LEGISLATIVE REPORT TO THE GENERAL ASSEMBLY

Adverse Event Reporting

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

QUALITY IN HEALTH CARE PROGRAM

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State of Connecticut
Department of Public Health
Legislative Report to the General Assembly
Adverse Event Reporting

For the Period of January 1, 2017 – December 31, 2017

Quality in Health Care Program

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EXECUTIVE SUMMARY

In January 2017, based on the recommendations of a work group of the Quality in Health Care Advisory Committee, the two Connecticut-specific categories (CT 1 & CT 2) were no longer reportable. The work group concluded that the overwhelming majority of perforations during open, laparoscopic, and endoscopic procedures (CT 1) were not preventable, and that events reported as serious injury or death during surgery (CT 2) are better captured under other more specific surgical categories already used by Connecticut in the National Quality Forum list of reportable events.

The number of adverse events reports (n=351) in 2017 was 19% lower than the preceding year due to the discontinuation of the two Connecticut-specific categories.

Also in January 2017, the guidance for reporting sexual abuse or assault (NQF 7C) was revised to clarify what is a "substantiated allegation." For 2017, NQF 7C reports were much lower compared to the previous year.

The most common adverse events reported were: (1) stage 3-4 or unstageable pressure ulcers acquired after admission to a healthcare facility, (2) falls resulting in serious disability or death, and (3) retained foreign objects in the patient after surgery. Respectively, they accounted for 59.3%, 23.9%, and 4.8% of all adverse events.

In May 2017, the Department of Public Health (DPH) implemented web-based adverse event reporting. The new system collects information about the race, ethnicity, and language spoken by persons who experienced adverse events.

After examining an adverse event report, which includes a Corrective Action Plan, the department determines whether to initiate an investigation.

BACKGROUND

Connecticut General Statutes (CGS) §19a-127*l* required the Department of Public Health to establish a Quality in Health Care program for health care facilities. An Advisory Committee, chaired by the DPH Commissioner or his 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.

[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 can be accessed at https://portal.ct.gov/dph under Statistics and Research,/"Health Care Quality".

Prior to May 2017, adverse events were reported to DPH by telephone and fax machine. Beginning in May 2017, reporting is through a web-based portal. Reporting forms and definitions are provided via the DPH website under "Forms".[2]

The Adverse Event reporting requirements were amended when CGS §19a-127*n* became law on 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, which 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 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.*

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[2] https://portal.ct.gov/DPH/Communications/Forms/Forms

[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.

[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.

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; and (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 therein. DPH promulgated guidance related to these changes during 2012 and implemented the revised list in January 2013.

In October 2016, recommendations were made to the DPH Commissioner by a DPH/hospital work group of the Quality in Health Care Advisory Committee concerning four adverse event categories that were identified as weak due to lack of clarity or lack of current effectiveness. Regarding pressure ulcers (NQF 4F), the work group concluded that the spike in reporting in 2013 was due to the definitional change to include unstageable pressure ulcers, not to any decline in patient safety or quality, and that additional reporting years are required to verify the efficacy of the expanded category. Regarding sexual abuse or assault (NQF 7C) the work group recommended changes to the existing guidance to clarify what constitutes reportable "substantiated allegations." Additional criteria for a reportable event included any staff-witnessed sexual assault; sufficient clinical evidence to support allegations; and credible admission by the perpetrator. Additional guidance included consideration of the impact of the alleged perpetrator's mental state on the credibility of their admission.

Regarding perforations during open, laparoscopic, or endoscopic procedures (CT 1) the work group determined that the overwhelming majority of reported events are not preventable and recommended that the category be retired. Regarding patient death or serious injury as a result of surgery (CT 2), the work group concluded that the category does not provide a useful means of identifying preventable events, while five other categories which track specific surgical issues are better designed to capture meaningful data.[6] The work group recommended that category CT 2 be retired. These recommendations were accepted. Starting January 2017, the two Connecticut-specific categories are no longer reportable to DPH, and clarifying guidance was introduced to reduce the number of unsubstantiated sexual abuse reports going forward.[7]

CGS §19a-127*o* 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 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

[5] http://www.qualityforum.org/Topics/SREs/Serious_Reportable_Events.aspx
[6] Categories 1A-1E relate to surgical or invasive procedure events.
[7] For the complete guidance, on the DPH website choose Forms, then scroll down to Licensing, Certification, and Adverse Events > Adverse Event Reporting Form (effective 1/1/17).

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[8]).

DPH presented webinars in December 2016 and April 2017 to introduce the revised adverse event category list and implementation guidelines, and web-based reporting, to facilities that participate in adverse event reporting. The revised adverse event categories and guidance as of January 2017, slides from the April 2017 training, and an adverse event web-based user manual are available at https://portal.ct.gov/DPH/Communications/Forms/Forms. Following user acceptance testing, web-based adverse event reporting went live in May 2017.

The web-based adverse event reporting application is hosted at the Connecticut Bureau of Enterprise Systems and Technology (BEST) behind firewalls. The application uses drop-down lists to minimize data entry errors or ambiguities. Users first register and log in using a username and password. Facility users will be able to see the events at their own facility only. The application is used for tracking adverse event reports and corrective action plans, and follow-up with the DPH Facility Licensing and Investigation (FLIS) section, if additional details are requested.

New fields in the web-based application collect data on the preferred language spoken by the patient who experienced the adverse event, English proficiency, race, ethnicity, and whether an interpreter was provided during the medical visit.

Adverse event data for this DPH report were obtained from the electronic database at DPH and the web-based application. 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, which pursuant to legislative changes is now known as the Health Systems Planning Unit at the Office of Health Strategy. 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.[9]

ADVERSE EVENT DATA

The DPH electronic database contains 351 reports of adverse events reported in 2017. Demographic information for 2017 is shown in Appendix A. This reported information is influenced by several factors: varying rates of adverse events across facilities, patient case mix,

[8] Quality of Health Care reports are at https://portal.ct.gov/dph under Statistics and Research, then choose "Health Care Quality." The reports were discontinued after 2017.

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

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.[10] 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.[11]

Acute care hospitals including children's hospitals submitted 296 (84%) of the 351 adverse event reports in 2017; chronic disease hospitals, 42; hospitals for the mentally ill, 7; and outpatient surgical facilities (if not owned by a hospital), 6. Fifty-four percent of reported adverse events occurred in males and 46% 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 hospital adult medical ward (Appendix A).

Web-based reports were collected beginning in May 2017. A substantial portion of such reports did not indicate race or ethnicity. Of those that did, the most common races were white (82%) and black (14%). Hispanic ethnicity was recorded in 11.5% of cases.

Appendix B presents the number of adverse events reported by year for 2012 through 2017, according to the lists of NQF events (1A-7D) and Connecticut-specific events (CT1 & CT2) that were adopted in 2013 and revised in 2017. Thus for example, the definition of falls in 2012 was the same as in 2013-17, except they were reported as NQF category 4E in 2012. They are shown as NQF category 4F, which is the category used in 2013-17.

As shown in the chart below and Appendix C, the most commonly reported events in 2017 were pressure ulcers. Two hundred and eight (208) pressure ulcers comprised 59% of all 351 adverse events reported. The second most commonly reported events were falls resulting in death or serious injury, with 84 reports (24%). Retention of a foreign object in a patient after surgery or other procedure followed with 17 reports (5%). The next most commonly reported event, at 10 instances, was surgery performed on the wrong body part (3%).

Following the peak in ulcers reported in 2013, there was a large decline through 2016, and a rise in 2017. See the October 2014 and 2015 reports for additional analysis of pressure ulcers.

The number of reports of sexual abuse or assault in 2016 (24) was more than twice as high as in any previous year. For 2017, there were 5 reports. It is reasonable to assume, but not provable, that the reporting guidance implemented in 2017 reduced the number of unsubstantiated allegations reported.

