CLINICAL PERFORMANCE METRICS

NIH Clinical Center

2ND QUARTER 2016

Table of Contents

FRAMEWORK FOR CLINICAL QUALITY AND PATIENT SAFETY

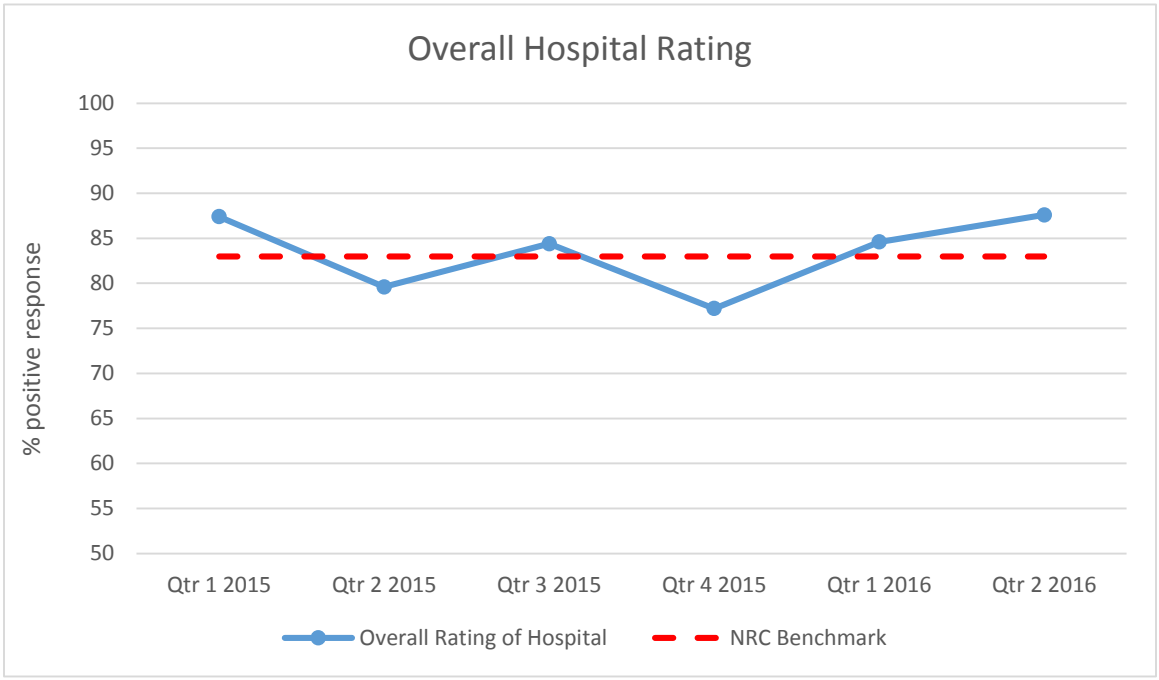
At the center of the NIH Clinical Center's (NIH CC) approach to patient safety and clinical quality is the delivery of patient-centric, safe, and high quality care. The NIH CC accomplishes this goal in the context of the framework illustrated below.

