LEGISLATIVE REPORT TO THE GENERAL ASSEMBLY
Adverse Event Reporting

General Statutes of Connecticut
Section 19a-127l-n

QUALITY IN HEALTH CARE PROGRAM

OCTOBER 2016

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Legislative Report to the General Assembly
Adverse Event Reporting

Quality in Health Care Program

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EXECUTIVE SUMMARY

For 2015 the number of adverse events reports (n=456) was 3% lower than the preceding year. The most common adverse events among reports were: (1) stage 3-4 or unstageable pressure ulcers acquired after admission to a healthcare facility, (2) falls resulting in serious disability or death, (3) perforations during open, laparoscopic, and/or endoscopic procedures, and (4) retention of foreign objects in patients after surgery. These four categories accounted for 85% of events reported in 2015.

After examining an adverse event report, which includes a Corrective Action Plan, the Department of Public Health (DPH) determines whether to initiate an investigation. In addition to adverse event monitoring by DPH, Patient Safety Organizations disseminate information to improve patient care.

BACKGROUND

Connecticut General Statutes §19a-127l required the Department of Public Health (DPH) to establish a Quality in Health Care program for health care facilities. The program is operated through general DPH resources. An Advisory Committee, chaired by the DPH Commissioner or designee, advises the program. Mandatory adverse event[1] reporting began October 1, 2002. After evaluating the program for more than a year, the Advisory Committee recommended adoption of the National Quality Forum (NQF) list of Serious Reportable Events, plus five or six Connecticut-specific events.

Adverse events are reported to DPH by telephone and fax machine. Reporting forms and definitions are located at the DPH website under "Forms."[2] After the department has decided whether to open an investigation, paper-based data are entered into an electronic database.

The Adverse Event reporting requirements were amended when CGS 19a-127n became effective July 1, 2004. The statute replaced the previous adverse event classification system with a list of reportable events identified by the NQF. Additionally, DPH added six Connecticut-specific adverse event definitions to supplement the NQF list. (The list appears in Appendix B.) Items on the list are of concern to both the public and healthcare professionals, are clearly identifiable and measurable, and are often preventable.[3] DPH completed development of the mandated regulations for reporting of adverse events, and these became effective November 1, 2007.

In May 2007, hospitals and ambulatory surgical centers were provided with the updated NQF List of Serious Reportable Events and the revised list compiled by the Commissioner of Public

[1] As discussed in Connecticut's March 2004 Adverse Events report, adverse events are not the same as medical errors. Some adverse events do not result from medical errors, and some medical errors do not result in adverse events. Annual Reports are at www.ct.gov/dph under Statistics & Research, then choose "Health Care Quality."
[2] http://www.ct.gov/dph/cwp/view.asp?a=3115&q=390100&dphNav_GID=1601
[3] More fully explained in Kenneth W. Kizer, "Clearing the Confusion about Connecticut's New Adverse Event Reporting Law," which appears as appendix B of Connecticut's October 2004 Adverse Events report.

Health. A new category was included in the NQF list related to fertility clinics.[4] The NQF category "patient death associated with a fall" was expanded to include "serious injury associated with a fall." Reporting for this expanded category replaced the Connecticut-specific category that previously existed.

In January 2010, "Patient death or serious disability associated with surgery" was added to the list of reportable adverse events. This category includes significant hemorrhage and/or unanticipated death in a low risk (American Society of Anesthesiologists Class 2) patient.

Public Act 10-122 required that for all annual reports submitted after July 1, 2011:

> the commissioner shall include hospital and outpatient surgical facility adverse event information for each facility identified (1) by the National Quality Forum's List of Serious Reportable Events category, and (2) in accordance with any list compiled by the commissioner and adopted as regulations pursuant to subsection (c) of this section. Such reports shall be prepared in a format that uses relevant contextual information. For purposes of this subsection "contextual information" includes, but is not limited to, (A) the relationship between the number of adverse events and a hospital's total number of patient days or an outpatient surgical facility's total number of surgical encounters expressed as a fraction in which the numerator is the aggregate number of adverse events reported by each hospital or outpatient surgical facility by category as specified in this subsection and the denominator is the total of the hospital's patient days or the outpatient surgical facility's total number of surgical encounters, and (B) information concerning the patient population served by the hospital or outpatient surgical facility, including such hospital's or outpatient surgical facility's payor or case mix. In addition, a hospital or outpatient surgical facility may provide informational comments relating to any adverse event reported to the commissioner pursuant to this section.

The NQF document *Serious Reportable Events in Healthcare-2011 Update*[5] added four items, retired three items, and revised definitions, specifications, and numbering for the remaining items. The most substantial change in definition made unstageable pressure ulcers reportable in addition to stages three and four. The new items were: (1) Death or serious injury of a neonate associated with labor or delivery in a low-risk pregnancy; (2) patient death or serious injury resulting from the irretrievable loss of an irreplaceable biological specimen; (3) patient death or serious injury from failure to follow up or communicate laboratory, pathology, or radiology test results; (4) death or serious injury of a patient associated with the introduction of a metallic object into the MRI area. A summary of NQF changes appeared in Appendix J of the October 2012 DPH report, and the revised Connecticut adverse event list in Appendix K there. DPH promulgated guidance related to these changes during 2012 and implemented the revised list in January 2013.

CGS Section 19a-127o identifies the primary activity of a Patient Safety Organization (PSO), which is to improve patient safety and the quality of care delivered to patients through the

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[4] Prior to *Serious Reportable Events in Healthcare-2011 Update*, category 4H was "Artificial insemination with the wrong donor sperm or wrong egg." In 2013 the Connecticut category label changed to NQF 4G.

[5] http://www.qualityforum.org/Topics/SREs/Serious_Reportable_Events.aspx

collection, aggregation, analysis, or processing of medical or health-related information submitted to the PSO by the health care provider. This "patient work product" may include reports, records, analyses, policies, procedures or root cause analyses prepared exclusively for the purpose of disclosure to the PSO. The patient safety work product is confidential and not subject to use or access except to the PSO and the health care provider. PSOs disseminate appropriate information or recommendations on best clinical practices or potential system changes to improve patient care to the health care providers, DPH, the Quality of Care Advisory Committee and the public. DPH has designated four PSOs: Qualidigm, the Connecticut Healthcare Research & Education Foundation (CHREF), the Ambulatory Surgical Center Patient Safety Organization (ASC PSO), and QA to QI LLC (see the DPH reports on Connecticut's Quality of Care Program[6]).

Adverse event data were obtained from the electronic database at DPH. Inpatient days and primary payer information for acute care hospitals was obtained from hospital discharge data routinely gathered by the Office of Healthcare Access (OHCA) at DPH. Similar information for outpatient childbirth centers, hospice, chronic disease hospitals, and hospitals for the mentally ill, and outpatient surgical centers was obtained by DPH from those facilities.[7]

ADVERSE EVENT DATA

As of September 30, 2016, the DPH electronic database contained 456 reports of adverse events reported in 2015. Demographic information is shown in Appendix A. This reported information is influenced by several factors: varying rates of adverse events across facilities, patient case mix, quality of care, number of patients served, knowledge or interpretation of event definitions and reporting requirements, changes made to event definitions, additions to or deletions from the list of reportable events, willingness to report events, as well as the effectiveness of the institutional system to convey information from event participants to the designated reporter, and other factors.[8] Consequently, clear conclusions about the causes of observed event fluctuations and differences across facilities cannot be derived simply from the number of reports or fluctuations in the number of reports.[9]

Acute care or children's hospitals submitted 401 (88%) of the 456 adverse event reports; chronic disease hospitals, 29; hospitals for the mentally ill, 10; and outpatient surgical facilities (if not owned by a hospital), 16. Fifty-two percent of reported adverse events occurred in males and

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[6] Quality of Health Care reports are at www.ct.gov/dph under Statistics & Research, then choose "Health Care Quality."

[7] The Department thanks the Ambulatory Surgical Care Patient Safety Organization for assistance in gathering information from outpatient surgical centers.