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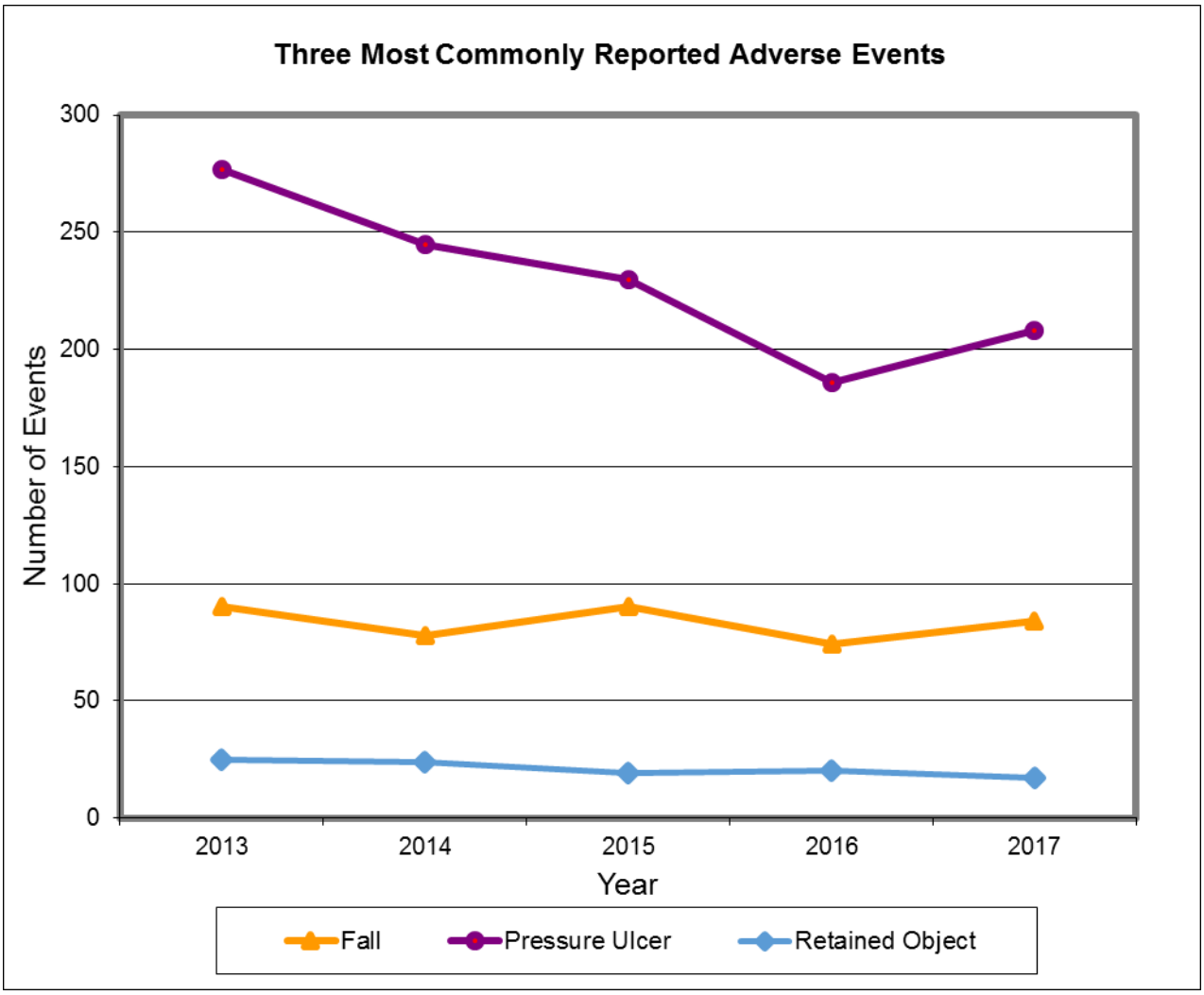
[10] Zegers et al, "Variation in the Rates of Adverse Events between Hospitals and Hospital Departments," *International Journal for Quality in Health Care* 2011:1-8; Attenello et al, "Incidence of 'Never Events' Among Weekend Admissions Versus Weekday Admissions to US Hospitals: National Analysis,"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

[11] 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.

Seventeen reports of retained objects after surgery from 2017 included sponge (4), catheter piece (4), drain (2), and single items (7). Two of these had no indications for removal.



Of the eight burn reports (5C) in 2017, no facility reported more than two, and no two events closely resembled another. Three events were caused by patients: one intentional and one unintentional hot liquid spill, and one patient lit a cigarette while receiving oxygen. One patient experienced hand blisters of unknown origin. Four events were caused by staff: moist heat caused blisters, cautery of bleeding ignited an alcohol-based antiseptic, thermal injury from placing an ablator's grounding on the thigh, and chemical burn after irrigation of a root canal.

Adverse event counts, patient days, and rate by facility and event type in 2017 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 and chronic 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 are used for the denominator of the rate. DPH decided to use inpatient days because previously it was found that outpatient day figures could not be reliably obtained from the acute care database. Many of the choices for "Location of Event" (Appendix A) could be either inpatient or outpatient.

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."[12] 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 it cannot be determined how complete facility reporting is.

Based on these adverse event data alone certain conclusions are not possible. No conclusion can be reached as to 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 is based on CT inpatient billing data. It 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 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. This hypothesis was tested 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 herein 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.

CURRENT ACTIVITIES

During the course of healthcare inspection activities, DPH activities include, but are not limited to, a review of medical records to ensure that care has been provided in accordance with applicable state and federal laws and regulations and standards of care. Not only are inpatient medical records reviewed, but closed medical records as well. Such review includes compliance with the requirements of adverse event reporting.

[12] 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.

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.

The department 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 § 19a-127*o* allows DPH to designate "Patient Safety Organizations" (PSOs) and § 19a-127*p* requires 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. The department has designated four PSOs, including the Qualidigm Patient Safety Organization, the Connecticut Healthcare Research and

Education Foundation Patient Safety Organization, the Ambulatory Surgical Center Patient Safety Organization, and QA to QI LLC.

Healthcare Associated Infections

The Healthcare Associated Infections (HAI) Committee, pursuant to § 19a-490 *n-o*, 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 (https://portal.ct.gov/DPH/Infectious-Diseases/HAI/Healthcare-Associated-Infections-HAIs-Data-Reports-and-Publications).

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.[13] Nursing Home Compare includes data about pressure ulcers, falls, UTI, and use of restraints.[14]

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

Concluding Statement

After many years 'experience with adverse events reporting in acute care settings, it is evident to DPH that this system provides value and enhances other existing patient safety systems and interventions. Regular review of the events and revisions, where appropriate, have kept the reporting system current and focused on important safety issues. The new, more robust, electronic reporting system enhances data collection and analysis. The manual method of adverse event reporting and data collection was time consuming. Automating the process of reporting and data collection has proven to be not only efficient for the healthcare provider, but has improved the operational efficiency for the Department and the quality of the data.

In addition, language proficiency and translation data raise awareness that appropriate communication in medical settings is not only respectful, vital to shared decision making, equity, and satisfaction, but is also a safety issue.

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

APPENDICES

Appendix A:
Demographic Data from Adverse Event Reports

Appendix B:
Counts and Crosswalk of Adverse Events Codes 2012-2017

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Appendix I:
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Appendix A.
Demographic Data from Adverse Event Reports in the Electronic Database, Connecticut 2017

Measure	Frequency	Percent
Facility Type (n=351)		
Acute Care or Children's Hospital	296	84.3%
Chronic Disease Hospital	42	12.0%
Hospital for Mentally Ill Persons	7	2.0%
Outpatient Surgical Facility	6	1.7%
Patient Gender (n=350)		
Male	188	53.7%
Female	162	46.3%
Patient Age (n=351)		
0-14	14	4.0%
15-44	51	14.5%
45-64	98	27.9%
65 and older	188	53.6%
Location of Event (n=351)		
Adult Medical	79	22.5%
Adult Surgical	28	8.0%
Ambulatory Surgical	7	2.0%
Cardiac Care and Telemetry	16	4.6%
Cardiac Cath Lab	3	0.9%
Diagnostic Services	2	0.6%
Dialysis	1	0.3%
Emergency Department	16	4.6%
Medical ICU	61	17.4%
Neonatal ICU	1	0.3%
Obstetrical/Gynecological	4	1.1%
Operating Room	14	4.0%
Other	47	13.4%
Outpatient Services	10	2.8%
Pediatrics	7	2.0%
Psychiatric	21	6.0%
Rehabilitative Services	9	2.6%
Surgical ICU	25	7.1%

Frequency and percent reflect only the non-missing values.

Appendix A continued.