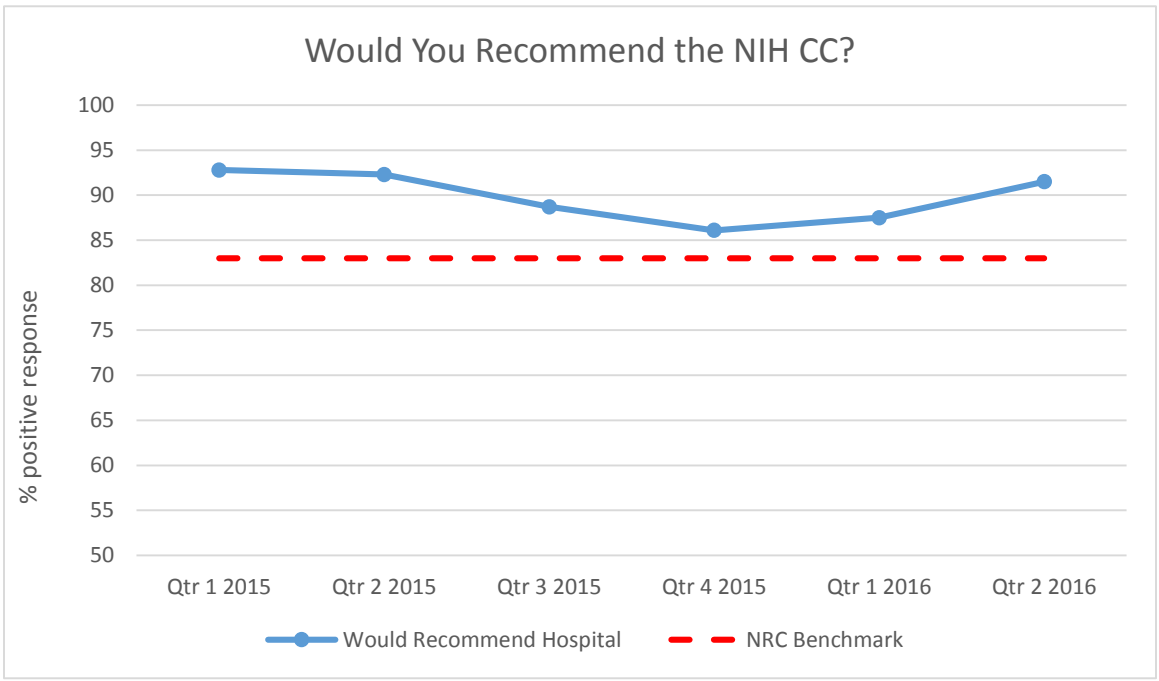
The figure below provides examples of patient safety and clinical quality activities ongoing at the NIH CC.

The quality metrics presented in this report demonstrate the NIH CC's engagement in rigorous surveillance for patient safety events, near misses, and errors, as well as a steadfast commitment to continuous improvement in the clinical research environment.

PATIENT EXPERIENCE

The NIH Clinical Center partners with National Research Corporation (NRC) - Picker to measure our patients' perceptions of their experience. A census sample of patients is mailed an 82-question survey within two weeks of discharge. NRC – Picker uses a two wave survey reminder method to assure a robust response rate. The NIH CC's response rate is approximately 40%. In an effort to benchmark with hospitals nationwide, in 2015 the NIH CC revised the survey tool to align with the HCAHPS survey tool.