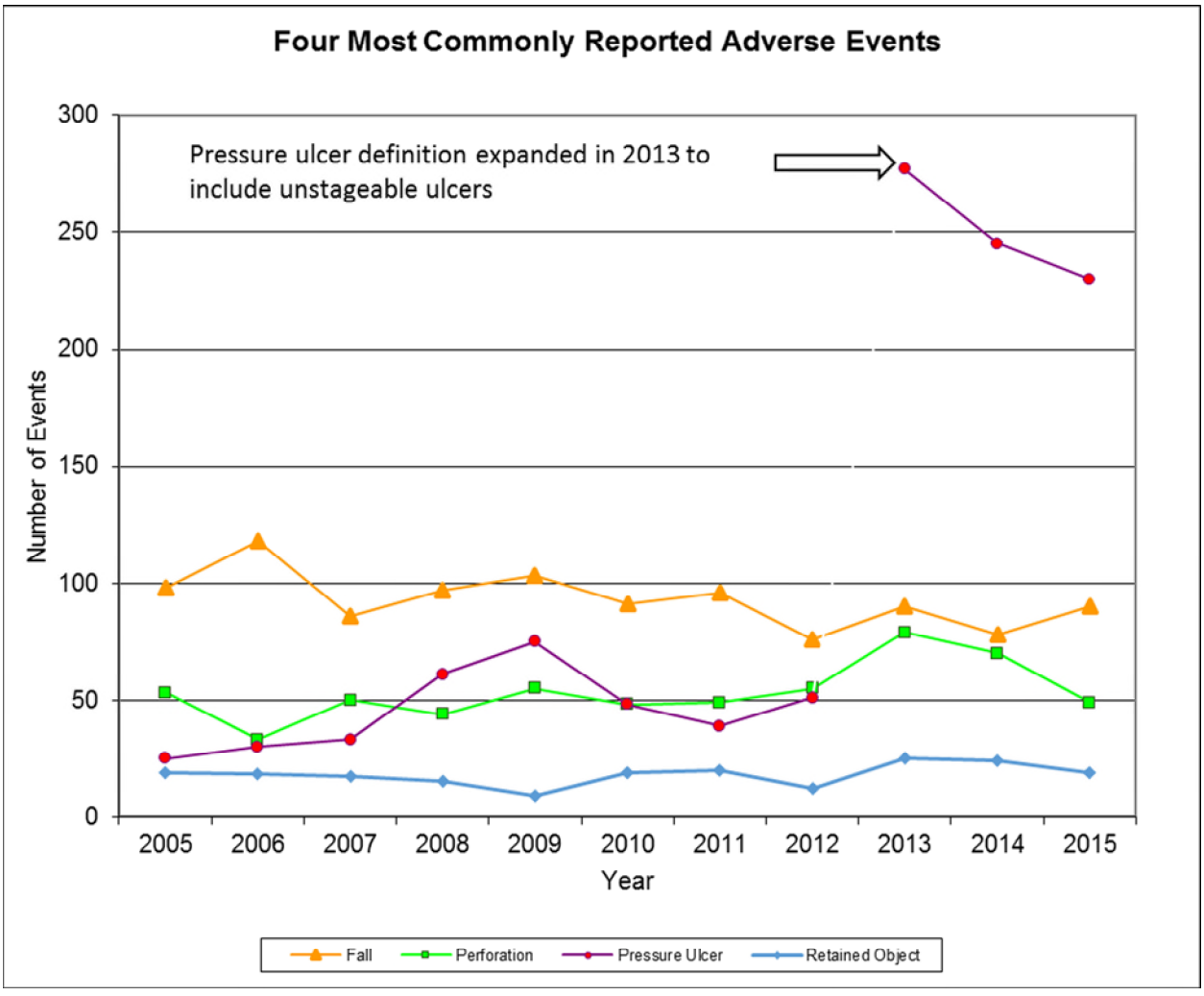
[8] Marieke Zegers et al, "Variation in the Rates of Adverse Events between Hospitals and Hospital Departments," *International Journal for Quality in Health Care* 2011:1-8; Frank Attenello et al, "Incidence of 'Never Events' Among Weekend Admissions Versus Weekday Admissions to US Hospitals: National Analysis," *BMJ* 2015;350:h1460.

[9] For additional discussion of the limitations of passive incident reporting, see the Patient Safety section of the September 2011 issue of the Agency for Healthcare Research and Quality (AHRQ), Morbidity and Mortality Rounds at http://webmm.ahrq.gov/; Kaveh G. Shojania, "The Elephant of Patient Safety: What You See Depends Upon How You Look," *Joint Commission Journal on Quality and Patient Safety, 36(9);* September 2010, 399.

48% in females. The majority of reports concerned patients over the age of 65 years. The most common location of occurrence was reported to be the adult medical ward (Appendix A).

Appendix B presents the number of adverse events reported by year for 2012-2015, according to the list of NQF events (1A-7D) and Connecticut-specific events (CT1 & CT2) that was adopted in 2013. Thus for example, the definition of falls was stable during the period shown but the category (4E) is that used in 2013-15 rather than the category (4F) used prior to 2013.

As shown in the chart below and Appendix C, the most commonly reported events in 2015 were pressure ulcers. Two hundred thirty pressure ulcers comprised 50% of all 456 adverse events reported. The second most commonly reported events were falls resulting in death or serious injury, with 90 reports (20%). Perforations during open, laparoscopic, and/or endoscopic procedures, followed with 49 reports (11%).[10] The next most commonly reported, 19 events, were retention of foreign objects in patients after surgery or other procedures (4%).



[10] For more details about these adverse events, see the "Six Month Summary of Adverse Event Reports" (Appendix A of the June 30, 2005 DPH report on the Quality in Health Care Program).

Between 2012 and 2013 the category of reportable pressure ulcers expanded to include unstageable ulcers in addition to stage 3 and 4, if acquired in the healthcare facility. As a result of this expansion, total counts in 2013-2015 should not be compared directly with counts in prior years. See the October 2014 and 2015 reports for additional analysis of pressure ulcers.[11]

The distributions and frequencies of perforations during surgery at various anatomic sites are logically related to the frequencies and difficulties of surgeries at those sites. However, DPH does not collect data about adverse event-free surgeries, so it is not possible to calculate event rates by surgeries performed. Additionally, surgery at one organ (e.g. uterus) may result in injury to another (e.g. colon) or exploration may discover injury from a previous surgery rather than itself cause perforation. The following mutually-exclusive groupings were made by the initial purpose of the surgery, to the extent it could be determined by DPH from the report. Among the 49 perforation reports in 2015, the sites or procedures mentioned were: colon procedure other than colonoscopy (13), colonoscopy (9), uterine procedure other than hysterectomy (5), gall bladder and ducts (5), hysterectomy (4), urinary bladder (3), kidney-related (2), and eight procedures with one event each, some in the chest and upper GI tract.

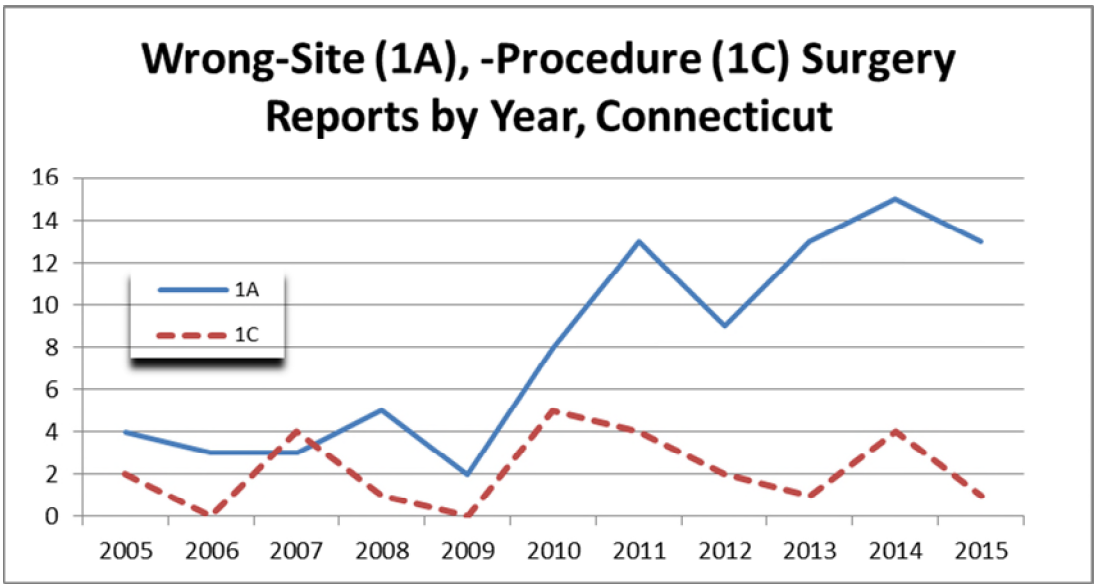
Nineteen reports of retained objects after surgery from 2015 included sponge (2), catheter fragment (2), guide wire piece (2), glove portion (2), drain (2) and nine single items.

Fourteen reports in 2015 of surgery resulting in serious injury or death (CT2) included 8 deaths. The proportion of deaths among such reports was unchanged from 2009-2010, in which 9 of 17 reports (7G) mentioned a death (see page 31 of the 2011 Adverse Event Report).

As illustrated in the following chart, the annual number of wrong-site (1A) reports increased between 2009 and 2011 and has remained at the higher level ever since, while there was no consistent change in wrong-procedure (1C) reports. It is not possible to calculate event rates by surgeries performed. The increased annual 1A reporting is spread across a variety of facilities and procedures. Thirty-four reports of wrong site/patient/procedure events (1A-1C) were received during 2014-15 from 16 facilities. Eighteen were in women. Locations within facilities included Adult Medical (2), Adult Surgical, Ambulatory Surgical (4), Diagnostic Services (5), Emergency Department (3), Operating Room (15), Outpatient Services (3), and Surgical ICU. Ages of patients were: 0-14 (1), 15-44 (7), 45-64 (14), and 65 and older (12). Six surgeries included wrong vertebral level. Sites of wrong side nerve block included shoulder, knee (3), and unspecified (2). Wrong finger and wrong toe incisions were corrected immediately, as was an incorrect marker placement for a breast incision. Nine more extensive wrong side/site procedures included eye, thoracocentesis, rib, tooth, and vertebral lamina removals, arterial stent, chest tube placement (2), and finger biopsy. Lymphoscintigraphy was mistakenly performed on both sides rather than one, and an unintended dilation was performed during a colon procedure (1B). Three procedures (1C) differed from the written consent. Four errors of line or tube placement (1A) reflected poor technical skills but correct intention. An additional misplaced

[11] Hartford Hospital on its website reported a decrease in pressure ulcer rates between September 2012 and March 2015 (https://hartfordhospital.org/patients-and-visitors/for-patients/patient-safety-quality/performance-measures/other-measures-pressure-ulcer-prevention). This is in rough agreement with the ulcer reporting to DPH, which decreased between 2013 and 2014.

feeding tube and catheter were reported as type 2B events. For January-June 2016 (not reflected in the chart below or details above), seven 1A and four 1C events were reported. It is speculative to attribute the 2009-2011 rise in 1A reports to specific causes. The Centers for Medicare and Medicaid Services announced in 2009 that hospitals would not be reimbursed any costs associated with wrong-site, wrong-procedure, wrong-patient errors. However, there was no consistent change in the annual numbers of NQF 1A wrong-site or 1C wrong-procedure surgery reports in Minnesota from 2009-2015.[12]



From the adoption of the NQF list in July 2004 through December 2015 there were 32 reports of serious injury or death when device is used or functions other than as intended (2B). Some of the reports overlap with other categories, such as wrong-site surgery (noted above). The events included catheter misplacement (6), catheter break (3), catheter cut inadvertently, harm during removal of a catheter, harm during removal of a guide wire, guide wire break, use of the wrong line, feeding tube misplacement, feeding tube disconnected, tubing not connected to mask, contrast agent infiltrate, 12 device failures (which were reported to the FDA and the manufacturer), an event when a patient was off a monitor as its battery was changed, and a suicide.