Demographic Data from Adverse Event Reports in the Electronic Database, Connecticut 2017

Web-Based Reports, Which Began in May 2017

Measure	Frequency	Percent
Inpatient/Outpatient (n=224)		
Inpatient	195	87.1%
Outpatient	29	12.9%
Admission Type (n=224)		
Hospital Based	218	97.3%
Off Campus Satellite Site	4	1.8%
Ambulatory Surgical Center	2	0.9%
Patient Race (n=122)		
White	100	82.0%
Black or African American	17	13.9%
American Indian or Alaska Native	1	0.8%
Asian	4	3.3%
Patient Ethnicity (n=131)		
Hispanic or Latino	15	11.5%
Not Hispanic or Latino	106	80.9%
Other	10	7.6%
Spoken Language (n=131)		
English	122	93.1%
Spanish	4	3.1%
Other Language	5	3.8%
English Proficiency (n=119)		
Not Well	3	2.5%
Well	21	17.6%
Very Well	55	46.2%
Unknown	40	33.6%
Interpreter Used? (n=224)		
No	220	98.2%
Yes	4	1.8%
Patient Expired (n=224)		
No	218	97.3%
Yes	6	2.7%

Frequency and percent reflect only the non-missing values.

Appendix B. Counts of Adverse Event Codes 2012-2017

Event Code	Description	Reports 2012	Reports 2013	Reports 2014	Reports 2015	Reports 2016	Reports 2017
NQF 1A	Surgery performed on the wrong site	9	13	15	13	18	10
NQF 1B	Surgery performed on the wrong patient	0	1	0	1	1	0
NQF 1C	Wrong surgical procedure performed on a patient	2	1	4	1	6	3
NQF 1D	Retention of a foreign object in a patient after surgery or other procedure	12	25	24	19	20	17
NQF 1E	Intraoperative or immediate postoperative/ postprocedure death in an ASA class I patient	0	0	1	1	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	1	1
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	1	1
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	0	2
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	2	0
NQF 3B	Patient death or serious injury associated with patient elopement (disappearance)	0	1	0	0	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	5	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	7	4
NQF 4B	Patient death or serious injury associated with unsafe administration of blood products	0	0	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	3	0
NQF 4D	Death or serious injury of a neonate associated with labor or delivery in a low-risk pregnancy	4	1	4	5	2	1
NQF 4E	Patient death or serious injury associated with a fall while being cared for in a healthcare setting	76	90	78	90	74	84
NQF 4F*	Any Stage 3, Stage 4, or unstageable pressure ulcer acquired after admission/ presentation to a healthcare setting	51	277	245	230	186	208
NQF 4G	Artificial insemination with the wrong donor sperm or wrong egg	0	0	0	0	0	0

Appendix B (cont.). Counts of Adverse Event Codes 2012-2017

Event Code	Description	Reports 2012	Reports 2013	Reports 2014	Reports 2015	Reports 2016	Reports 2017
NQF 4H	Death or serious injury resulting from irretrievable loss of an irreplaceable biological specimen	NA	3	0	0	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	2	0
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	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	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	4	8
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	0	1
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	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	0	0
NQF 7B	Abduction of a patient/resident of any age	0	1	0	0	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	24	5
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	2	2
CT 1	Perforations during open, laparoscopic and/or endoscopic procedures resulting in death or serious injury.	55	79	71	49	58	NA
CT 2	Patient death or serious injury as a result of surgery	14	13	12	14	14	NA
	Total Reports	241	534	472	456	431	351
	Total excluding CT1-CT2	172	442	389	393	359	351

*Unstageable pressure ulcers became reportable in 2013.

NA is marked in cells where the event category did not exist prior to 2013 or after 2016.

CT1 and CT2 are no longer reportable beginning January 2017.

The definition of NQF 7C was clarified to include only substantiated allegations beginning January 2017.

Appendix C. Connecticut Adverse Events in 2017
Most Frequently Reported Events
NQF List (1A-7D)

Event	Description	Frequency	Percent of All Events
4F	Unstageable, stage 3 or 4 pressure ulcers acquired after admission to a healthcare facility	208	59.3%
4E	Patient death or serious injury associated with a fall while being cared for in a healthcare facility	84	23.9%
1D	Retention of a foreign object in a patient after surgery or other procedure	17	4.8%
1A	Surgery performed on the wrong body part	10	2.8%
5C	Death or serious injury associated with burn	8	2.3%
All other reported adverse events		24	6.8%
Total		**351**	100.0%

Appendix D. Adverse Event Reports by Event Type
Acute Care Hospitals. Connecticut, 2017.*

	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
Backus																1	7												
Bridgeport	1			2												4	24						1						
Bristol	1															1	4												
Ct Children's Medical Cntr				2													5												
Danbury[1]																7	5												
Day Kimball																													
Dempsey				2							1					2													
Greenwich																4	3												
Griffin																3	2												
Hartford	1		1	2				1								3	16												
Hungerford																1	1												
Hospital of Central Ct																4	3												
Johnson	1			1																									
Lawrence & Memorial				1												4	4											2	
Manchester				1												1	1												
Middlesex												1				1	2						1					1	1
MidState																1	2											1	
Milford																1	2												
Norwalk																3	9												
Rockville																													
St Francis	1			1							1					4	12												1
St Mary's	1			1								2				2	1												
St Vincent's	2															9	7							1					
Sharon																													
Stamford																2	16												
Waterbury								1								2	8												
Windham																1													
Yale-NH				4		1										11	43						2					1	
All Acute Care	8	0	1	17	0	1	1	2	0	0	2	3	0	0	0	72	177	0	0	0	0	0	4	1	0	0	0	5	2

* Zero count cells are suppressed except in totals

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

Appendix D (continued).
Adverse Event Reports and Rates
Acute Care Hospitals. Connecticut, 2017.

Hospital	CY 2017 Reports Total	Patient Days* CY 2017	Rate per 100,000 Pt Days*
William W. Backus Hospital	8	45,951	17.4
Bridgeport Hospital	32	108,800	29.4
Bristol Hospital	6	25,353	23.7
Connecticut Children's Medical Center	7	42,751	16.4
Danbury and New Milford Hospitals	12	96,946	12.4
Day Kimball Healthcare	0	15,191	0.0
John Dempsey Hospital	5	39,067	12.8
Greenwich Hospital	7	54,239	12.9
Griffin Hospital	5	30,726	16.3
Hartford Hospital	24	233,546	10.3
Charlotte Hungerford Hospital	2	23,597	8.5
Hospital of Central Connecticut	7	63,032	11.1
Johnson Memoral Hospital	2	14,200	14.1
Lawrence and Memorial Hospital	11	63,494	17.3
Manchester Memorial Hospital	3	40,729	7.4
Middlesex Hospital	7	53,867	13.0
Milford Hospital	3	9,944	30.2
MidState Medical Center	4	32,715	12.2
Norwalk Hospital	12	53,405	22.5
Rockville General Hospital	0	12,795	0.0
Saint Francis Hospital	20	147,390	13.6
Saint Mary's Hospital	7	47,493	14.7
Saint Vincent's Medical Center	20	83,645	23.9
Sharon Hospital	0	5,706	0.0
Stamford Hospital	18	72,881	24.7
Waterbury Hospital	11	50,486	21.8
Windham Community Memorial Hospital	1	10,218	9.8
Yale-New Haven Hospital	62	431,925	14.4
All Acute Care Hospitals	296	1,910,092	15.5

* 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, 2017.*

	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
Ct Hospice																1													
Gaylord																	7												
Hsp Special Care												1				4	21						2						
Masonicare																													
Mount Sinai																							1						
Veterans																1	1												
Hebrew Home																1	2												
Chronic Disease	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	7	31	0	0	0	0	0	3	0	0	0	0	0	0
* Zero count cells are suppressed except in totals																													

		Patient*	Rate per
	Reports	Days	100,000
Facility	Total	2017	Pt Days
The Connecticut Hospice	1	12,773	7.8
Gaylord Hospital	7	40,153	17.4
The Hospital for Special Care	28	75,930	36.9
Masonicare Health Center	0	3,956	0.0
Mount Sinai Rehabilitation Hospital	1	11,599	8.6
Levitow Veterans Health Center	2	41,610	4.8
Hebrew Home and Hospital	3	7,606	39.4
All Chronic Disease Hospitals	42		
* Inpatient days are used for rate calculation.			

