, the following strategies should be considered:

- Perform proper and consistent hand hygiene.
- Ensure that the environment is clean by properly disinfecting equipment and patient rooms.
- Properly disinfect the skin with chlorhexidine before line insertion.
- Disinfect catheter hubs, needleless connectors, injection ports, and intravenous tubing before each use.
- During multidisciplinary rounds, assess the need to continue central lines.^{6,7,8}

Regardless of what best practices are implemented, standardizing procedures across an organization can be one of the most effective strategies to reduce CLABSIs.⁶ These best practices, along with adopting a culture of safety and garnering strong leadership support, can help sustainably reduce CLABSIs.¹⁰

Table 14. CAPs Submitted for CLABSI events

Insertion	<ul style="list-style-type: none"> • Antimicrobial-coated catheters used • Residents retrained in line placement • Reinforce adherence to central line bundle • Checklist for central line insertion • Reinforced use of the checklist
Maintenance	<ul style="list-style-type: none"> • Policy and procedure education to all staff who maintain and access central lines • Site care following CDC guidelines • Reinforce adherence to central line bundle • Audits of Site Care • Pocket-sized reminder cards for site care
Daily Assessment	<ul style="list-style-type: none"> • Daily necessity assessment of the need for catheter • Reinforce adherence to central line bundle
Leadership	<ul style="list-style-type: none"> • Posting CLABSI rates on units • Incentives for zero CLABSIs • Review of each case by individual unit

⁹ Kuhn DM, Mukherjee PK, Clark TA, et al. Candida parapsilosis characterization in an outbreak setting. *Emerg Infect Dis* 2004 Jun;10(6):1074-81. Also available: <http://www.cdc.gov/ncidod/Eid/vol10no6/pdfs/03-0873.pdf>.

¹⁰ Beyond the bundle: reducing the risk of central line-associated bloodstream infections. *Pa Patient Saf Advis* 2010 Mar 18;7(Suppl 1):1-9. Also available: [http://patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/mar18_7\(suppl1\)/Pages/01.aspx](http://patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2010/mar18_7(suppl1)/Pages/01.aspx).

Additional Resources

CLABSI safe practices based on both CDC and IHI recommendations are summarized below:^{11,12}

Prior to Insertion

- Perform hand washing using an alcohol-based hand rub before and after central-catheter insertion.
- Use maximal barrier precautions in preparation for central-catheter insertion.
- Perform skin antiseptics using a 2% chlorhexidine-based preparation before catheter insertion.
- A povidone-iodine preparation should be used to clean CVC insertion sites for children 2 months of age or younger, especially low-birth-weight neonates.

During Insertion

- Select the optimal site for catheter insertion, with Avoidance of the Femoral Vein for Central Venous Access in Adult Patients.

After Insertion

- Perform hand washing using an alcohol-based hand rub before and after catheter care.
- Change gauze dressings every 2 days, transparent dressings at least every 7 days or when damp soiled or loose.¹³
- Review line necessity daily, and remove unnecessary lines promptly.

The Joint Commission – 2010 National Patient Safety Goals (NPSG 07.04.01) – This requirement covers short and long-term central venous catheters and peripherally inserted central catheter (PICC) lines. <http://www.jointcommission.org/PatientSafety/NationalPatientSafetyGoals/>.

Also refer to the Society for Healthcare Epidemiology of America/Infectious Diseases Society of America “Compendium of Strategies to Prevent Healthcare-Associated Infections” for practical recommendations about implementation of CLABSI prevention efforts available online at: <http://www.shea-online.org/about/compendium.cfm>.

Stage III & IV Pressure Ulcers Acquired after Admission to a Healthcare Facility

Stage III and IV pressure ulcers are considered Serious Reportable Events and have been added to the list of hospital-acquired conditions whose treatment will no longer be reimbursed by Medicare. Pressure ulcer incidence rates vary considerably by clinical setting—ranging from 0.4% to 38% in acute care, from 2.2% to 23.9% in long-term care, and from 0% to 17% in home care.¹⁴ Stage III and IV pressure ulcers

¹¹ O’Grady NP, Alexander M, Dellinger EP, et al. Guidelines for the prevention of intravascular catheter-related infections. Centers for Disease Control and Prevention. *MMWR Recomm Rep* 2002 Aug 9;51(RR10):1-26. Also available: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5110a1.htm>.