From the adoption of the NQF list in July 2004 through December 2015 there were 42 reports of serious medication errors (4A). For analysis, DPH assigned the reports to exclusive smaller categories and compared the 21 earlier reports (2004-2009) to the 21 later reports (2010-2015).

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[12] Minnesota Department of Health, "Adverse Events in Minnesota," February 2016; http://www.health.state.mn.us/patientsafety/ae/2016ahereport.pdf, page 11. The 12 Connecticut wrong site surgery events in acute care hospitals, in a state population of 3,574,097 in 2015 was a lower rate than the 29 Minnesota events in a state population of 5,489,594 (though higher in 2014). The CT 2009 rate for 1A was much lower than the MN 2009 rate. CT wrong-procedure (1C) report rates were much lower than MN throughout 2009-2015 (CT DPH analysis).

For the entire period the distribution of medical errors were: wrong dose (14), contraindicated drug (6), drug allergy (5), wrong patient (3), wrong route of administration (3), wrong drug (3), wrong timing of administration (2), drug not discontinued (2), extra drug, missed administration of drug, drug compounding error, and aspiration after drug administration. Some errors were reported where the error became known after the patient had been discharged from the reporting facility. Various drugs were named in the 42 reports. The most commonly named drugs were epinephrine (3), contrast media (2), heparin (2), and acetaminophen (2). There were slight imbalances toward more allergic reaction reports in the later period (4 of 5) and more reports of wrong drug in the earlier period (3 of 3).

Adverse event counts, patient days, and rate by facility and event type are shown in appendices D-G. These represent, respectively, acute care hospitals (D), chronic care hospitals and hospices (E), hospitals for the mentally ill (F), and ambulatory surgical centers, pain medicine centers, fertility centers, and outpatient childbirth centers (G). Not all adverse event categories are relevant to all facilities. For example, events associated with birth are not applicable in a facility that does not handle deliveries. Also, patient populations differ considerably between types of facilities.

For acute care hospitals, the calculated rates are based on adverse events that occurred in the emergency department, inpatient, or an outpatient setting (in the numerator), but only inpatient days contribute to the denominator of the rate. We found that outpatient days could not be reliably obtained from the database. Many of the choices for "Location of Event" (appendix A) could be either inpatient or outpatient. Fiscal Year 2015 (October 2014 to September 2015) data were used in the rate denominator and payer mix calculations because calendar year 2015 data were unavailable to DPH at the time this report was prepared.

Significant variation in facility reporting patterns are a common characteristic of passive surveillance systems (where the responsibility for reporting falls upon the health care provider) and this is not unique to Connecticut's adverse events reporting system. A passive surveillance system "has the advantage of being simple and not burdensome" to administer, however "it is limited by variability and incompleteness in reporting."[13] Typically, data validation is a function of an active surveillance strategy that can be used to increase the completeness of reporting, as is being done in the separate Connecticut Healthcare Associated Infections program. However, data validation is often labor intensive and expensive, requiring dedicated resources. Nevertheless, without such validation we cannot determine how complete facility reporting is.

Based on these adverse event data alone we cannot derive certain conclusions. We cannot say whether a high reporting rate reflects highly complete reporting in a facility with good quality of care, or perhaps modestly complete reporting in a facility with poor care, or neither better nor worse quality care, as noted earlier.

Appendix H, based on billing data, shows the primary payer for all patients seen at each facility. There is a positive correlation between the proportion of patients covered by Medicare and the

[13] Steven M. Teutsch, "Considerations in Planning a Surveillance System," in Steven M. Teutsch and R. Elliott Churchill, eds., *Principles and Practice of Public Health Surveillance*, 2nd ed. (New York: Oxford University Press, 2000), 22.

average age of patients seen at a facility. Some studies have found an association between older age and greater risk of experiencing an adverse event. We tested this hypothesis for Connecticut (see the 2011 report). Due to the poor single year correlation in 2010, no calculation was made for later years. No attempt was made here to risk adjust the rates based upon the average age of the population served or other contextual factors. Minimal correlation of age with total adverse events is partly due to adverse events being a heterogeneous category, with different causes and occurring in various locations (see the 2015 report).

Appendix I contains facility comments about safety efforts, as allowed for by PA 10-122.

Appendix J shows types of adverse events that have been analyzed and the dates of DPH reports in which analyses appeared.

CURRENT ACTIVITIES AND FUTURE PLANS

DPH regularly screens death records for cause of death codes that might be related to an adverse event. (For a description of the system, see the 2011 Adverse Event report, Appendix Q.) Selected records are reviewed further. The department gathers additional information to determine if reportable fatal adverse events occurred, and whether such events were reported to DPH.

Investigation of Adverse Events

The first responsibility for investigation of an adverse event lies with the facility in which the event occurred. Under Connecticut's Adverse Event reporting law, facilities are required to submit a Corrective Action Plan to DPH for each reported Adverse Event.

An external investigation at a healthcare facility due to an adverse event may begin in several ways: (1) as a result of a complaint to DPH made by any person; (2) following a sentinel event report by the facility to the Joint Commission, a complaint to the Joint Commission by any person (see www.jointcommission.org), or an unannounced, onsite visit to a facility by the Joint Commission during which an adverse event becomes known; or (3) as a consequence of an adverse event report sent by the healthcare facility to DPH. The last of these routes is discussed here.

After examining an adverse event report, which includes a Corrective Action Plan, the DPH Healthcare Quality and Safety Branch determines whether to initiate an investigation. Screening to rule out medical error is based on clinical judgment and/or objective medical criteria. The screening team consists of healthcare clinicians at DPH.

DPH conducts investigations regarding adverse event reports that may indicate a systems issue or issues related to inadequate standards of care. These investigations determine regulatory compliance versus noncompliance and provide additional information that may allow one to distinguish between events that have been due to a medical error or system failure and those that

have not. Investigations involving adverse events follow the same process as issues received through the public complaint process. Information is gathered through onsite inspection and observation, review of clinical records, interviews with institutional staff and vested parties as appropriate. The results of completed investigations are public, and may be obtained upon request, under the Freedom of Information (FOI) Act.

Patient Safety Organizations

Connecticut General Statutes section 19a-127o allowed DPH to designate "Patient Safety Organizations" (PSOs) and 19a-127p required hospitals to contract with a PSO. The primary activity of a PSO is to improve patient safety and the quality of care delivered to patients through the collection, aggregation, analysis or processing of medical or health care related information submitted to the PSO by the health care provider. This "patient safety work product" may include reports, records, analyses, policies, procedures, or root cause analyses prepared exclusively for the purpose of disclosure to the PSO. The patient safety work product is confidential and not subject to use or access except to the PSO and the health care provider. The PSO will disseminate appropriate information or recommendations on best medical practices or potential system changes to improve patient care to the health care providers, DPH, the Quality of Health Care Advisory Committee, and the public. DPH has designated four PSOs, including the Qualidigm Patient Safety Organization, the Connecticut Hospital Association Patient Safety Organization, the Ambulatory Surgical Center Patient Safety Organization, and QA to QI LLC. PSO activities during the previous year appear in the annual June 30 report concerning the Quality in Health Care program, found on the DPH website.

Healthcare Associated Infections

The Healthcare Associated Infections (HAI) Committee, established by legislation, is separate from the Quality in Health Care Advisory Committee. Infections are reported through the CDC's National Healthcare Safety Network (NHSN). Reports from the HAI Committee can be found on the DPH website (http://www.ct.gov/dph/cwp/view.asp?a=3136&q=417318).

Healthcare Acquired Conditions (including infections)

CMS Hospital Compare includes data about knee and hip replacement complications and healthcare associated infections: CLABSI, CAUTI, SSI, MRSA, and C Diff.[14] Nursing Home Compare includes data about pressure ulcers, falls, UTI, and use of restraints.[15] In 2016 the Health and Human Services Office of the Inspector General released its findings about adverse events in rehabilitation facilities, following similar reports about hospitals and nursing homes.

The Medicare Patient Safety Monitoring System (MPSMS) identifies adverse events from a national sample of patients who were hospitalized for acute myocardial infarction (AMI),

[14] https://www.medicare.gov/hospitalcompare/search.html
[15] https://www.medicare.gov/nursinghomecompare/search.html

congestive heart failure (HF), pneumonia, or any of several surgical procedures. The MPSMS uses 21 measures of adverse events. The measures differ from the NQF list used in the Connecticut adverse event reporting system that is the subject of this annual report. Between 2005 and 2011 the adverse event rate declined among patients with AMI or HF, but not others.[16] Pressure ulcer rates decreased without an increase in the frequency of documenting ulcers in the medical record as present on admission, which would exemption them from being counted as a new adverse event.

The CMS Partnership for Patients (http://partnershipforpatients.cms.gov/) set a goal of reducing preventable harm by 40% in US hospitals by the end of 2013. The Partnership targeted all forms of harm to patients but started by using the 21 MPSMS measures among its 26 measures. Grants to Hospital Engagement Networks for Round 2 of the Partnership were awarded in September 2015.

Partnership for Patients (P4P) analyses by the Agency for Healthcare Quality and Research (AHRQ) showed a 17% decrease in hospital acquired conditions (HACs) from 2010 to 2014, with the HAC rate holding steady from 2013 to 2014 (http://www.ahrq.gov/professionals/quality-patient-safety/pfp/interimhacrate2014.html). The rate of catheter-acquired urinary tract infections (CAUTI) declined 38% from 2010 to 2014 in the P4P data, while there was no change for the same period in the NHSN data, probably due to differing definitions of CAUTI. In MPSMS, CAUTI was defined by physician-diagnosed CAUTI with antibiotic prescription, infections per hospital admission, anywhere in the hospital. NHSN required laboratory confirmation of active infection, infections per catheter-days, in intensive care units only. More progress has been made preventing CAUTIs outside the ICU than inside.[17]

Selected Patient Safety Summaries and Abstracts[18]

The AHRQ Annual Perspective 2015 articles were devoted to *Accountability in Patient Safety, Burnout among Health Professionals and its Effect on Patient Safety,* and *Computerized Provider Order Entry and Patient Safety.*
https://psnet.ahrq.gov/perspectives?annual_perspective=true

Getting Rid of "Never Events" in Hospitals.