Appendix F. Adverse Event Reports by Event Type and Rates per 100,000 Inpatient Days
Hospitals for Mentally Ill Persons. Connecticut, 2017.*

	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
Natchaug											1												1						
Silver Hill																1													
Masonicare																4													
Mental Health	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	5	0	0	0	0	0	0	1	0	0	0	0	0	0
* Zero count cells are suppressed except in totals																													

Facility	Reports Total	Patient Days 2017	Rate per 100,000 Pt Days
Natchaug Hospital	2	19,472	10.3
Silver Hill Hospital	1	11,717	8.5
Masonicare Behavioral Health	4	9,680	41.3
All Hospitals for Mentally Ill Persons	7		

Appendix G. Adverse Event Reports by Event Type for Ambulatory Surgical Centers, Pain Medicine Centers, Fertility Centers, and Childbirth Centers. Connecticut, 2017.

	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
Ct Childbirth & Women															1														
Aesthetic Surg Center																													
Bloomfield ASC[1]																													
Center for Adv Reprod																													
Central Ct Endoscopy																													
Coastal Digestive Care																													
Conn Eye, South																													
Connecticut Fertility																													
Connecticut Foot																													
Conn GI Endoscopy																													
Conn Orthopaedic	1																												
Conn Surgery																													
Constitution Surg, East																													
Danbury Surgical																													
Diagnostic Endoscopy																													
Digestive Dis Endosc																													
Eastern Ct Endoscopy																													
Endoscopy Center of Ct					1																								
Endoscopy, Fairfield																													
Endoscopy, Northwest																													
Evergreen Endoscopy																													
Eye Surgery Center																													
Fairfield Endoscopy[2]																													
Fairfield Surgery																													
Gary J. Price MD																													
Glastonbury Endoscopy																													
Glastonbury Surgery																													
Gregory Brucato MD																													
Guilford ASC																													
Hartford Surgical																													
John J. Borkowski MD																													
Laser and Vision Surg																													
Leif Nordberg MD (CVW)																													
Litchfield Hills Surgery																													
Middlesex Endoscopy																													
Middlesex Orthopedic																													
Naugatuck Endoscopy																													
New England Fertility																													
New Vision Cataract																													
North Haven Surgery																													
Norwalk Surgery																													
Orthopaedic Neurosurg																													
Orthopedic Associates																													
Plast Surg of South Ct																													
Reproductive Medicine																													
River Valley/Ct Surg Arts																													
St Francis GI Endosc																													
Shoreline Colonoscopy																													
Shoreline Surgery																													
Southington Surgery			1																										
Split Rock Surgical																													
SSC II																													
Summer St Ambulatory[3]																													
Surg Center Fairfield																													
Surg Center-Ct Hand																													
Waterbury Outpatient																													
Western CT Ortho Surg	1																												
Wilton Surgery			1																										
Yale Health Services																													
All Ambulatory Facilities	2	0	2	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

[1] Formerly Dr. Felice's Youthful Images [2] Now NEMG Gastro [3] Now Speciality Surgery Ctr

Appendix G (continued). Adverse Event Reports and Rates, Outpatient Visits for Ambulatory Surgical Centers, Pain Medicine Centers, Fertility Centers, and Childbirth Centers, Connecticut, 2017.

Facility	Location	Reports Total	Patient Visits 2017	per 100,000 Pt visits Rate 2017
Connecticut Childbirth & Women's Center	Danbury	1	124	806.5
Aesthetic Surgery Center[1]	New Haven	0	347	0.0
Bloomfield ASC (formerly Dr. Felice's Youthful Images)	Bloomfield	0	1,634	0.0
Center for Advanced Reproductive Services	Farmington	0	2,263	0.0
Central Connecticut Endoscopy Center	Plainville	0	6,710	0.0
Coastal Digestive Care Center	New London	0	6,348	0.0
Connecticut Eye Surgery Center South	Milford	0	8,052	0.0
Connecticut Fertility[2]	Bridgeport	0	253	0.0
Connecticut Foot Surgery Center[1]	Milford	0	354	0.0
Connecticut GI Endoscopy	Bloomfield	0	5,722	0.0
Connecticut Orthopaedic	Hamden	1	4,077	24.5
Connecticut Surgery	Hartford	0	2,995	0.0
Constitution Eye Surgery Center East	Waterford	0	5,642	0.0
Danbury Surgical Center	Danbury	0	6,645	0.0
Diagnostic Endoscopy	Stamford	0	6,166	0.0
Digestive Disease Associates Endoscopy Suite	Branford	0	2,326	0.0
Eastern Connecticut Endoscopy Center	Norwich	0	6,318	0.0
Endoscopy Center of Connecticut	Guilford/Hamden	1	8,048	12.4
Endoscopy Center of Fairfield, The	Fairfield	0	9,058	0.0
Endoscopy Center of Northwest Connecticut	Torrington	0	3,432	0.0
Evergreen Endoscopy Center	South Windsor	0	5,300	0.0
Eye Surgery Center, The	Bloomfield	0	1,622	0.0
Fairfield County Endoscopy Center (now NEMG Gastro)	Trumbull	0	5,686	0.0
Fairfield Surgery Center	Fairfield	0	1,606	0.0
Gary J. Price, M.D., Center for Aesthetic Surgery	Guilford	0	130	0.0
Glastonbury Endoscopy Center, LLC	Glastonbury	0	7,636	0.0
Glastonbury Surgery Center	Glastonbury	0	4,944	0.0
Guilford Surgery Ctr (formerly CT Ctr for Plastic Surg)	Guilford	0	1,468	0.0
Hartford Surgical Center	Hartford	0	1,800	0.0
John J. Borkowski, M.D.	Middletown	0	26	0.0
Laser and Vision Surgery Center[1]	Manchester	0	1,966	0.0
Leif O. Nordberg, M.D. (now CVW Body Design)	Stamford	0	301	0.0
Litchfield Hills Surgery Center	Torrington	0	1,418	0.0
Middlesex Center for Advanced Orthopedic Surgery	Middletown	0	3,792	0.0
Middlesex Endoscopy Center	Middletown	0	6,891	0.0
Naugatuck Valley Endoscopy Center	Waterbury	0	3,865	0.0
New England Fertility Institute[3]	Stamford	0	250	0.0
New Vision Cataract Center	Norwalk	0	2,778	0.0
North Haven Surgery/Pain Medicine Center	North Haven	0	3,882	0.0
Norwalk Surgery Center	Norwalk	0	3,626	0.0
Orthopaedic & Neurosurgery Center of Greenwich (Stamford ASC)	Greenwich	0	2,957	0.0
Orthopedic Associates Surgery Center	Rocky Hill	0	8,090	0.0
Plastic Surgery of Southern Connecticut	Westport	0	13	0.0
Reproductive Medicine Associates of Connecticut	Norwalk	0	1,175	0.0
River Valley Ambul Surg/Connecticut Surgical Arts	Norwich	0	3,138	0.0
Saint Francis GI Endoscopy	Windsor	0	6,313	0.0
Shoreline Colonoscopy Suites	Old Saybrook	0	500	0.0
Shoreline Surgery Center	Guilford	0	6,632	0.0
Southington Surgery Center	Southington	1	3,714	26.9
Split Rock Surgical Associates	Wilton	0	152	0.0
SSC II	Guilford	0	3,032	0.0
Summer Street Ambulatory Surgery Center (now Speciality Surgery Ctr)	Stamford	0	1,392	0.0
Surgery Center of Fairfield County	Bridgeport	0	5,563	0.0
Surgical Center of CT-CT Hand	Bridgeport	0	3,090	0.0
Waterbury Outpatient Surgical Center	Waterbury	0	2,498	0.0
Western CT Ortho Surgical Ctr (formerly Hand Ctr)	Danbury	1	3,233	30.9
Wilton Surgery Center	Wilton	1	7,018	14.2
Yale University Health Services ASC	New Haven	0	1,100	0.0
All Facilities		6		

[1] 2016 patient visits data. [2] 2015 patient visits data. [3] 2014 patient visits data.

Appendix H.
Primary Payer (%) of Inpatient Hospital Bills (N=394,972)
Acute Care Hospitals. Connecticut, CY 2017.