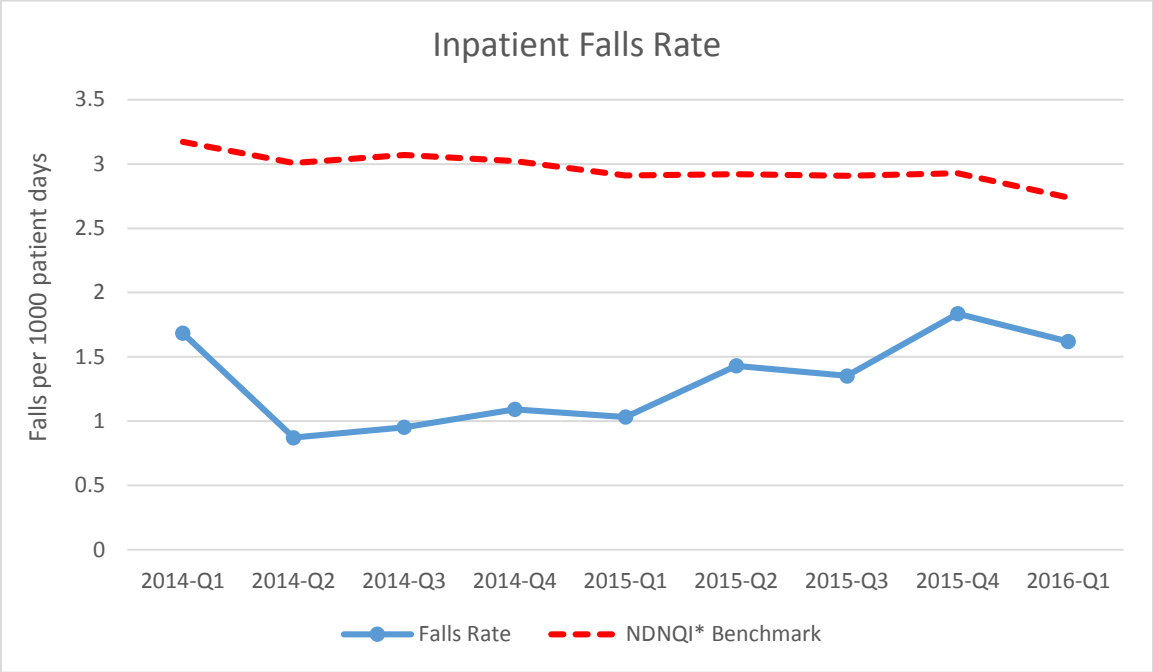




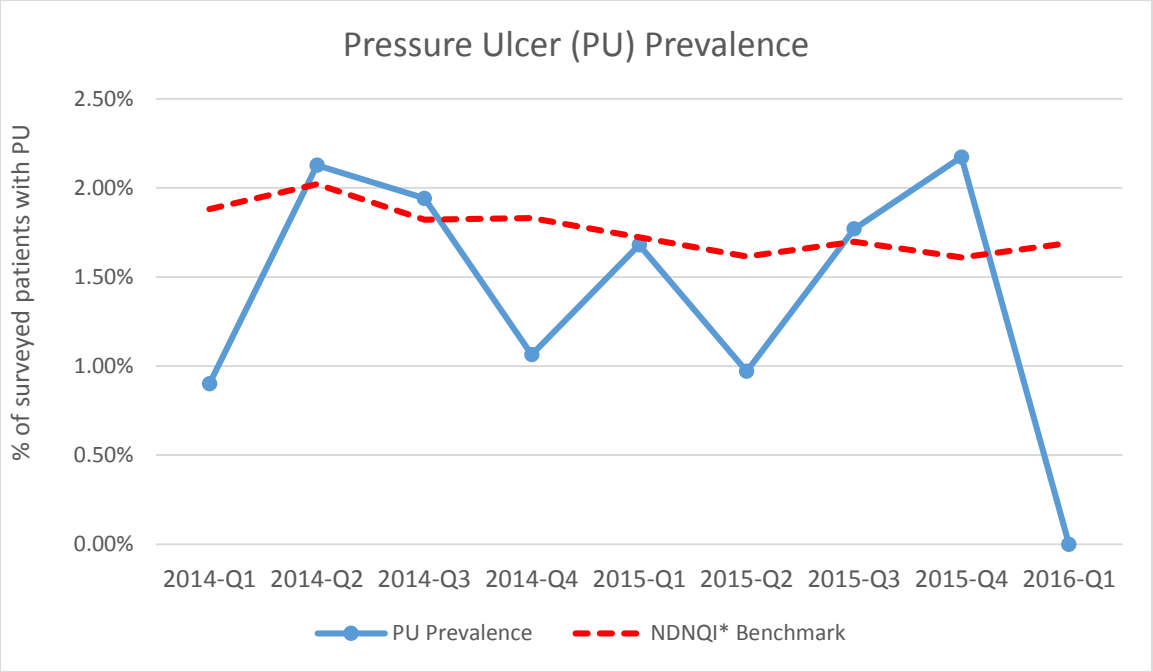
	CMS HCAHPS 90th Percentile	Qtr 1 2015	Qtr 2 2015	Qtr 3 2015	Qtr 4 2015	Qtr 1 2016	Qtr 2 2016
	Positive	Positive	Positive	Positive	Positive	Positive	Positive
CAHPS Dimensions							
Adult Inpatient Hospital CAHPS							
Care Transitions	61.0	69.5	70.6	67.0	66.5	68.6	72.8
Cleanliness / Quietness	79.0	74.0	71.2	71.3	68.4	71.2	69.5
Communication About Meds	74.0	79.0	76.1	75.0	73.1µ	81.5µ	83.3
Communication with Doctors	89.0	88.9	89.0	89.9	87.0	90.0	93.8
Communication with Nurses	87.0	85.1	83.7	86.5	84.9	88.2	89.7
Discharge Information	91.0	80.4	80.5	78.0	77.7	79.4	81.8
Overall Rating of Hospital	83.0	87.4	79.6	84.4	77.2	84.6	87.6
Pain Management	78.0	65.7	67.2	71.3	70.7	75.6	82.1
Responsiveness of Hospital Staff	81.0	63.4	67.9	74.2	73.7	77.2	78.2
Would Recommend Hospital	83.0	92.8	92.3	88.7	86.1	87.5	91.5