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[16] Richard Kronick, Sharon Arnold, and Jeffrey Brady, "Improving Safety for Hospitalized Patients: Much Progress but Many Challenges Remain," JAMA 316(5); 2 Aug 2016, 489-90.
[17] Ibid.
[18]Selected by DPH. Many resources are featured on the AHRQ Patient Safety Network, http://psnet.ahrq.gov. On 25 June, 2015 the House Appropriations Committee voted in favor of a bill to eliminate the AHRQ. In December 2015 AHRQ funding was cut 8% for FY 2016, but the agency survived. With the 20 September 2016 issue, JAMA inaugurates a series of performance improvement articles on quality of care. The first article is "Performing the Wrong Procedure."

Morgenthaler T, Harper CM. *Harvard Business Review*. October 20, 2015.

"Never events" are considered largely preventable yet harmful. Following the frequency of never events, or the ratio of never events to opportunities to have the event over time, will provide a distorted picture of the progress in improving patient safety because (1) the definition of never events has changed over time, (2) the complexity and severity of inpatient illnesses is higher than ever and such patients are more likely to suffer pressure ulcers or falls, and (3) many current treatments were not performed a decade ago. Rather than look at never events or sentinel events alone, the Mayo Clinic examines all aspects of care in patients who die in their facilities. What was learned through these and other reviews were codified into the "Mayo Clinic Patient Safety Essentials." As a result, there were large decreases in surgical never events frequency and medication errors. Before 2005 there were 74 surgical sponges left in patients per 1 million procedures. Recently, due to check lists and bar-coding, the rate was reduced to 5 per million.

Falls and pressure ulcers have been harder to eliminate. Most pressure ulcers are now suffered by critically ill patients for whom all known prevention methods have been employed and failed. Most wrong-site surgeries now occur when the surgeon operates just above or below the intended spinal level and are often associated with abnormal anatomy. The retained foreign objects are now ones that rarely cause harm, such as small fragments of implantable devices.

Still, there is much to do. Some events are tied to communication lapses. Information systems must be designed to combat cognitive overload.

Learning from Every Death.

Huddleston JM, Diedrich DA, Kinsey GC, Enzler MJ, Manning DM. *Journal of Patient Safety* 10/1. March 2014.

Lessons learned from the development and evolution of the Mayo Clinic Mortality Review System (MRS). The initial review requires 30-60 minutes each for physician and nurse reviewers. The possibility of decreasing the resource burden has been reevaluated every few years. Each time the potential loss of adverse event detection was too great and 100% of deaths are reviewed. The MRS differs from traditional Morbidity and Mortality; MRS is a systems review with multidisciplinary input.

In the beginning the concept of preventable deaths was used. With time, the actual types of issues or adverse events identified became more important, and the designation of preventability was no longer reported and therefore, not meaningful. It is anticipated and desired that nurses and physicians find and interpret systems issues differently. The evaluation of the medical record was designed to yield as much learning as possible from the differing perspectives of care providers. Therefore, interrater reliability was not an explicit goal.

The recognition that adverse events include both issues of commission and omission changed the tenor and context of patient safety discussion in our hospitals. The quarterly mortality reports include a statistical control chart of mortality rate, Pareto diagrams of events or issues identified

during the MRS review, and patient stories, without being prescriptive. In the 10 years since inception of MRS, the stories and data carried back to the clinical practice resulted in improvements and a statistically significant reduction in mortality rate.

Bias is the greatest challenge because when reviews are completed the outcome is already known. Burnout is the most important human quality to endanger lasting success. Reviewing cases requires dedicated time built into the job description or time supported away from clinical practice. We view the identification of unreported patient safety opportunities, ongoing MRS spread, reviewer recruitment, reliable data, provision of timely feedback to the clinical practice, transparency of findings, and new quality improvement initiatives responding to MRS findings as evidence of success. However, it is time consuming, labor intensive, and wrought with the subjectivity of retrospective peer review. Our hospital and quality leadership openly discuss these pros and cons. They take the patient safety findings seriously and weigh them in conjunction with other competing priorities for quality improvement resources.

Safer Healthcare.

Vincent C, Amalberti R. Chapter "Safety Strategies in Hospitals," pp. 73-91. 10.1007/978-3-319-25559-0_7. http://link.springer.com/chapter/10.1007/978-3-319-25559-0_7/fulltext.html

Within the National Health Service an average hospital has 8000 pages of policies on their websites running to more than two million words. The plethora of unusable quasi-legal policies is an unconscionable burden on the staff, a drain on resources and paradoxically a threat to safety. Failures and departures from standards are not the exception but the day to day reality of healthcare. Safety is achieved partly by attempting to reduce and control such failures but also, in recognition of the impossibility of this task, by actively monitoring and managing problems that arise. The critical question is whether we leave this to ad hoc improvisation or try to build this capacity into the system. There are areas of the hospital which conform to our ultra-safe model, others which rely on a high reliability approach and a number in which care is highly adaptive, albeit still with a bedrock of core procedures. In some of these settings safety is best achieved by a mixture of automation, reliable equipment and adherence to core standards and procedures. In other environments these approaches remain important but need to be complemented by a greater reliance on risk control, adaptation and mitigation.

When doctors share visit notes with patients: a study of patient and doctor perceptions of documentation errors, safety opportunities and the patient-doctor relationship.

Bell SK, Mejilla R, Anselmo M, et al. BMJ Qual Saf. 2016 May 18. pii: bmjqs-2015-004697. doi: 10.1136/bmjqs-2015-004697. [Epub ahead of print]

Despite concerns about errors, offending language or defensive practice, transparent notes overall did not harm the patient-doctor relationship. Rather, doctors and patients perceived relational benefits. Traditionally more vulnerable populations—non-white, those with poorer self-reported health and those with fewer years of formal education—may be particularly likely

to feel better about their doctor after reading their notes. Further informing debate about OpenNotes, the findings suggest transparent records may improve patient satisfaction, trust and safety.

Measuring Patient Safety Events: Opportunities and Challenges.

Rosen AK, Chen Q. http://www.qualitymeasures.ahrq.gov/expert/expert-commentary.aspx?f=rss&id=50301. June 13, 2016

Integrating the patients' perspective, improving measurement of outpatient safety, and identifying preventability are three important areas where we need to advance. Patient-reported events will add breadth and value to both inpatient and outpatient safety measurement; including the outpatient setting is critical for providing a better assessment of overall patient safety within a system of care. Given the era of public reporting, it is essential that we improve the science of safety measurement in order to ensure that we are measuring the "true" safety performance of providers, and also that we are targeting our quality improvement efforts at events that most likely can be prevented.

A National Trauma Care System: Integrating Military and Civilian Trauma Systems to Achieve Zero Preventable Deaths After Injury.

National Academies Press, 2016.

Advances in trauma care have accelerated over the past decade, spurred by the significant burden of injury from the wars in Afghanistan and Iraq. Between 2005 and 2013, the case fatality rate for United States service members injured in Afghanistan decreased nearly 50 percent, despite an increase in the severity of injury among U.S. troops during the same period of time. But as the war in Afghanistan ends, knowledge and advances in trauma care developed by the Department of Defense (DoD) over the past decade from experiences in Afghanistan and Iraq may be lost. This would have implications for the quality of trauma care both within the DoD and in the civilian setting, where adoption of military advances in trauma care has become increasingly common and necessary to improve the response to multiple civilian casualty events.

An Innovative Approach to the Surgical Time Out: A Patient-Focused Model.

Kozusko SD, Elkwood L, Gaynor D, Chagares SA. AORN J. 2016 Jun;103(6):617-22. doi: 10.1016/j.aorn.2016.04.001.

The surgical time out is an integral component of patient safety in OR settings. At The Center for Outpatient Surgery (TCOPS), a team of nurses and plastic and breast surgeons evaluated discrepancies, wrong-site surgeries, near misses, team communication, and patient satisfaction to develop and implement a surgical checklist that would help improve efficiency and patient safety

and reduce near misses. This checklist involves the surgical team and patient, and it includes preoperative, pre-incision, and postoperative time outs. Since 2011, 4,453 procedures have used the preoperative and pre-incision timeouts. Of those, 998 have used all three when we added the postoperative component. Since the implementation of the checklist, there have been zero discrepancies and zero wrong-site surgeries. Patients have expressed satisfaction with their inclusion in the preoperative time out. Staff members at TCOPS have noted excellent results, and the checklist can be adopted by other specialties.

The role of radio frequency detection system embedded surgical sponges in preventing retained surgical sponges: a prospective evaluation in patients undergoing emergency surgery.

Inaba K, Okoye O, Aksoy H, et al. Ann Surg. 2016 Jul 18; [Epub ahead of print].

Retained surgical items are considered a preventable patient safety problem. In this implementation study, investigators used sponges embedded with radio frequency detection (RFD) in emergency surgeries. The RFD system identified sponges that would not have been detected, either because the sponge and instrument count was incorrect or because the count was not performed. These results argue for expanding the use of RFD sponges for emergency surgery.

Adverse Health Events in Minnesota.

Minnesota Department of Health, February 2016, p. 5.

In December 2015, MDH conducted a survey of all hospitals and licensed surgical centers to learn more about their successes and challenges with the reporting system, as well as to allow facilities to provide input into the direction of the reporting system for the future. Patient safety staff members and administrators at all facilities were surveyed using an online tool, with a 40 percent response rate. A number of respondents described improvement in falls prevention as well as prevention of injury from falls. Another area of improvement that many facilities noted was in preventing pressure ulcers at their facilities, as well as improving the specimen labeling and handling process. The most common challenges were lack of internal resources to implement safety practices; increases in mental health patients, a population with complex safety issues; difficulty with attaining proper medication reconciliation and adding a new area of focus to existing efforts, violence prevention.