Hospital	Self Pay	Medicare	Medicaid	Blue Cross and Commercial	Other
William W. Backus Hospital	1.2	46.2	23.7	14.5	14.5
Bridgeport Hospital	3.3	41.2	30.3	19.6	5.6
Bristol Hospital	1.6	47.9	25.6	16.8	8.0
Connecticut Children's Medical Center	0.8	0.2	54.2	28.1	16.7
Danbury and New Milford Hospitals	1.4	41.1	19.1	35.7	2.8
Day Kimball Healthcare	0.5	46.6	26.6	17.6	8.8
John Dempsey Hospital	0.8	43.2	27.2	14.8	14.1
Greenwich Hospital	4.2	35.7	6.0	40.0	14.2
Griffin Hospital	0.6	49.4	21.6	15.6	12.8
Hartford Hospital	1.3	42.9	23.2	14.1	18.6
Charlotte Hungerford Hospital	1.3	53.5	23.8	11.3	10.2
Hospital of Central Connecticut	1.2	44.3	27.3	10.6	16.7
Johnson Memoral Hospital	1.1	46.8	27.1	5.3	19.6
Lawrence and Memorial Hospital	3.6	47.1	21.1	19.7	8.5
Manchester Memorial Hospital	1.5	37.8	25.4	8.7	26.7
Middlesex Hospital	0.7	47.6	16.9	17.6	17.2
Milford Hospital	1.2	68.1	6.5	11.3	12.9
MidState Medical Center	1.1	49.1	22.7	12.2	14.9
Norwalk Hospital	3.9	45.2	18.3	21.3	11.4
Rockville General Hospital	1.0	62.0	15.4	6.7	14.9
Saint Francis Hospital	1.6	45.7	23.7	5.0	24.0
Saint Mary's Hospital	2.6	45.5	30.8	8.5	12.5
Saint Vincent's Medical Center	4.0	45.0	24.8	13.3	13.0
Sharon Hospital	0.0	50.7	12.3	12.6	24.4
Stamford Hospital	0.8	37.0	24.7	18.5	19.0
Waterbury Hospital	1.6	47.3	29.3	10.7	11.1
Windham Community Memorial Hospital	1.4	63.4	19.0	8.8	7.4
Yale-New Haven Hospital	2.9	37.1	25.6	25.0	9.4
Total	2.1%	42.3%	24.0%	18.0%	13.5%

Data Source: DPH Environmental & Occupational Health Assessment Section.

Appendix H (continued).
Primary Payer (%) of Bills,
Hospices, Chronic Disease Hospitals, and Hospitals for Mentally Ill Persons.
Connecticut, 2017.

Facility	Self Pay	Medicare	Medicaid	Blue Cross and Commercial	Other
The Connecticut Hospice		100.0			
Gaylord Hospital		47.4	11.7	37.7	3.2
The Hospital for Special Care	0.1	9.9	81.2	8.8	
Masonicare Health Center, Chronic Disease Hospital		90.4		9.6	
Mount Sinai Rehabilitation Hospital		55.8	20.7		23.5
Levitow Veterans Health Center	8.8		67.5		23.7
Hebrew Home and Hospital		85.2	7.0		7.8
Natchaug Hospital*	0.9	20.9	43.0		35.2
Silver Hill Hospital	4.4	13.4	82.2		
Masonicare Behavioral Health		77.2		22.8	
*2016 data					

Appendix H (continued). Case Mix or Primary Payer (%) of Bills
Ambulatory Surgical Centers, Pain Medicine Centers, Fertility Centers, and Outpatient Childbirth Centers. Connecticut, 2017.

Facility	Case Mix	Self Pay	Medicare	Medicaid	Blue Cross and Commercial	Other
Connecticut Childbirth & Women's Center		4.8%		18.5%		76.7%
Aesthetic Surg Center[1]		60.0%			40.0%	
Bloomfield ASC (formerly Dr Felice Youth Images)		<1%	50.0%	2.0%	46.0%	<1%
Center for Advanced Reproductive Services		20.0%			80.0%	
Central Connecticut Endoscopy Center		3.0%	32.0%	5.0%	60.0%	
Coastal Digestive Care Center			30.0%	10.0%	57.0%	3.0%
Connecticut Eye Surgery Center South		<1%	46.0%	3.0%	25.0%	25.0%
Connecticut Fertility[2]		70.0%			30.0%	
Connecticut Foot Surgery Center[1]		2.0%	25.0%	3.0%	70.0%	
Conn GI Endoscopy		<1%	19.0%	4.0%	76.0%	
Conn Orthopaedic		<1%	23%	<1%	29%	47%
Conn Surgery		<1%	44.0%	17.0%	27.0%	37.0%
Constitution Eye Surgery Center, East[2]		8.0%	53.0%	4.0%	36.0%	7.0%
Danbury Surgical Center	GI-42.6%, Ophtha-34.9%, Ortho-19.1%, Pain-2.7%, Other-.7%					
Diagnostic Endoscopy		<1%	22%		78%	
Digestive Dis Endosc		1.0%	35.0%	15.0%	40.0%	9.0%
Eastern Ct Endoscopy		<1%	25.0%	12.0%	59.0%	4.0%
Endoscopy Center of Ct		59.0%	30.0%	10.0%	55.0%	
Endoscopy, Fairfield		<1%	20.0%		72.0%	7.0%
Endoscopy, Northwest		<1%	26.0%	10.0%	63.0%	
Evergreen Endoscopy		0.0%	20.5%	12.4%	63.5%	3.6%
Eye Surgery Center		<1%	66.0%	2.0%	31.0%	
Fairfield Endoscopy (Now NEMG Gastro)		<1%	28.9%	3.8%	20.8%	45.6%
Fairfield Surgery			8.0%		70.0%	20.0%
Gary J. Price, M.D., Center for Aesthetic Surgery		100.0%				
Glastonbury Endoscopy		<1%	16.0%	4.0%	79.0%	
Glastonbury Surgery		<1%	26.0%	6.0%	55.0%	12.0%
Guilford Surgery Center		3.0%	12.0%	1.0%	78.0%	6.0%
Hartford Surgical		<1%	22.0%	11.7%	66.1%	
John J. Borkowski, M.D.		100.0%				
Laser and Vision Surg[1]		1.0%	58.0%	4.0%	29.0%	8.0%
Leif O. Nordberg, M.D. (CVW)		27.0%	12.0%	15.0%	46.0%	
Litchfield Hills Surgery		<1%	23.0%	0.0%	60.0%	16.0%
Middlesex Endoscopy		<1%	26.0%	8.0%	65.0%	<1%
Middlesex Orthopedic		<1%	10.6%	1.6%	74.7%	1.1%
Naugatuck Endoscopy		<1%	20.0%	13.0%	65.0%	<1%
New England Fertility[3]		80.0%			20.0%	
New Vision Cataract		<1%	45.0%	7.0%	48.0%	
North Haven Surgery		<1%	21.0%	24.0%	51.0%	2.0%
Norwalk Surgery		<1%	25.0%	4.0%	67.0%	4.0%
Orthopaedic Neurosurg (Stamford ASC)		<1%	31.5%		67.0%	1.0%
Orthopedic Associates		<1%	31.0%	2.0%	55.0%	12.0%
Plast Surg of South Ct		7.0%	15.0%	7.0%	69.0%	
Reproductive Medicine		25.0%			75.0%	
River Valley/Ct Surg Arts		1.0%	24.0%	8.0%	63.0%	2.0%
St Francis GI Endosc		<1%	15.0%	2.0%	83.0%	
Shoreline Colonoscopy	100% colonoscopy					
Southington Surgery		<1%	30.0%	2.5%	56.0%	11.0%
Shoreline Surgery			22.9%	2.2%	72.6%	2.3%
Split Rock Surgical		1.0				
SSC II		16.2%	22.9%	2.4%	53.9%	4.6%
Summer St Ambulatory (now Specialty Surgery Ctr)		<1%	11.0%	1.0%	88.0%	<1%
Surg Center Fairfield		3.0%	28.0%	5.0%	15.0%	49.0%
Surg Center-Ct Hand		5.0%	23.0%	10.0%	55.0%	7.0%
Waterbury Outpatient		14.0%	12.0%	65.0%	9.0%	<1%
Western CT Ortho Surg		<1%	24.0%	<1%	68.0%	7.0%
Wilton Surgery		<1%	37.7%	7.6%	51.5%	2.7%
Yale Health Services						100.0%

[1] 2016 data. [2] 2015 data. [3] 2014 data.

Appendix I: Comments Submitted by Facilities

In accordance with legislation, facilities that are required to report adverse events to DPH may submit comments to the department 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.