¹² Institute for Healthcare Improvement (IHI). Prevent central line infections. Getting started kit. Updated how-to guide [online]. 2008 Jun [cited 2009 Sept 17]. Available from Internet: <http://www.ihl.org/IHI/Programs/Campaign/CentralLineInfection.htm>.

¹³ Bleasdale SC, Trick WE, Gonzalez IM, et al. Effectiveness of chlorhexidine bathing to reduce catheter-associated bloodstream infections in medical intensive care unit patients. *Arch Intern Med* 2007 Oct 22;167(19):2073-9.

¹⁴ Lyder CH. Pressure ulcer prevention and management. *JAMA* 2003;289(2):223-6.

include pressure ulcers with full thickness tissue loss and full thickness tissue loss with exposed muscle, tendon, or bone. The Department received 31 reports of stage III or IV pressure ulcers acquired after admission. This was the most frequently reported NQF event in FY 2010.

Prevention of Stage III and IV Pressure Ulcers

CAPS submitted with these reports included the following:

- Wound Care consult ordered if high risk on admission
- Braden Scores during shift report
- Skin assessment and care rounds at shift change
- Protocol Audits and Pain Audits
- Discuss high Braden scores during daily huddle
- Implement the Pressure Ulcer Prevention and Treatment Protocol for at-risk patients
- Education was provided throughout the facility as a review of identification and staging of pressure ulcers, including a refresher on using the Braden Scale

Additional Resources

A number of clinical practice guidelines have been developed in the area of pressure ulcer prevention and treatment. The following is a summary of the National Quality Forum's Safe Practices for Pressure Ulcer Prevention:¹⁶

- Evaluate each patient on admission and regularly thereafter for the risk of developing pressure ulcers.
- Implement explicit organizational policies regarding the prevention of pressure ulcers, including the following:
 - Identify individuals at risk of developing pressure ulcers
 - Document the pressure ulcer risk assessment and prevention plan
 - Assess and periodically reassess each patient's risk, and act on the assessment
 - Perform quarterly prevalence studies to evaluate the effectiveness of the pressure ulcer prevention program
- Performance improvement initiatives should include the following elements:
 - Education regarding the pertinent pressure ulcer frequency and severity
 - Skill building in use of pressure ulcer prevention interventions
 - Implementation of process improvement interventions
 - Measurement of process or outcome indicators
 - Reporting of performance outcomes

NQF also endorses the use of implementation approaches, as follows:¹⁵

- Use of preventive fire-code-compliant pads or plastic polymer pressure-relieving pads on pressure points

¹⁵ National Quality Forum (NQF). Safe practices for better healthcare 2006 update [online]. 2006 [cited 2010 Nov 24]. Available from Internet:

http://www.qualityforum.org/Publications/2007/03/Safe_Practices_for_Better_Healthcare%E2%80%932006_Update.aspx.

- Repositioning of any patient at risk for the development of a pressure ulcer at least every two hours
- Nutrition assessment and supplements when indicated
- Instituting a protocol incorporating specific risk assessment scores, and empowering nurses to initiate prevention interventions without a physician's order

A summary of pressure ulcer prevention guidelines may be found at the National Guideline Clearinghouse (www.guideline.gov). In addition, National Pressure Ulcer Advisory Panel (NPUAP) provides a list of pressure ulcer prevention points at http://www.npuap.org/PU_Prev_Points.pdf.

Patient Death or Serious Disability Associated with a Fall

The Centers for Disease Control and Prevention (CDC) estimates that one in three U.S. adults age 65 or older falls each year.¹⁶ Falls in adults age 65 and older are the leading cause of injury related deaths; however, the most common injury is a hip fracture.^{17,18} Falls are even more common in older adults across healthcare settings. Within nursing homes, as many as 3 out of 4 residents are estimated to fall each year. This is approximately twice as the rate of older adults outside of nursing homes.¹⁹ During the current reporting period, District facilities reported eleven falls-related events.