Massachusetts General Hospital provides descriptions of all 94 serious reportable events it reported in 2014 with lessons learned/actions to prevent future events.
http://qualityandsafety.massgeneral.org/measures/MGHDPHReportSREFinal2014.pdf

APPENDICES

Appendix A:
Demographic Data from Adverse Event Reports

Appendix B:
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Primary Payer Source, by Facility

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Adverse Event Types Analyzed in DPH Reports

Appendix A.

Demographic Data from Adverse Event Reports in the Electronic Database, Connecticut 2015

Measure	Frequency	Percent
Facility Type (n=456)		
Acute Care or Children's Hospital	401	87.9%
Chronic Disease Hospital	29	6.4%
Hospital for Mentally Ill Persons	10	2.2%
Outpatient Surgical Facility	16	3.5%
Patient Gender (n=456)		
Male	237	52.0%
Female	219	48.0%
Patient Age (n=456)		
0-14	13	2.9%
15-44	64	14.0%
45-64	120	26.3%
65 and older	259	56.8%
Location of Event (n=456)		
Adult Medical	126	27.6%
Adult Surgical	30	6.6%
Ambulatory Surgical	10	2.2%
Cardiac Care	8	1.8%
Cardiac Cath Lab	2	0.4%
Diagnostic Services	7	1.5%
Emergency Department	17	3.7%
Medical ICU	57	12.5%
Neonatal ICU	5	1.1%
Obstetrical/Gynecological	9	2.0%
Operating Room	59	12.9%
Other	35	7.7%
Outpatient Services	12	2.6%
Pediatrics	1	0.2%
Psychiatric	28	6.1%
Rehabilitative Services	11	2.4%
Surgical ICU	39	8.6%

Appendix B. Counts of Adverse Event Codes 2012-2015

Event Code	Description	Reports 2012	Reports 2013	Reports 2014	Reports 2015
NQF 1A	Surgery performed on the wrong site	9	13	15	13
NQF 1B	Surgery performed on the wrong patient	0	1	0	1
NQF 1C	Wrong surgical procedure performed on a patient	2	1	4	1
NQF 1D	Retention of a foreign object in a patient after surgery or other procedure	12	25	24	19
NQF 1E	Intraoperative or immediate postoperative/ postprocedure death in an ASA class I patient	0	0	1	1
NQF 2A	Patient death or serious injury associated with the use of contaminated drugs, devices, or biologics provided by the healthcare setting	0	0	3	0
NQF 2B	Patient death or serious injury associated with the use or function of a device in patient care in which the device is used or functions other than as intended	2	3	2	5
NQF 2C	Patient death or serious injury associated with intravascular air embolism that occurs while being cared for in a healthcare setting	1	0	0	1
NQF 3A	Discharge or release of a patient/resident of any age, who is unable to make decisions, to other than an authorized person	0	0	0	1
NQF 3B	Patient death or serious injury associated with patient elopement (disappearance)	0	1	0	0
NQF 3C	Patient suicide, attempted suicide, or self-harm that results in serious injury, while being cared for in a healthcare setting	1	5	0	3
NQF 4A	Patient death or serious injury associated with a medication error (e.g., errors involving the wrong drug, wrong dose, wrong patient, wrong time, wrong rate, wrong preparation or wrong route of administration)	3	6	1	7
NQF 4B	Patient death or serious injury associated with unsafe administration of blood products	0	0	0	0
NQF 4C	Maternal death or serious injury associated with labor or delivery in a low-risk pregnancy while being cared for in a healthcare setting	0	2	0	1
NQF 4D	Death or serious injury of a neonate associated with labor or delivery in a low-risk pregnancy	4	1	4	5
NQF 4E	Patient death or serious injury associated with a fall while being cared for in a healthcare setting	76	90	78	90
NQF 4F*	Any Stage 3, Stage 4, or unstageable pressure ulcer acquired after admission/ presentation to a healthcare setting	51	277	245	230
NQF 4G	Artificial insemination with the wrong donor sperm or wrong egg	0	0	0	0

Appendix B (cont.). Counts of Adverse Event Codes 2012-2015

Event Code	Description	Reports 2012	Reports 2013	Reports 2014	Reports 2015
NQF 4H	Death or serious injury resulting from irretrievable loss of an irreplaceable biological specimen	NA	3	0	0
NQF 4I	Patient death or serious injury resulting from failure to follow up or communicate laboratory, pathology, or radiology test results	0	2	0	3
NQF 5A	Patient or staff death or serious injury associated with an electric shock in the course of a patient care process in a healthcare setting	0	0	0	0
NQF 5B	Any incident in which systems designated for oxygen or other gas to be delivered to a patient contains no gas, the wrong gas, or are contaminated by toxic substances	0	1	0	0
NQF 5C	Patient death or serious injury associated with a burn incurred from any source in the course of a patient care process in a healthcare setting	1	0	1	0
NQF 5D	Patient death or serious injury associated with the use of physical restraints or bedrails while being cared for in a healthcare setting	1	1	0	2
NQF 6A	Death or serious injury of a patient or staff associated with the introduction of a metallic object into the MRI area.	NA	0	0	0
NQF 7A	Any instance of care ordered by or provided by someone impersonating a physician, nurse, pharmacist, or other licensed healthcare provider	0	2	1	0
NQF 7B	Abduction of a patient/resident of any age	0	1	0	0
NQF 7C	Sexual abuse/assault on a patient or staff member within or on the grounds of a healthcare setting	7	4	9	10
NQF 7D	Death or serious injury of a patient or staff member resulting from a physical assault (i.e.battery) that occurs within or on the grounds of a healthcare setting	2	3	1	0
CT 1	Perforations during open, laparoscopic and/or endoscopic procedures resulting in death or serious injury.	55	79	71	49
CT 2	Patient death or serious injury as a result of surgery	14	13	12	14
	Total Reports	241	534	472	456

*Unstageable pressure ulcers became reportable in 2013.

NA is marked in cells where the event category did not exist prior to 2013.

One CT1 report in 2014 was omitted from the table last year.

Appendix C. Connecticut Adverse Events in 2015
Most Frequently Reported Events
NQF List (1A-7D) and Connecticut-Specific List (CT1 & CT2)

Event	Description	Frequency	Percent of All Events
4F	Unstageable, stage 3 or 4 pressure ulcers acquired after admission to a healthcare facility	230	50.4%
4E	Patient death or serious injury associated with a fall while being cared for in a healthcare facility	90	19.7%
CT1	Perforations during open, laparoscopic and/or endoscopic procedures resulting in death or serious disability	49	10.7%
1D	Retention of a foreign object in a patient after surgery or other procedure	19	4.2%
CT2	Death or serious injury associated with surgery	14	3.1%
1A	Surgery performed on the wrong body part	13	2.9%
All other reported adverse events		41	9.0%
Total		**456**	100.0%

Appendix D. Adverse Event Reports by Event Type
Acute Care Hospitals. Connecticut, 2015.

	Adverse Event Reports by Event Type																														
Hospital	1A	1B	1C	1D	1E	2A	2B	2C	3A	3B	3C	4A	4B	4C	4D	4E	4F	4G	4H	4I	5A	5B	5C	5D	6A	7A	7B	7C	7D	CT1	CT2
Backus	2							1				1				5	6														
Bridgeport				4												1	19											1		1	
Bristol				1												1	4							1						7	
CCMC																	4														
Danbury[1]	2															6	20														
Day Kimball																															
Dempsey				1												7	1														
Greenwich																2	1											1			1
Griffin																1	3													1	
Hartford	1			3												1	31													1	
Hungerford																															1
HOCC	3			1											2	3	7													1	
Johnson																															
L & M				1											1	2	1													1	
Manchester	1													1		2	2														
Middlesex																2	1													1	
Milford																1								1						1	1
MidState																1														4	1
Norwalk															1	2	5														
Rockville																2															
St Francis	1	1		1			2					1				6	31			1										4	2
St Mary's											1				1																
St Vincent's				3			2		1		1					7	11											6		6	6
Sharon												1																			
Stamford																4	12			1										1	1
Waterbury				2													5			1										4	
Windham																1															
Yale-NH	2			2			1				1	3				7	55											1		4	
All Acute Care	12	1	0	19	0	0	5	1	1	0	3	6	0	1	5	64	219	0	0	3	0	0	0	2	0	0	0	9	0	37	13

[1] Beginning October 2014 New Milford events are reported under Danbury license.

Notes: Event categories changed between 2012 and 2013, e.g old 5D is new 4E (falls); old 7A is new CT1 (perforations during surgery).

Appendix D (continued).
Adverse Event Reports and Rates
Acute Care Hospitals. Connecticut, 2015.

Hospital	Reports Total	Patient Days* FY 2015	Rate per 100,000 Pt Days*
William W. Backus Hospital	15	47692	31.5
Bridgeport Hospital	26	106867	24.3
Bristol Hospital	14	26332	53.2
Connecticut Children's Medical Center	4	42513	9.4
Danbury and New Milford Hospitals[1]	28	103217	27.1
Day Kimball Healthcare	0	16425	0.0
John Dempsey Hospital	9	37487	24.0
Greenwich Hospital	5	51948	9.6
Griffin Hospital	5	28512	17.5
Hartford Hospital	37	225885	16.4
Charlotte Hungerford Hospital	1	25527	3.9
Hospital of Central Connecticut	17	68038	25.0
Johnson Memoral Hospital	0	15219	0.0
Lawrence and Memorial Hospital	6	62227	9.6
Manchester Memorial Hospital	6	39279	15.3
Middlesex Hospital	4	55603	7.2
Milford Hospital	4	11938	33.5
MidState Medical Center	6	36075	16.6
Norwalk Hospital	8	57228	14.0
Rockville General Hospital	2	9654	20.7
Saint Francis Hospital	50	152541	32.8
Saint Mary's Hospital	2	48922	4.1
Saint Vincent's Medical Center	43	109517	39.3
Sharon Hospital	1	10951	9.1
Stamford Hospital	19	70403	27.0
Waterbury Hospital	12	52961	22.7
Windham Community Memorial Hospital	1	12117	8.3
Yale-New Haven Hospital	76	411361	18.5
All Acute Care Hospitals	401	1,936,439	20.7

[1] New Milford Hospital is under the Danbury license beginning 10/1/2014

* Inpatient patient days are used as rate denominators

Appendix E. Adverse Event Reports by Event Type and Rates per 100,000 Inpatient Days, Chronic Disease Hospitals and Hospice. Connecticut, 2015.