Presented below is information submitted by those facilities providing comments:

Hospital for Special Care
Griffin Hospital
Stamford Hospital
Western Connecticut Health Network
Day Kimball Hospital

Hospital for Special Care

Hospital for Special Care prioritizes the safety of every patient in our care. We also highly value patient autonomy and choice. We provide extensive clinical education and peer support to each patient to ensure our patients, individuals living with complex and chronic medical conditions, can make informed and balanced decisions about their health care and activities and understand the potential impact of their choices on skin health, wound risk and other associated issues. Hospital for Special Care is a High Reliability Organization committed to promoting patient well-being and seeking new and innovative ways to improve patient health outcomes.

Griffin Hospital

Griffin Hospital continues its commitment 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 Hospital 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 2016, Griffin had successfully reduced our preventable serious safety event rate for a rolling 12 months by 80% and has remained at or better than the 80% reduction target for calendar year 2017.

Stamford Hospital

Stamford Hospital is committed to patient safety and to providing the highest quality of patient care. We maintain a comprehensive pressure ulcer prevention program and evaluate ongoing outcomes. The pressure ulcer prevention program includes a specialized team of certified wound nurses, comprehensive nursing skin assessments, annual educational programs for clinical staff, and the deployment of specialized devices to support pressure ulcer prevention. The nursing department has a robust shared governance structure, including nursing practice and quality councils, which evaluate our processes and ensure implementation of evidence-based practices.

The hospital acquired pressure ulcers presented in this report reflect a small subset of hospital acquired pressure ulcers overall. To comprehensively evaluate overall hospital acquired pressure ulcer rates, we participate in the National Database of Nursing Quality Indicators (NDNQI). This database allows our hospital to benchmark our quality outcomes against similar hospitals nationally. Stamford Hospital's outcomes for pressure ulcers have exceeded other hospitals in the nation. In 2017, 91% of Stamford Hospital patient care units exceeded the national benchmark for hospital acquired pressure ulcers for the entire calendar year. As our pressure ulcer prevention program has evolved, we have enabled continued improvement in our hospital acquired pressure ulcer rates.

Western Connecticut Health Network

The mission of Western Connecticut Health Network (WCHN) is to improve the health of every person we serve through the efficient delivery of excellent, innovative and compassionate care. Our Network of Danbury/New Milford and Norwalk Hospitals strives to deliver the highest quality of care and service by surpassing established national standards through a continuous focus on improvement, innovation and education.

We approach our work with the highest standards of openness, honesty and ethical behavior. Our goal is to achieve optimal safety outcomes by maintaining the Network's serious safety event incidence at the top quartile of state performance. In addition to optimal safety outcomes for both patients and our staff, the Network strives to achieve optimal quality outcomes by reducing the incidence of hospital associated conditions.

WCHN is actively engaged in local and statewide initiatives to deliver excellent care to every person served. WCHN is a member of the Connecticut Hospital Association's Patient Safety Organization and actively participates in the statewide high reliability collaborative to reduce patient harm across the state. As a result of this active engagement, WCHN is proud of the reduction in preventable serious safety events and actively reviews every occurrence for lessons learned to hardwire interventions to permanently reduce harm to zero. WCHN is committed to providing excellent, innovative and compassionate care with a focus on the patient and our community. We are proud of our efforts to outperform established national standards to meet the needs of our community. We believe in our community and take very seriously the trust it places in our healthcare Network.

Day Kimball Hospital

Day Kimball Hospital 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.

- Our quality department proactively educates our staff on patient safety topics, consistently reviews processes and policies, and institutes case reviews as needed.
- Day Kimball Hospital immediately addresses each adverse event, conducts root cause analysis and provide feedback to staff.

- Day Kimball Hospital conducts thorough review of Sentinel Event Alerts 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.
- We have committed to working with the Studer Group to improve the patient experience.

Day Kimball Hospital continues to be proactive in integrating best practices learned through our own experiences and comprehensive analyses as well as through collaboration with Connecticut Hospital Association (CHA).

Some initiatives Day Kimball Hospital is actively working on in collaboration with CHA include but not limited to:

1) High Reliability Training
2) Workplace Violence
3) Workplace Safety

We have committed to serve as a champion and trainer for Connecticut's "Safety Starts with Me". The safety of patients and employees has always been a priority. The Safety Starts with Me initiative is about sharpening our focus to create a culture of safety – adopting and ingraining shared values and beliefs about how we act and interact – so that we can make our organization an even safer place with fewer human errors and fewer events of harm. We recently had approximately 23 employees certified as instructors for High Reliability. We are in the process of scheduling training classes for all our staff to attend.

We take very seriously the trust our community places in us, and commit to continuously improving patient-centered quality and safety.

Appendix J: Selected Patient Safety Literature Summaries and Abstracts[15]

Taking the "Public" Out of Public Reporting of Percutaneous Coronary Intervention. Rishi K. Wadhera; Deepak L. Bhatt. *JAMA.* 2017;318(15):1439-1440. doi:10.1001/jama.2017.12087 (October 17)

There is now more than a decade's worth of evidence that the "public" component of public reporting clearly affects physician behavior by increasing risk aversion in states that report PCI outcomes, likely to the detriment of high-risk patients. Even interventional cardiologists acknowledge that knowing mortality statistics will be made public influences their decision to perform PCI. Beyond risk aversion, up-coding of high-risk variables in PCI may occur in public reporting states, which inflates predicted risk and improves risk-adjusted outcomes in the absence of actual improvements in care. This is likely a consequence of the pressure clinicians feel to optimize outcomes due to fear of embarrassment or reduced referrals if poor outcomes are publicly disclosed. Given these challenges, a shift in the current PCI reporting approach to one that focuses on the reporting of outcomes to clinicians and institutions, rather than to the public, may be more likely to improve quality of care.

Notably, public reporting of PCI outcomes was implemented in part to provide patients with information to make informed decisions about their care. Despite the investment of resources to ensure the public availability of outcomes data, in general, patients do not appear to use this information in a way that meaningfully influences where they choose to receive care. For emergency care, such as PCI for acute MI, patients may have limited ability to select hospitals. Furthermore, there is no evidence that public reports affect physician and hospital referral patterns. In fact, reporting of PCI outcomes only appears to affect physician behavior substantially, and there is compelling evidence that it is not always in a positive manner.

Wrong-Site Surgery. Kathryn E. Engelhardt; Cynthia Barnard; Karl Y. Bilimoria. *JAMA.* 2017;318(20):2033-2034. doi:10.1001/jama.2017.17177

Intraoperative imaging of breast lesions within the surgical specimen to ensure adequate excision is an effective means for minimizing risk of error.

Reliable site marking requires identification of specific lesions, levels, or digits; preoperative imaging should be considered when site marking. Involving the patient in the identification of the surgical site is important.

When errors occur, surgeons should disclose the error to the patient, be involved in the institution's risk management processes to understand the root causes of errors, and help design high-reliability system solutions to minimize the risk of subsequent errors.

A Novel ICU Hand-Over Tool: The Glass Door of the Patient Room. Wessman BT, Sona C, Schallom M. J Intensive Care Med. 2017 Sep;32(8):514-519. doi: 10.1177/0885066616653947. Epub 2016 Jun 6.

BACKGROUND: Poor communication among healthcare providers is cited as the most common cause of sentinel events involving patients. Patient care in the critical care setting is incredibly complex. A consistent care plan is necessary between day/night shift teams and among bedside intensive care unit (ICU) nurses, consultants, and physicians. The goal [of the project] was to create a novel, easily accessible communication device to improve ICU patient care.

[15]Selected by DPH. Many resources are featured on the AHRQ Patient Safety Network, https://psnet.ahrq.gov.

METHODS: This communication improvement project was done at an academic tertiary surgical/trauma/mixed 36-bed ICU with an average of 214 admissions per month. A glass door template was embossed on the glass that included 3 columns for daily goals to be written: "day team," "night team," and "surgery/consultant team." Assigned areas for tracking "lines," "antibiotics," "ventilator weaning," and "deep vein thrombosis (DVT) screening" were included. These doors are filled out/updated throughout the day by all of the ICU providers. All services can review current plans/active issues while evaluating the patient at the bedside. Patient-identifying data are not included. All ICU safety reported events were retrospectively reviewed over a 4-year period (2 years prior/2 years after glass door implementation) for specific handover communication-related errors and to compare the 2 cohorts.