The falls report indicated that the majority of the falls (75%) were given a harm score of "E" or "F." This means the event resulted in temporary harm that required treatment and possibly a prolonged hospitalization. (See Table 4 for harm score descriptions.) This data represents all 11 falls reports, paper and electronic, during FY 2010. Eighteen percent of the events submitted on falls reported that the patient ultimately died. What can we learn from these events?

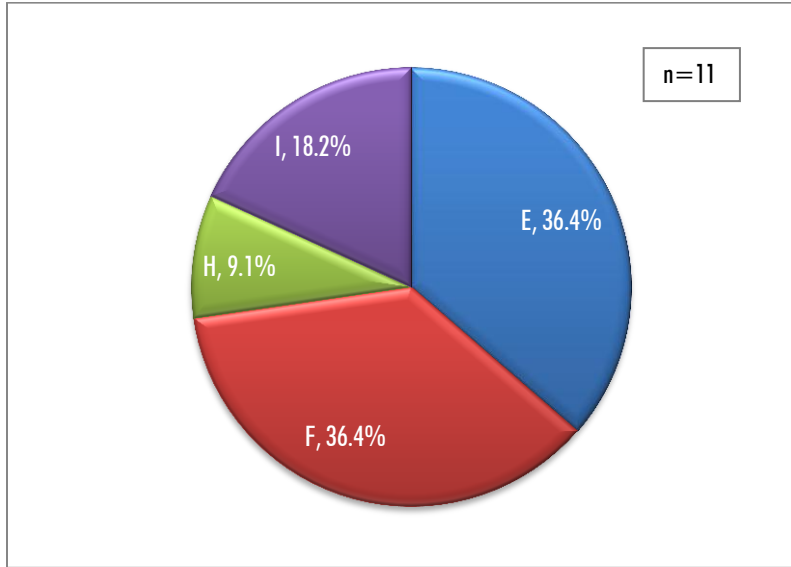
¹⁶ Centers for Disease Control and Prevention. Falls among older adults; an overview [online]. 2008 Apr 25 [cited 2010 Nov 24]. Available from Internet: <http://www.cdc.gov/ncipc/factsheets/adultfalls.htm>.

¹⁷ ECRI Institute. *Falls Prevention Strategies in Healthcare Settings*. Plymouth Meeting (PA): ECRI Institute; 2006 Oct.

¹⁸ Institute for Healthcare Improvement. Getting started kit: Prevent pressure ulcers. How to guide [online]. 2008 Mar 27 [cited 2009 Jul 28]. Available from Internet: <https://www.ihl.org/users/login.aspx?returnURL=http%3a%2f%2fwww.ihl.org%2fihl%2fdownload.aspx%3ffile%3d%2fNR%2frdonlyres%2f5ABABB51-93B3-4D88-AE19-BE88B7D96858%2f0%2fPressureUlcerHowtoGuide.doc>

¹⁹ Centers for Disease Control and Prevention. Falls in nursing homes [online]. 2008 Jun 10 [cited 2010 Nov 24]. Available from Internet: <http://www.cdc.gov/ncipc/factsheets/nursing.htm>.