	Adverse Event Reports by Event Type																														
Facility	1A	1B	1C	1D	1E	2A	2B	2C	3A	3B	3C	4A	4B	4C	4D	4E	4F	4G	4H	4I	5A	5B	5C	5D	6A	7A	7B	7C	7D	CT1	CT2
Ct Hospice																															
Gaylord																2	2														
Hsp Special Care																1	6														
Masonicare[1]																															
Mount Sinai																	2														
Veterans																7															
Hebrew Home																8	1														
Chronic Disease	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: Event definitions and categories changed between 2012 and 2013; old 5D is new 4E (falls); old 7A is new CT1 (perforations during surgery).

[1] Reports for chronic disease and behavioral health are combined.

Facility	Reports Total	Patient Days 2015	Rate per 100,000 Pt Days
The Connecticut Hospice	0	11,672	0.0
Gaylord Hospital*	4	105,077	3.8
The Hospital for Special Care	7	72,597	9.6
Masonicare Health Center	0	2,927	0.0
Mount Sinai Rehabilitation Hospital**	2	8,839	22.6
Levitow Veterans Health Center	7	43,070	16.3
Hebrew Home and Hospital	9	8,591	104.8
All Chronic Disease Hospitals	29	252,773	11.5
*includes 40223 inpatient days and 63166 outpatient visits.			
**denominator data are FY 2015			

Appendix F. Adverse Event Reports by Event Type and Rates per 100,000 Inpatient Days
Hospitals for Mentally Ill Persons. Connecticut, 2015.

	Adverse Event Reports by Event Type																														
Facility	1A	1B	1C	1D	1E	2A	2B	2C	3A	3B	3C	4A	4B	4C	4D	4E	4F	4G	4H	4I	5A	5B	5C	5D	6A	7A	7B	7C	7D	CT1	CT2
Natchaug																												1			
Silver Hill												1																			
Masonicare[1]																8															
Mental Health	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0

Note: Event definitions and categories changed between 2012 and 2013; old 5D is new 4E (falls); old 7A is new CT1 (perforations during surgery).

[1] Reports for chronic disease and behavioral health are combined.

Facility	Reports Total	Patient Days 2015	Rate per 100,000 Pt Days
Natchaug Hospital*	1	18,705	5.3
Silver Hill Hospital	1	12,348	8.1
Masonicare Behavioral Health	8	9,439	84.8
All Hospitals for Mentally Ill Persons	10	40,492	24.7

*denominator data are FY 2015

Appendix G. Adverse Event Reports by Event Type for Ambulatory Surgical Centers, Pain Medicine Centers, Fertility Centers, and Childbirth Centers. Connecticut, 2015.

	Adverse Event Reports by Event Type																														
Facility	1A	1B	1C	1D	1E	2A	2B	2C	3A	3B	3C	4A	4B	4C	4D	4E	4F	4G	4H	4I	5A	5B	5C	5D	6A	7A	7B	7C	7D	CT1	CT2
Ct Childbirth & Women																															
Aesthetic Surg Center																															
Center for Adv Reprod																															
Central Ct Endoscopy																														1	
Coastal Digestive Care																															
Conn Center Plast Surg																															
Conn Eye, South	1																														
Connecticut Fertility																															
Connecticut Foot																															
Conn GI Endoscopy																															
Conn Orthopaedic																															
Conn Surgery																															
Constitution Surg, East																															
Danbury Surgical																														1	
Diagnostic Endoscopy																														2	
Digestive Dis Endosc																															
Dr. Felice Youth Images																															
Eastern Ct Endoscopy																														1	
Endoscopy Center of Ct																															
Endoscopy, Fairfield																															
Endoscopy, Northwest																															
Evergreen Endoscopy																														1	
Eye Surgery Center			1																												
Fairfield Endoscopy																															
Fairfield Surgery																															
Gary J. Price, M.D.																															
Glastonbury Endoscopy																															
Glastonbury Surgery																															
Gregory Brucato, M.D.																															
Hartford Surgical																														1	1
John J. Borkowski, M.D.																															
Laser and Vision Surg																															
Leif O. Nordberg, M.D.[1]																															
Litchfield Hills Surgery																															
Middlesex Endoscopy																															
Middlesex Orthopedic																															
Naugatuck Endoscopy																														2	
New England Fertility																															
New Vision Cataract																															
North Haven Surgery					1																										
Norwalk Surgery																															
Orchard Medical Center																															
Orthopaedic Neurosurg																															
Orthopedic Associates																															
Plast Surg of South Ct																															
Reproductive Medicine																															
River Valley/Ct Surg Arts																															
Robbins Eye																															
St Francis GI Endosc																															
Shoreline Colonoscopy																															
Southington Surgery																														1	
Shoreline Surgery																														1	
Split Rock Surgical																															
SSC II																															
Summer St Ambulatory																															
Surg Center Fairfield																															
Surg Center-Ct Hand																															
Waterbury Outpatient																															
Western CT Ortho Surg[2]																															
Wilton Surgery																															
Yale Health Services																														1	
All Ambulatory Facilities	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	1

Notes: Event definitions and categories changed between 2012 and 2013, e.g old 5D is new 4E (falls); old 7A is new CT 1 (perforations during surgery).

[1] Now CVW Body Design

[2] Formerly Hand Center

Appendix G (continued). Adverse Event Reports and Rates, Outpatient Visits for Ambulatory Surgical Centers, Pain Medicine Centers, Fertility Centers, and Childbirth Centers, Connecticut, 2015.

Facility	Location	Reports Total	Patient Visits 2015	per 100,000 Pt visits Rate 2015
Connecticut Childbirth & Women's Center	Danbury	0	127	0.0
Aesthetic Surgery Center	New Haven	0	327	0.0
Center for Advanced Reproductive Services	Farmington	0	1548	0.0
Central Connecticut Endoscopy Center	Plainville	1	6640	15.1
Coastal Digestive Care Center	New London	0	6718	0.0
Connecticut Center for Plastic Surgery (now Guilford Surgery)	Guilford	0	70	0.0
Connecticut Eye Surgery Center South	Milford	1	6727	14.9
Connecticut Fertility	Bridgeport	0	253	0.0
Connecticut Foot Surgery Center	Milford	0	367	0.0
Connecticut GI Endoscopy	Bloomfield	0	5703	0.0
Connecticut Orthopaedic	Hamden	0	4040	0.0
Connecticut Surgery	Hartford	0	3864	0.0
Constitution Eye Surgery Center East	Waterford	0	5832	0.0
Danbury Surgical Center	Danbury	1	7671	13.0
Diagnostic Endoscopy	Stamford	2	6058	33.0
Digestive Disease Associates Endoscopy Suite	Branford	0	2123	0.0
Dr. Felice's Youthful Images[1]	Bloomfield	0	113	0.0
Eastern Connecticut Endoscopy Center	Norwich	1	5236	19.1
Endoscopy Center of Connecticut	Guilford/Hamden	0	8223	0.0
Endoscopy Center of Fairfield, The	Fairfield	0	8181	0.0
Endoscopy Center of Northwest Connecticut	Torrington	0	3495	0.0
Evergreen Endoscopy Center	South Windsor	0	3717	0.0
Eye Surgery Center, The	Bloomfield	1	1455	68.7
Fairfield County Endoscopy Center	Trumbull	1	5707	17.5
Fairfield Surgery Center[2]	Fairfield	0	1228	0.0
Gary J. Price, M.D., Center for Aesthetic Surgery	Guilford	0	184	0.0
Glastonbury Endoscopy Center, LLC	Glastonbury	0	5537	0.0
Glastonbury Surgery Center	Glastonbury	0	5019	0.0
Gregory Brucato, M.D./Brucato Plastic Surgery	Ridgefield	0	43	0.0
Hartford Surgical Center[1]	Hartford	2	1248	160.3
John J. Borkowski, M.D.	Middletown	0	33	0.0
Laser and Vision Surgery Center	Manchester	0	2568	0.0
Leif O. Nordberg, M.D. Now CVW Body Design	Stamford	0	41	0.0
Litchfield Hills Surgery Center	Torrington	0	1447	0.0
Middlesex Center for Advanced Orthopedic Surgery	Middletown	0	3567	0.0
Middlesex Endoscopy Center	Middletown	0	6615	0.0
Naugatuck Valley Endoscopy Center	Waterbury	2	4657	42.9
New England Fertility Institute[1]	Stamford	0	250	0.0
New Vision Cataract Center	Norwalk	0	2841	0.0
North Haven Surgery/Pain Medicine Center	North Haven	1	3811	26.2
Norwalk Surgery Center	Norwalk	0	3340	0.0
Orchard Medical Center	New Haven	0	46	0.0
Orthopaedic & Neurosurgery Center of Greenwich	Greenwich	0	1583	0.0
Orthopedic Associates Surgery Center	Rocky Hill	0	7532	0.0
Plastic Surgery of Southern Connecticut	Westport	0	16	0.0
Reproductive Medicine Associates of Connecticut	Norwalk	0	955	0.0
River Valley Ambul Surg/Connecticut Surgical Arts	Norwich	0	2354	0.0
Robbins Eye Center	Bridgeport	0	287	0.0
Saint Francis GI Endoscopy	Windsor	0	5162	0.0
Shoreline Colonoscopy Suites	Old Saybrook	0	560	0.0
Shoreline Surgery Center	Guilford	1	6122	16.3
Southington Surgery Center	Southington	1	2877	34.8
Split Rock Surgical Associates[1]	Wilton	0	165	0.0
SSC II	Guilford	0	3420	0.0
Summer Street Ambulatory Surgery Center	Stamford	0	39	0.0
Surgery Center of Fairfield County	Bridgeport	0	5452	0.0
Surgical Center of CT-CT Hand	Bridgeport	0	2723	0.0
Waterbury Outpatient Surgical Center	Waterbury	0	3283	0.0
Western CT Ortho Surgical Ctr (formerly Hand Ctr)	Danbury	0	2384	0.0
Wilton Surgery Center	Wilton	0	7461	0.0
Yale University Health Services ASC	New Haven	1	1100	90.9
All Facilities		16		

[1] 2014 patient visits data. [2] 2013 patient visits data.