RESULTS: Information on the glass doors is entered daily on rounds by all services. Prior to implementation, 7.96% of reported errors were related to patient handover communication errors. The post glass-door era had 4.26% of reported errors related to patient handover communication errors with a relative risk reduction of 46.5%. Due to its usefulness, this method of communication was quickly adopted by the other critical care services (cardiothoracic, medical, neurology/neurosurgery, cardiology) at the institution and is now used for over 150 ICU beds.

CONCLUSIONS: The glass door patient handover tool is an easily adaptable intervention that has improved communication leading to an overall decrease in the number of handover communication errors.

Safety Analysis Over Time: Seven Major Changes to Adverse Event Investigation.
Charles Vincent, Jane Carthey, Carl Macrae and Rene Amalberti. Implementation Science (2017) 12:151 DOI 10.1186/s13012-017-0695-4

BACKGROUND: Every safety-critical industry devotes considerable time and resources to investigating and analyzing accidents, incidents and near misses. The systematic analysis of incidents has greatly expanded the understanding of both the causes and prevention of harm. These methods have been widely employed in healthcare over the last 20 years but are now subject to critique and reassessment. In this paper, the authors reconsider the purpose and value of incident analysis and methods appropriate to the healthcare of today.

MAIN TEXT: The primary need for a revised vision of incident analysis is that healthcare itself is changing dramatically. People are living longer, often with multiple co-morbidities which are managed over very long timescales. The vision of safety analysis needs to expand concomitantly to embrace much longer timescales. Rather than think only in terms of the prevention of specific incidents, one needs to consider the balance of benefit, harm and risks over long time periods encompassing the social and psychological impact of healthcare as well as physical effects. The authors argued for major changes in the approach to the analysis of safety events: assume that patients and families will be partners in investigation and where possible engage them fully from the beginning, examine much longer time periods and assess contributory factors at different time points in the patient journey, be more proportionate and strategic in analyzing safety issues, seek to understand success and recovery as well as failure, consider the workability of clinical processes as well as deviations from them and develop a much more structured and wide-ranging approach to recommendations.

CONCLUSIONS: Previous methods of incident analysis were simply adopted and disseminated with little research into the concepts, methods, reliability and outcomes of such analyses. There is a need for significant research and investment in the development of new methods. These changes are profound and will require major adjustments in both practical and cultural terms and research to explore and evaluate the most effective approaches.

A Comprehensive Program to Reduce Rates of Hospital-Acquired Pressure Ulcers in a System of Community Hospitals. Englebright J, Westcott R, McManus K, Kleja K, Helm C, Korwek KM, Perlin JB. J Patient Saf. 2018 Mar;14(1):54-59. doi: 10.1097/PTS.0000000000000167.

OBJECTIVES: The prevention of hospital-acquired pressure ulcers (PrUs) has significant consequences for patient outcomes and the cost of care. Providers are challenged with evaluating available evidence and best practices, then implementing programs and motivating change in various facility environments.

METHODS: In a large system of community hospitals, the Reducing Hospital Acquired-PrUs Program was developed to provide a toolkit of best practices, timely and appropriate data for focusing efforts, and continuous implementation support. Baseline data on PrU rates helped focus efforts on the most vulnerable patients and care situations. Facilities were empowered to use and adapt available resources to meet local needs and to share best practices for implementation across the system. Outcomes were measured by the rate of hospital-acquired PrUs, as gathered from patient discharge records.

RESULTS: The rate of hospital-acquired stage III and IV PrUs decreased 66.3% between 2011 and 2013. Of the 149 participating facilities, 40 (27%) had zero hospital-acquired stage III and IV PrUs and 77 (52%) had a reduction in their PrU rate. Rates of all PrUs documented as present on admission did not change during this period. A comparison of different strategies used by the most successful facilities illustrated the necessity of facility-level flexibility and recognition of local workflows and patient demographics.

CONCLUSIONS: Driven by the combination of a repository of evidence-based tools and best practices, readily available data on PrU rates, and local flexibility with processes, the Reducing Hospital Acquired-PrUs Program represents the successful operationalization of improvement in a wide variety of facilities.

Mississippi Hospital Reduces Patient Falls by 25 Percent Using AHRQ Program.
https://www.ahrq.gov/news/newsroom/case-studies/201801.html?utm_source= 2018-01&utm_medium=psls&utm_term=&utm_content=5&utm_campaign=ahrq_ics_2018

Anderson Regional Medical Center, a 260-bed hospital in Meridian, Mississippi, reduced patient falls by 25 percent after implementing AHRQ's Preventing Falls in Hospitals Training Program in 2015. The reduction in patient falls resulted in an estimated $238,000 savings in medical costs. Key measures taken to prevent falls now include bedside commodes, welcome signs in each room from the nurse reminding patients to "call, don't fall," and additional safety awareness training from the nurses and patient care technicians. Another falls-reduction tactic now used by Anderson Regional is having an individually written contract with patients that indicates when the nurse will come to take them to the bathroom during the night, when falls are most likely.

Retained Guidewires in the Veterans Health Administration: Getting to the Root of the Problem. Cherara L, Sculli GL, Paull DE, Mazzia L, Neily J, Mills PD. J Patient Saf. 2018 Feb 13. doi: 10.1097/PTS.0000000000000475. [Epub ahead of print]

OBJECTIVES: The aims of this study were to investigate the demographics, causes, and contributing factors of retained guidewires (GWs) and to make specific recommendations for their prevention.

METHODS: The Veterans Administration patient safety reporting system database for 2000-2016 was queried for cases of retained GWs (RGWs). Data extracted for each case included procedure location, provider experience, insertion site, urgency, time to discovery, root causes, and corrective actions taken.

RESULTS: There were 101 evaluable cases of RGWs. Resident trainee (36%), critical care unit (38%), femoral vein (44%), and nonemergent placement (79%) were the conditions most frequently associated with an RGW. While discovery occurred almost immediately (30%) or in the next 24 hours (31%), there were instances of RGWs found months (2%) or years (3%) later. Common root causes included inexperience (46%), lack of standardization (35%), distractions (25%), and lack of a checklist (23%).

CONCLUSIONS: The results demonstrate the impact of human factors-based errors such as post-task completion errors. Human factor-based interventions such as checklists and devices employing forcing functions that do not allow clinicians to complete the insertion process without first removing the GW are recommended.

Senior Staff Safety Rounds: a Commitment to Ensure Safety is the Top Priority. O'Connell RT, Ivy ME. NEJM Catalyst. May 1, 2018. Bridgeport Hospital and Yale New Haven Health System.

Leadership participation at the front lines can drive safety improvement work. This commentary describes how one organization used a Safety Attitudes Questionnaire to structure an executive rounding initiative and reports the positive impact of the program. Face-to-face interaction with leaders contributed to real-time improvements.

We Will Not Compete on Safety: How Children's Hospitals Have Come Together to Hasten Harm Reduction. Lyren A, Coffey M, Shepherd M, Lashutka N, Muething S. Joint Commission Journal on Quality and Patient Safety 2018 Jun 6; [Epub ahead of print]. https://doi.org/10.1016/j.jcjq.2018.04.005

Reducing harm often requires implementing multicomponent interventions and engaging frontline staff to make change. Prior research has shown that cross-institutional collaboration can facilitate sharing of data and dissemination of best practices to improve safety. The Children's Hospitals' Solutions for Patient Safety (SPS) Network fosters collaboration across 137 hospitals in the United States and Canada to reduce harm from hospital-acquired conditions and adverse events. Hospitals share their data through SPS and have an opportunity to learn from one another. This study describes the efforts of SPS and concludes that since 2012, an initial group of 33 hospitals has successfully reduced harm across eight conditions by anywhere from 9% to 71%. This represents almost $150 million in savings from harm avoided for an estimated 9,000 children.

First-year Analysis of the Operating Room Black Box Study. Jung JJ, Jüni P, Lebovic G, Grantcharov T. Ann Surg. 2018 Jun 18. doi: 10.1097/SLA.0000000000002863. [Epub ahead of print]

OBJECTIVE: To characterize intraoperative errors, events, and distractions, and measure technical skills of surgeons in minimally invasive surgery practice.

BACKGROUND: Adverse events in the operating room (OR) are common contributors of morbidity and mortality in surgical patients. Adverse events often occur due to deviations in performance and environmental

factors. Although comprehensive intraoperative data analysis and transparent disclosure have been advocated to better understand how to improve surgical safety, they have rarely been done.