Table 15. Frequency of Harm Score for Fall Events

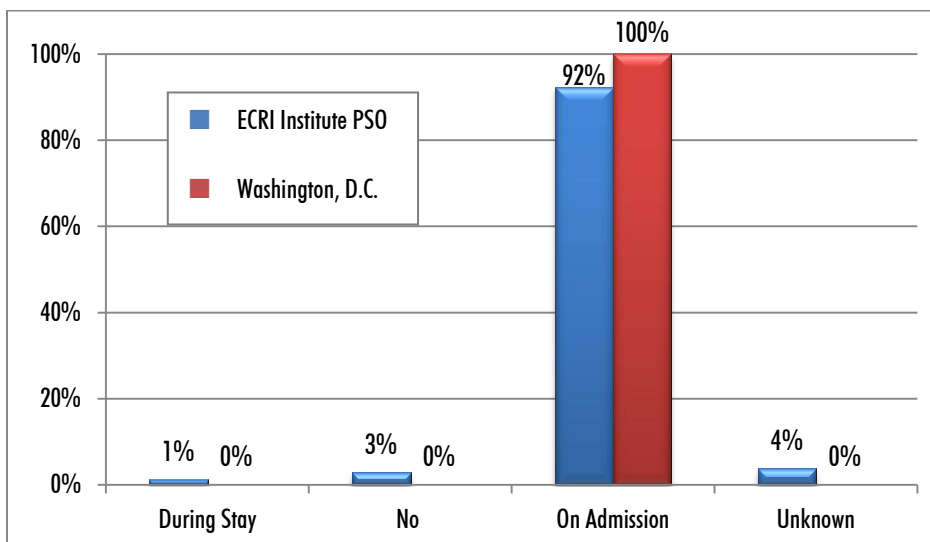


Prevention of Falls

Falls prevention starts with the falls risk assessment and should be followed through by initiating the preventive strategies discussed in each facility’s falls protocol. Protocols should have different strategies for each level of falls risk; high, moderate, and low.

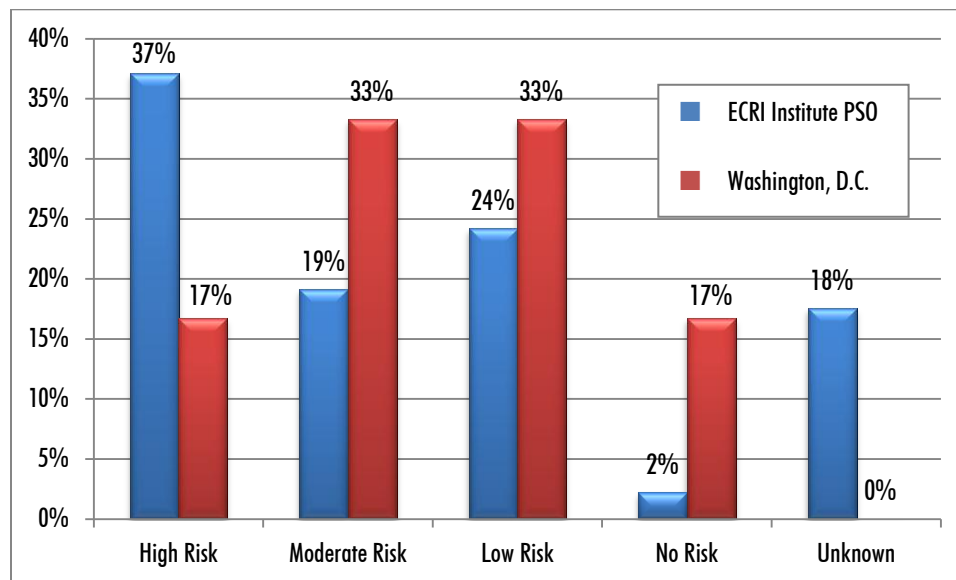
The following tables represent when a falls risk assessment was performed and the result of the risk assessment. This data was based on the falls reported in the web-based system during FY 2010. This allowed for more specific analysis of District falls and comparison with EIPSO national data. The District reports showed 100% of the falls risk assessments were appropriately performed on admission.

Table 16. Frequency of Falls Risk Assessment Completion for Web-based Fall Events



These web-based falls reports for the District also revealed the level of falls risk the patient was given on admission. The majority of patients were given a rating of moderate or low falls risk, 33% for each category; the rest of patients were either given a high risk or no risk rating. When compared to the EIPSO national aggregate, the majority of patients were given a high risk rating of 37% while 2% of patients were rated as no risk. However, the rest of the patients were given a moderate (19%) or low (24%) falls risk score, respectively.