Appendix H.
Primary Payer (%) of Inpatient Hospital Bills
Acute Care Hospitals. Connecticut, FY 2015.

Hospital	Self Pay	Medicare	Medicaid	Blue Cross and Commercial	Other
William W. Backus Hospital	0.9	46.7	23.8	14.8	13.7
Bridgeport Hospital	1.3	39.8	31.8	18.0	9.0
Bristol Hospital	1.2	48.4	25.9	15.9	8.6
Connecticut Children's Medical Center	0.6	0.5	57.0	26.0	16.0
Danbury and New Milford Hospitals	1.3	42.5	17.7	36.7	1.9
Day Kimball Healthcare	0.7	47.4	27.0	12.2	12.7
John Dempsey Hospital	0.4	46.8	25.1	15.0	12.7
Greenwich Hospital	1.5	36.1	6.7	32.8	22.9
Griffin Hospital	0.5	54.2	20.2	13.1	11.9
Hartford Hospital	1.5	42.8	23.2	12.5	19.9
Charlotte Hungerford Hospital	1.2	57.9	19.4	11.8	9.8
Hospital of Central Connecticut	1.2	46.3	26.3	5.6	20.6
Johnson Memoral Hospital	1.8	48.7	21.7	14.9	12.9
Lawrence and Memorial Hospital	0.5	46.5	22.8	22.1	8.0
Manchester Memorial Hospital	1.1	39.1	25.2	7.7	26.9
Middlesex Hospital	0.2	52.5	17.2	16.6	13.6
Milford Hospital	1.0	62.8	10.2	11.3	14.7
MidState Medical Center	0.8	53.7	21.3	10.0	14.3
Norwalk Hospital	3.5	44.8	18.6	23.0	10.2
Rockville General Hospital	0.9	67.4	12.4	6.2	13.1
Saint Francis Hospital	1.5	45.5	23.5	4.6	24.9
Saint Mary's Hospital	1.6	47.4	28.5	13.8	8.7
Saint Vincent's Medical Center	4.4	44.4	23.9	13.3	14.0
Sharon Hospital	2.0	57.4	16.0	10.9	13.7
Stamford Hospital	0.9	38.3	22.1	19.0	19.6
Waterbury Hospital	1.2	49.4	26.5	11.2	11.7
Windham Community Memorial Hospital	1.6	58.2	20.7	15.9	3.5
Yale-New Haven Hospital	0.8	36.1	28.0	23.1	12.1
Total	1.3%	43.0%	24.1%	17.2%	14.4%

Data Source: DPH Office of Health Care Access.

Appendix H (continued).
Primary Payer (%) of Bills,
Hospices, Chronic Disease Hospitals, and Hospitals for Mentally Ill Persons.
Connecticut, 2015.

Facility	Self Pay	Medicare	Medicaid	Blue Cross and Commercial	Other
The Connecticut Hospice		100.0			
Gaylord Hospital		36.7	21.1	38.3	4.8
The Hospital for Special Care		11.8	70.0	10.1	
Masonicare Health Center, Chronic Disease Hospital		94.4		5.6	
Mount Sinai Rehabilitation Hospital	0.2	45.1	17.0	7.7	30.0
Levitow Veterans Health Center		10.2	74.6		15.3
Hebrew Home and Hospital		79.1	7.9		13.0
Natchaug Hospital*	0.1	17.5	43.8		38.7
Silver Hill Hospital	1.0	13.0			86.0
Masonicare Behavioral Health		87.1		12.9	

VA Medicaid includes with 66.1% Medicare and Medicaid, 8.5% Medicaid only, 15.3% service connected

Mt Sinai Other includes 17.5% Medicare Managed Care.

Appendix H (continued). Case Mix or Primary Payer (%) of Bills
Ambulatory Surgical Centers, Pain Medicine Centers, Fertility Centers, and Outpatient Childbirth Centers.
Connecticut, 2015.

Facility	Case Mix	Self Pay	Medicare	Medicaid	Blue Cross and Commercial	Other
Connecticut Childbirth & Women's Center		6.0		13.0		81.0
Aesthetic Surgery Center		66.0			31.0	3.0
Center for Advanced Reproductive Services		34.0			66.0	
Central Connecticut Endoscopy Center		0.1	17.6	6.2	76.2	
Coastal Digestive Care Center		2.0	24.0	10.0	62.0	2.0
Guilford Surgery Ctr formally CT Ctr for Plastic Surg		9.0			78.0	13.0
Connecticut Eye Surgery Center South		1.0	72.0	1.0	26.0	
Connecticut Fertility		70.0			30.0	
Connecticut Foot		14.0	26.7	1.0	55.3	3.0
Connecticut GI Endoscopy		1.0	23.0		76.0	
Connecticut Orthopaedic		1.0	21.0	1.0	30.0	47.0
Connecticut Surgery[1]			16.8	6.0	62.5	14.6
Constitution Surg, East		8.0	53.0	4.0	36.0	7.0
Danbury Surgical	GI Endoscopy 45% Orthopedics 26% Ophthalmology 24% Pain Management 5%					
Diagnostic Endoscopy	EGD-2295, Colonoscopy-5239, Sig-67					
Digestive Dis Endosc		2.0	33.0	20.0	33.0	12.0
Dr. Felice Youth Images (Now Bloomfield ASC)		0.0	0.0	0.0	0.0	0.0
Eastern Connecticut Endoscopy Center		1.0	21.0	11.0	68.0	
Endoscopy Center of Ct		5.0	30.0	10.0	55.0	
Endoscopy, Fairfield		1.0	20.0		72.0	7.0
Endoscopy, Northwest	100% gastro					
Evergreen Endoscopy		0.1	13.9	7.6	78.4	
Eye Surgery Center		1.0	68.0	5.0	27.0	
Fairfield Endoscopy	100% gastro					
Fairfield Surgery[2]			17.0	2.0		81.0
Gary J. Price, M.D.		100.0				
Glastonbury Endoscopy		1.0	17.0	3.0	79.0	
Glastonbury Surgery		1.0	23.0	7.0	57.0	12.0
Gregory Brucato, M.D./Brucato Plastic Surgery		100.0				
Hartford Surgical[1]		1.0	5.5	5.5	88.0	
John J. Borkowski, M.D.		100.0				
Laser and Vision Surg		1.0	79.0	5.0	15.0	
Leif O. Nordberg, M.D. Now CVW Body Design[2]		100.0				
Litchfield Hills Surgery			22.0		21.0	57.0
Middlesex Orthopedic		1.0	21.0	4.0	53.0	21.0
Middlesex Endoscopy		0.0	27.8	9.5	62.2	0.5
Naugatuck Valley Endoscopy Center			16.0	14.0	70.0	
New England Fertility Institute[1]		80.0			20.0	
New Vision Cataract		2.0	50.0	6.0	47.0	
North Haven Surgery		1.0	22.0	21.0	53.0	3.0
Norwalk Surgery		1.0	30.0	3.0	65.0	1.0
Orchard Medical Center		15.0			85.0	
Orthopaedic Neurosurg		1.0	16.0		77.0	6.0
Orthopedic Associates Surgery Center		1.0	20.0	2.0	65.0	12.0
Plastic Surg of South Ct		37.0			63.0	
Reproductive Medicine		25.0			75.0	
River Valley		1.0	29.0	5.0	61.0	4.0
Robbins Eye[2]	Facility closed in early 2015	25.0	22.0	25.0	28.0	
Saint Francis GI Endosc		2.4		1.8	95.8	
Shoreline Colonoscopy	100% gastro					
Shoreline Surgery		1.0	19.0	2.0	75.0	3.0
Southington Surgery Center			21.0	1.0	61.0	17.0
Split Rock Surgical[1]						
SSC II		8.0	21.0	2.0	69.0	
Summer St Ambulatory		18.0	5.0		77.0	
Surgical Center Fairfield		4.0	5.0	12.0	37.0	42.0
Surgical Center of CT		8.0	18.0	9.0	51.0	18.0
Waterbury Outpatient		9.0	51.0	12.0	27.0	1.0
Western CT Ortho Surgical Ctr		1.0	25.0	1.0	61.0	12.0
Wilton Surgery		3.0	44.0	8.0	42.0	3.0
Yale Health Services						100.0

[1] 2014 data. [2] 2013 data.

Appendix I: Comments Submitted by Facilities

In accordance with legislation, facilities that are required to report adverse events to the Connecticut DPH may submit comments to DPH for inclusion in the annual report to the legislature. Submitting comments is OPTIONAL, not required. DPH encourages comments describing how a facility used data to measure or track adverse events or quality of care and measurably improve care or decrease adverse events. Do not list awards.

Facilities providing comments:

Middlesex Hospital
Day Kimball Healthcare
Stamford Hospital
Griffin Hospital
Saint Francis Healthcare
St. Vincent's Medical Center

Comments Submitted by Facilities, continued

Middlesex Hospital

The employees, medical staff, and leadership of Middlesex Hospital are committed to providing the people we serve with the safest, highest quality health care and the best possible experience, for every person, and every time. We believe that even a single avoidable adverse event is one too many and, thus, we have an ultimate goal of eliminating all preventable harm.
We also recognize that providing health care is an extremely complex process, and there are multiple pieces to achieving our goal of zero avoidable harm. It involves many disciplines and many people. It requires carefully developed systems and processes, as well as ongoing measurement to identify what is working and what is not. An organization also needs to have the skills to effectively learn from when things do not go as expected, and to make changes to continuously improve over time. In addition, we have recognized that achieving this goal will require that we involve patients and their families in both planning our strategies for improvement, and in understanding our results.