METHODS: The authors conducted a prospective cohort study in 132 consecutive patients undergoing elective laparoscopic general surgery at an academic hospital during the first year after the definite implementation of a multiport data capture system called the OR Black Box to identify intraoperative errors, events, and distractions. Expert analysts characterized intraoperative distractions, errors, and events, and measured trainee involvement as main operator. Technical skills were compared, crude and risk-adjusted, among the attending surgeon and trainees.

RESULTS: Auditory distractions occurred a median of 138 times per case [interquartile range] (IQR) 96-190]. At least 1 cognitive distraction appeared in 84 cases (64%). Medians of 20 errors (IQR 14-36) and 8 events (IQR 4-12) were identified per case. Both errors and events occurred often in dissection and reconstruction phases of operation. Technical skills of residents were lower than those of the attending surgeon ($P = 0.015$).

CONCLUSIONS: During elective laparoscopic operations, frequent intraoperative errors and events, variation in surgeons' technical skills, and a high amount of environmental distractions were identified using the OR Black Box.

Preventing Adverse Events in Cataract Surgery: Recommendations from a Massachusetts Expert Panel.
Nanji, Karen C; Roberto, Sarah A; Morley, Michael G; Bayes, Joseph, MD. Anesthesia & Analgesia: May 2018 - Volume 126 - Issue 5 - p 1537–1547. doi: 10.1213/ANE.0000000000002529

Massachusetts health care facilities reported a series of cataract surgery–related adverse events (AEs) to the state in recent years, including 5 globe perforations during eye blocks performed by 1 anesthesiologist in a single day. The Betsy Lehman Center for Patient Safety, a nonregulatory Massachusetts state agency, responded by convening an expert panel of frontline providers, patient safety experts, and patients to recommend strategies for mitigating patient harm during cataract surgery. The purpose of this article is to identify contributing factors to the cataract surgery AEs reported in Massachusetts and present the panel's recommended strategies to prevent them. Data from state-mandated serious reportable event reports were supplemented by online surveys of Massachusetts cataract surgery providers and semistructured interviews with key stakeholders and frontline staff. The panel identified 2 principal categories of contributing factors to the state's cataract surgery–related AEs: systems failures and choice of anesthesia technique. Systems failures included inadequate safety protocols (48.7% of contributing factors), communication challenges (18.4%), insufficient provider training (17.1%), and lack of standardization (15.8%). Choice of anesthesia technique involved the increased relative risk of needle-based eye blocks. The panel's surveys of Massachusetts cataract surgery providers show wide variation in anesthesia practices. While 45.5% of surgeons and 69.6% of facilities reported increased use of topical anesthesia compared to 10 years earlier, needle-based blocks were still used in 47.0% of cataract surgeries performed by surgeon respondents and 40.9% of those performed at respondent facilities. Using a modified Delphi approach, the panel recommended several strategies to prevent AEs during cataract surgery, including performing a distinct time-out with at least 2 care-team members before block administration; implementing standardized, facility-wide safety protocols, including a uniform site-marking policy; strengthening the credentialing and orientation of new, contracted and locum tenens anesthesia staff; ensuring adequate and documented training in block administration for any provider who is new to a facility, including at least 10 supervised blocks before practicing independently; using the least invasive form of anesthesia appropriate to the patient; and finally, adjusting anesthesia practices, including preferred techniques, as evidence-based best

practices evolve. Future research should focus on evaluating the impact of these recommendations on patient outcomes.

Amniotic Fluid Embolism. Clark SL. Obstet Gynecol. 2014 Feb;123(2 Pt 1):337-48. doi: 10.1097/AOG.0000000000000107.

Amniotic fluid embolism remains one of the most devastating conditions in obstetric practice with an incidence of approximately 1 in 40,000 deliveries and a reported mortality rate ranging from 20% to 60%. The pathophysiology appears to involve an abnormal maternal response to fetal tissue exposure associated with breaches of the maternal-fetal physiologic barrier during parturition. This response and its subsequent injury appear to involve activation of proinflammatory mediators similar to that seen with the classic systemic inflammatory response syndrome. Progress in the understanding of this syndrome continues to be hampered by a lack of universally acknowledged diagnostic criteria, the clinical similarities of this condition to other types of acute critical maternal illness, and the presence of a broad spectrum of disease severity. Clinical series based on population or administrative databases that do not include individual chart review by individuals with expertise in critical care obstetrics are likely to both overestimate the incidence and underestimate the mortality of this condition by the inclusion of women who did not have amniotic fluid embolism. Data regarding the presence of risk factors for amniotic fluid embolism are inconsistent and contradictory; at present, no putative risk factor has been identified that would justify modification of standard obstetric practice to reduce the risk of this condition. Maternal treatment is primarily supportive, whereas prompt delivery of the mother who has sustained cardiopulmonary arrest is critical for improved newborn outcome

Transforming Concepts in Patient Safety: a Progress Report. Gandhi TK, Kaplan GS, Leape L, Berwick DM, Edgman-Levitan S, Edmondson A, Meyer GS, Michaels D, Morath JM, Vincent C, Wachter R. BMJ Quality and Safety. Published online July 17, 2018. https://qualitysafety.bmj.com/content/early/2018/07/17/bmjqs-2017-007756

In 2009, the National Patient Safety Foundation's Lucian Leape Institute (LLI) published a paper identifying five areas of healthcare that require system-level attention and action to advance patient safety. The authors argued that to truly transform the safety of healthcare, there was a need to address medical education reform; care integration; restoring joy and meaning in work and ensuring the safety of the healthcare workforce; consumer engagement in healthcare and transparency across the continuum of care. In the ensuing years, the LLI convened a series of expert roundtables to address each concept, look at obstacles to implementation, assess potential for improvement, identify potential implementation partners and issue recommendations for action. Reports of these activities were published between 2010 and 2015. While all five areas have seen encouraging developments, multiple challenges remain. In this paper, the current members of the LLI (now based at the Institute for Healthcare Improvement) assess progress made in the USA since 2009 and identify ongoing challenges.

Perspectives on Safety. Agency for Health Care Quality and Research. September 2018. https://psnet.ahrq.gov/perspectives/perspective/257/In-Conversation-With--Sigall-K-Bell-MD. Dr. Bell is Director of Patient Safety and Discovery at OpenNotes, Beth Israel Deaconess Medical Center and Associate Professor of Medicine at Harvard Medical School. Her research focuses on transparency in health care delivery systems and partnering with patients to improve health care. Robert Wachter spoke with her about patient engagement and her experience with the OpenNotes project.

A Health System-Wide Initiative to Decrease Opioid-Related Morbidity and Mortality. Weiner SG, Price CN, Atalay AJ, Harry EM, Pabo EA, Patel R, Suzuki J, Anderson S, Ashley SW, Kachalia A. Jt Comm J Qual Patient Saf. 2018 Aug 28. pii: S1553-7250(18)30088-6. doi: 10.1016/j.jcjq.2018.07.003. [Epub ahead of print]

BACKGROUND: The opioid overdose crisis now claims more than 40,000 lives in the United States every year, and many hospitals and health systems are responding with opioid-related initiatives, but how best to coordinate hospital or health system-wide strategy and approach remains a challenge.

METHODS: An organizational opioid stewardship program (OSP) was created to reduce opioid-related morbidity and mortality in order to provide an efficient, comprehensive, multidisciplinary approach to address the epidemic in one health system. An executive committee of hospital leaders was convened to empower and launch the program. To measure progress, metrics related to care of patients on opioids and those with opioid use disorder (OUD) were evaluated.

RESULTS: The OSP created a holistic, health system-wide program that addressed opioid prescribing, treatment of OUD, education, and information technology tools. After implementation, the number of opioid prescriptions decreased (-73.5/month; $p < 0.001$), mean morphine milligram equivalents (MME) per prescription decreased (-0.4/month; $p < 0.001$), the number of unique patients receiving an opioid decreased (-52.6/month; $p < 0.001$), and the number of prescriptions $\geq$ 90 MME decreased (-48.1/month; $p < 0.001$). Prescriptions and providers for buprenorphine increased (+6.0 prescriptions/month and +0.4 providers/month; both $p < 0.001$). Visits for opioid overdose did not change (-0.2 overdoses/month; $p = 0.29$).

CONCLUSION: This paper describes a framework for a new health system-wide OSP. Successful implementation required strong executive sponsorship, ensuring that the program is not housed in any one clinical department in the health system, creating an environment that empowers cross-disciplinary collaboration and inclusion, as well as the development of measures to guide efforts.