Table 17. Frequency of Fall Risk for Web-based Fall Events (at Time of Fall)



The following is an example of a detailed corrective action plan submitted with a falls reports:

- Evaluation of patient population at high risk for fracture due to disease processes.
- Committee to address the medical and rehab management of this patient population to determine what changes in medication and/or therapy may be beneficial to improve bone health in this population.

Additional Resources

Since 2005, the Joint Commission’s National Patient Safety Goals for accredited organizations have included the implementation of a program aimed at reducing the risk of injury from falls. To meet the requirements for this goal, accredited facilities must implement falls reduction programs and conduct ongoing assessment of the efficacy of the program. The key components of a program aimed at addressing the persistent problem of falls in healthcare facilities include assessment for falls risk, action-based interventions, post-falls assessment and data collection, and use of falls reduction program tools.²⁰ When developing or revising fall prevention policies and protocols, it is important to consider that the risk factors for falls are complex and that no single type of intervention will succeed in eliminating the risk of falling.

²⁰ ECRI Institute. Falls. *Healthc Risk Control* 2005 Sep;2:Safety and Security 2:4-6.

Major areas that should be addressed in healthcare settings regarding falls include the following:^{21,22}

- Initial falls risk assessment upon admission
- Complete fall risk evaluation 2-3 weeks after admission which may include some of the following:
 - History of fall circumstances
 - Medications
 - Existing medical problems
 - Gait and balance
 - Neurological status
 - Cardiovascular status
 - Vision
 - Incontinence
 - Joint function
 - Assistive devices
 - Pain
 - Foot assessment
- Exercise such as strength and balance training if medically stable
- Evaluation for the need for vitamin D and/or calcium supplementation
- Reduce the use of restraints as they may increase the risk for falls
- Education for care givers as well as patients

A number of falls prevention tools can be accessed at:

- The Agency for Healthcare Research and Quality's (AHRQ) Quality Tools website at <http://www.innovations.ahrq.gov/qualitytools/>.
- The Institute for Healthcare Improvement (IHI) at <http://www.ihl.org/IHI/Topics/PatientSafety/ReducingHarmfromFalls>
- The National Guideline Clearinghouse at: <http://www.guideline.gov/>.

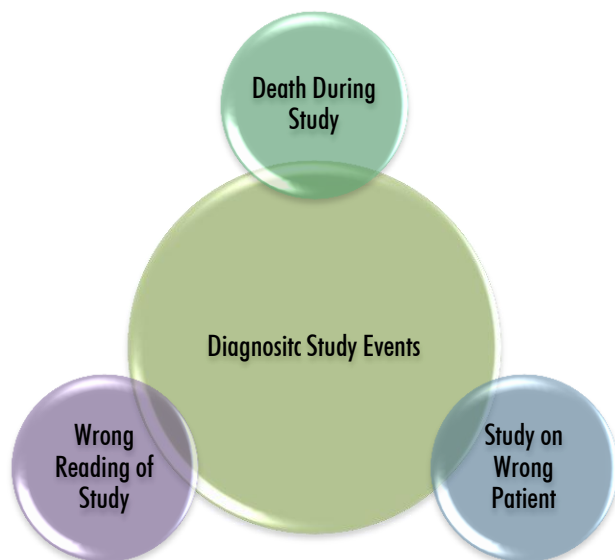
"Other" Event – (not NQF or CLABSI)

There were 8 events submitted as "Other" describing various types of incidents. The harm scores were E (63%) or I (27%) (see Table 5). The majority of events were reported by acute care hospitals (75%); the remainder were reported by nursing homes (25%). Events involving a diagnostic study were common. The issues reported included death during a diagnostic study, and a study performed on the wrong patient and one with incorrect readings.

²¹ Pennsylvania Patient Safety Authority. Medication assessment: one determinant of fall risk. *PA PSRS Patient Saf Advis* 2008 Mar;5(1):16-8.

²² Association for Healthcare Research and Quality (AHRQ). National Guideline Clearinghouse: Prevention of falls in the elderly [online]. 2009 [cited 2010 Nov 24]. Available from Internet: <http://www.guideline.gov/syntheses/synthesis.aspx?id=16412&search=falls>.