The process of eliminating safety events is one that takes time, and Middlesex has committed to this goal over the long term. We continue to evaluate our systems and processes, and to investigate the underlying causes of safety events, so we can prevent anything similar from happening in the future. In fact, in the last three years, we have seen an almost 70% decrease in the most serious of these events.

One specific example of the work we have done to improve outcomes is related to a serious type of infection called “sepsis.” Several years ago, despite already having relatively good outcomes, we recognized opportunities to improve the care of people with this type of infection. Through the use of technology and systematic process improvement, with the combined efforts of people from many disciplines, we have improved our ability to identify sepsis sooner, get all the necessary treatments to the patient faster and, more specifically monitor them, to be sure the treatments are having the expected effect. As a result, we saw significant improvements in the chances of dying from sepsis, the amount of time people with sepsis stay in the hospital, and the likelihood that they will need intensive care. We view the work we have done on sepsis as a model for future efforts to improve the care for people with many different diagnoses.

Finally, to anyone who has been affected by an adverse event while a patient at Middlesex Hospital, to their family members and loved ones, we sincerely apologize for any impact of such an event, and assure you that we have learned as much as we can from any event, so we can do our best to be sure it does not happen again.

Day Kimball Healthcare

Day Kimball Healthcare is committed to patient safety and employs a multitude of processes to prevent adverse events. We are transparent in addressing events when they do occur. We take every event seriously and work to identify practices, processes and protocols necessary to prevent similar issues in the future. Most importantly, we work diligently to provide the highest level of patient safety possible.

- Day Kimball employees regularly participate in numerous quality improvement/initiatives / patient safety committees and collaborate with external organizations to ensure best practices are instituted to prevent adverse events.
- Day Kimball conducts a thorough review of each Sentinel Event Alert from The Joint Commission in order to identify additional strategies and other opportunities for quality improvement initiatives for injuries that seem to be trending across the country.
- Day Kimball Hospital is certified as a Hip and Knee Joint Replacement Program by The Joint Commission.
- Day Kimball Hospital is certified as a Primary Stroke Center by the Joint Commission.

Day Kimball Healthcare continues to be proactive in integrating best practices learned through our own experiences and comprehensive analyses as well as through collaborations with Connecticut Hospital Association, Venzient (formerly VHA), The Joint Commission, and CMS Partnership for Patients. We take very seriously the trust our community places in us, and commit to continuously improving patient-centered quality and safety.

Stamford Hospital

Stamford Hospital is committed to continuously enhancing the safest and highest level of patient care by integrating the latest evidence-based practices across the institution. To promote a continued focus on high quality outcomes, the Hospital participates in the National Database of Nursing Quality Indicators (NDNQI). This system provides a framework for evaluating, benchmarking, and continuously improving key nursing practices. Areas assessed include fall reduction, prevention of hospital acquired infection, restraint usage, and reduction of hospital acquired pressure ulcers, among others.

As part of its ongoing participation in NDNQI, Stamford Hospital closely follows the occurrence of falls. Over the past few years, the organization's overall fall rate has compared favorably with national NDNQI rates. We have developed several interventions as part of our overall fall prevention program, and supplemented these with additional efforts to minimize the risk of falls with injury. These include:

- Building a comprehensive and interdisciplinary falls prevention team to more intensively evaluate falls with injury.
- Standardizing the hand-off communication process among nurses.
- Developing an individualized plan of care based upon identified fall and injury risks, in order to implement interventions specific to a patient, patient population, or setting.
- Conducting post-fall management, which includes: post-fall huddles, a system of transparent reporting, identification of possible causation trends that can inform improvement efforts and re-assessment of patients.

Griffin Hospital

Griffin Hospital is committed to providing safe, patient-centered, high quality care to all of the patients we serve. In 2014, Griffin implemented High Reliability through-out the organization, using the Connecticut Hospitals Association's "Safety Starts with Me" program. The program focuses on a standardized set of safety

habits and behaviors; using error prevention tools, that when used as part of daily workflow reduces avoidable medical error. By the end of Calendar year 2015, Griffin successfully reduced our preventable serious safety event rate for a rolling 12 months by 80% and reduced our reportable adverse events by 50%.

Saint Francis Hospital and Medical Center

Saint Francis Hospital and Medical Center continues its commitment to delivering the highest quality of care for our patients. Ongoing patient safety education is provided to all clinical and non-clinical staff beginning the first day of orientation. Leadership safety huddles and robust patient care rounding by nurse managers as well as leadership rounding has been incorporated in the institution as methods to deliver the highest quality of care to our patients.

In late 2014, Saint Francis was chosen to be one of ten hospitals nationwide to participate in an AHRQ two year partnership regarding prevention of pressure ulcers. Through this AHRQ initiative and with the support of hospital executive leadership, we developed a multidisciplinary team to conduct standardized evidence-based research that provided the basis for sound clinical practice guidelines and recommendations for overall quality improvement specially related to pressure ulcers. Through a coordinated effort of leadership and the work of designated skincare teams, with fostering of a high reliability and best practice culture, we experienced a 75% decrease in hospital acquired pressure ulcers in a twelve month span. Similar multidisciplinary initiatives with executive level sponsorship have resulted in a 40% decrease in falls with injury, over a 66% decrease in catheter-associated urinary tract infections and over a 30% decrease in central line associated blood stream infections.

In 2015, Saint Francis Hospital and Medical Center became part of Trinity Health, which is one of the largest multi-institutional Catholic health care delivery systems in the nation. As part of Trinity Health New England and the Regional Health Ministry, Saint Francis has the ability to utilize additional resources regarding patient safety available nationwide throughout the Trinity healthcare system.

St. Vincent's Medical Center

St. Vincent's Medical Center pioneered bringing the processes of high reliability and culture of safety to Connecticut hospitals, and we are continually engaged in the review of data and best practices that can help improve patient outcomes. We value transparency, and believe that reporting of actual and potential events to the Department of Public is a reflection of that approach. We review any potential harm event, and communicate and educate broadly to improve the quality of care.

We have maintained our commitment by mandating a "high reliability" safety training program for every employee regardless of position, and we conduct morning safety huddles as a way to raise and communicate safety concerns and prevent possible harm. We believe this is necessary to remain at the forefront of patient safety and quality, and to allow our staff to focus on our mission of creating a safe, holistic, and compassionate environment in which we can deliver person-centered care.

Comments Submitted by Facilities, continued

We remain vigilant in reducing the incidence of pressure ulcers. We have a dedicated certified wound and ostomy nurse who consults in patient care, and provides continuous education for our staff and patients on pressure ulcer prevention. St. Vincent's is a member of the Ascension Health Pressure Ulcer Initiative, sharing best practices for pressure ulcer prevention with other health systems. As such, we continue to evaluate new products and tactics for the reduction of adverse events related to skin care in the inpatient setting. Ongoing efforts to educate staff on skin surveillance, documentation, and reporting as well as interventions per our pressure prevention protocol have been successful. While this has initially resulted in an increase in reporting of incidents, our team believes it is a more accurate representation of a concern that all health care facilities are confronted with.

At St. Vincent's, patient and associate safety is our highest concern. We have policies regarding employee conduct and holding employees accountable for their actions. Employees who do not adhere to these policies are subject to progressive discipline, up to and including termination.

Fall prevention continues to remain a high priority. A new subgroup was created to review any patient fall and evaluate for common causes and areas of improvement. Monthly fall data is reviewed and feedback is provided to all nursing units. Fall risk is communicated at the RN bedside shift report. Fall prevention "Champions" have been established for each nursing unit to help promote fall education and fall prevention strategies.

To enhance surgical safety, St. Vincent's continues to concentrate its efforts on training and education around quality and safety and best practices. Surgical leadership and staff participate in interdisciplinary workgroups for surgical safety, review the specifics of any events, and continuously evaluate for improvement opportunities. St. Vincent's is a teaching hospital, and the chief clinical partner for the Frank H. Netter, MD School of Medicine at Quinnipiac University. As such, residents and students are included in event and process review, promoting a culture of safety throughout their education. St. Vincent's also participates in the Connecticut Quality Collaborative, a statewide initiative for surgical quality and safety, along with surgical workgroups at Ascension Health.

Finally, as part of our culture of safety, we empower all our staff to "speak up for safety" if they see something that has the potential to be unsafe in any situation.

Appendix J. Adverse Event Types Analyzed in DPH Reports

Event Code	Description	Date of DPH Report[1] June 2005	Oct 2009	Oct 2011	Oct 2014	Oct 2015	Oct 2016
NQF 1A	Surgery performed on the wrong site			√			√
NQF 1B	Surgery performed on the wrong patient			√			√
NQF 1C	Wrong surgical procedure performed on a patient			√			√
NQF 1D	Retention of a foreign object in a patient after surgery or other procedure			√	√	√	√
NQF 2B	Patient death or serious injury associated with the use or function of a device in patient care in which the device is used or functions other than as intended						√
NQF 4A	Patient death or serious injury associated with a medication error (e.g., errors involving the wrong drug, wrong dose, wrong patient, wrong time, wrong rate, wrong preparation or wrong route of administration)						√
NQF 4D	Death or serious injury of a neonate associated with labor or delivery in a low-risk pregnancy			√			
NQF 4E	Patient death or serious injury associated with a fall while being cared for in a healthcare setting	√					
NQF 4F	Any Stage 3, Stage 4, or unstageable pressure ulcer acquired after admission/ presentation to a healthcare setting	√	√		√	√	
CT 1	Perforations during open, laparoscopic and/or endoscopic procedures resulting in death or serious injury.	√			√	√	√
CT 2	Patient death or serious injury as a result of surgery			√			√

[1] June report is of the Quality in Health Care Program

October reports are of the Adverse Event Reporting Program