Table 18. Diagnostic Study Issues Reported in “Other” Events



Prevention of “Other” Events

Facilities reported the following contributing factors to the events involving diagnostic studies:

- Communication failure
- Patient history not known
- Failed to follow policy
- Patient refusal or non-compliance

Additional Resources

Misinterpretation of diagnostic studies, such as CT scans, MRIs, or x-rays, is typically the result of multiple breakdowns in the process. In 2007 the *Annals of Emergency Medicine* published a study that analyzed closed malpractice claims. The study revealed that 65% of the time diagnostic errors were associated with an adverse event. Specifically, misinterpretation of diagnostic tests occurred 37% of the time. As a result of the study the following strategies were suggested:

- Review policies and procedures for communicating critical test results, and encourage direct communication between radiology, the laboratory, and ordering providers.
- Implement a standardized process for handoffs.
- Require greater oversight of physician trainees’ diagnostic evaluations.
- Enhance staffing during periods of heavy workload.
- Employ a strategy of double-checking clinician interpretations of test results.²³

²³ ECRI Institute. Emergency Department Liability. *Healthcare Risk Control Risk Analysis*, Nov 2008; 4(1):1-24.

Diagnostic testing and other healthcare services can also be provided to the wrong patient when proper patient identification procedures are not in place or are not followed. For example, one case study discussed a nurse who took a patient to get a procedure. The nurse thought she was being vigilant because she stated the patient's name and procedure and had the patient confirm this to her. This led to a near-miss situation because the nurse should have checked the patient's wrist band and had the patient himself state his name and procedure. The following describes an assessment of strategies to improve patient identification, develop policies and procedures, as well as effective training and monitoring.

- Develop a policy for patient identification
- Monitor the identification process
- Ensure consistency in patient identification across settings
- Ensure that wristband policies are in place
- Address wrong-patient errors during procedures/tests
- Implement barriers to prevent patient identification mishaps
- Educate staff on the importance of patient identification
- Involve patients in the patient identification process

Transportation of patients should also be a part of a facility's patient identification process. There should be specific points in the care process and in the transition process when a patient must be re-identified.²⁴

In 2009, Newman-Toker and Pronovost published "Diagnostic errors—the next frontier for patient safety" in JAMA which can be found online at: http://jama.ama-assn.org/cgi/content/full/301/10/1060?ijkey=a8e0163e8447dbd46c34bb7e7cd2d84c1e08f3d8&keytype=2=tf_ipsecsha. It discusses the types of safety issues that healthcare is currently facing with diagnostic procedures and strategies to reduce chance of error.

²⁴ ECRI Institute. Patient Identification. *Healthcare Risk Control Risk Analysis*, Nov 2007; Supplement A; Risk and Quality Management Strategies 16: 1-14.

Conclusion

Medical facilities and providers in the District continue to take important steps in reducing the number of adverse events by submitting adverse event reports under the Medical Malpractice Amendment Act of 2006. The focus of the District's Patient Safety Reporting Program is to analyze events to better understand how and why adverse events occur. Dissemination of lessons learned and best practices will facilitate system changes that consistently promote the delivery of safe patient care. The success of the reporting program continues to rely on the willingness of healthcare facilities and providers to disclose NQF events and submit meaningful reports. In 2011, the District will have more opportunities to benefit from custom feedback to further support this objective. The vision for the reporting system is to provide a tool for quality improvement and education. The delivery of safe patient care is the ongoing goal of the program and 2011 will usher in the next phase of this important effort.

Technical Credits

This report was prepared for the Department of Health by ECRI Institute. ECRI Institute, a nonprofit organization, dedicates itself to bringing the discipline of applied scientific research in healthcare to uncover the best approaches to improving patient care. As pioneers in this science for nearly 40 years, ECRI Institute marries experience and independence with the objectivity of evidence-based research. More than 5,000 healthcare organizations worldwide rely on ECRI Institute's expertise in patient safety improvement, risk and quality management, and healthcare processes, devices, procedures, and drug technology.