NURSING QUALITY INDICATORS

Since 2007 the NIH CC Nursing Department has participated in the National Database of Nursing Quality Indicators™ (NDNQI) initiative. NDNQI provides quarterly and annual reporting of structure, process, and outcome indicators to evaluate the delivery of nursing care at the unit level. These data are reviewed monthly or quarterly by the nursing executive and leadership teams as well as at the patient care unit level and are presented quarterly at the NIH CC Clinical Quality Committee.



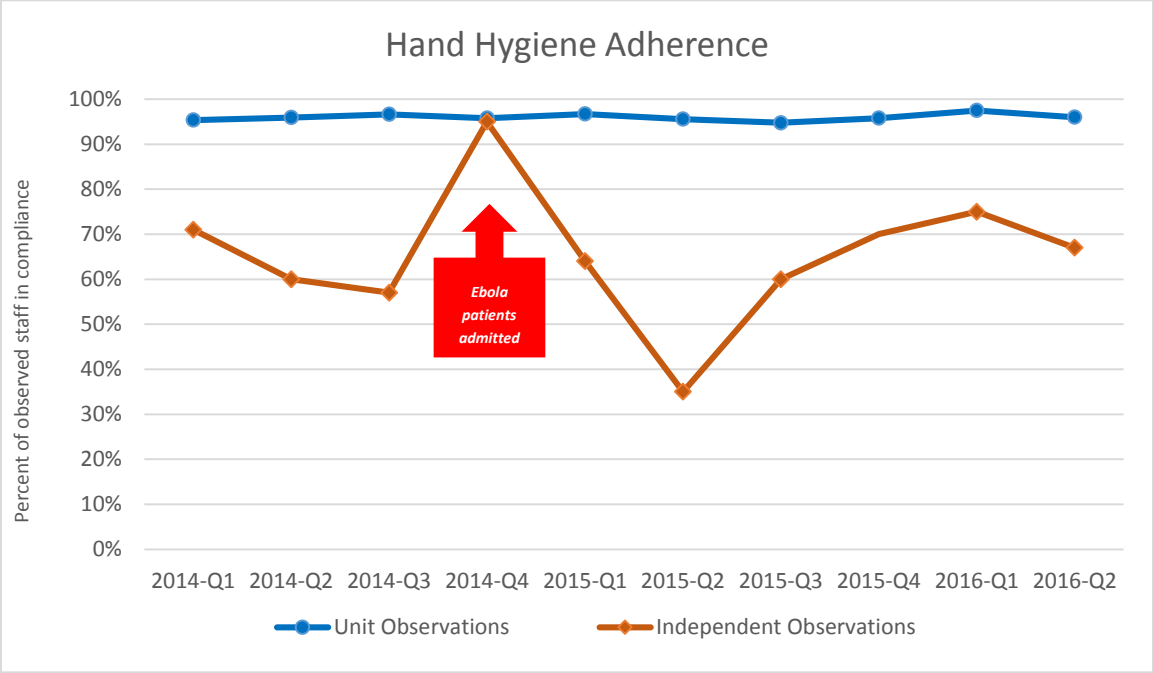
Patient falls consistently are below the NDNQI benchmark. Despite this high level performance the Nursing Department launched an aggressive falls prevention initiative in summer 2014 to attempt to reduce the risk of patient harm related to falls even further and to engage patients in falls prevention strategies. The rise in the rate of falls since 2015 is likely due to increased reporting related to awareness raising by the Nursing Department.



The graph above shows the percentage of patients found to have a pressure ulcer during the quarterly hospital-wide skin check of every patient. In addition to assessing each patient for their risk of developing a pressure ulcer throughout their hospital stay, the NIH CC has a team of skin care specialists who consult with staff, patients, and families on both prevention and treatment when skin breakdown occurs.

INFECTION PREVENTION AND CONTROL

Over 50% of patients admitted to the NIH CC are immunocompromised either due to the patient's underlying disease process/pathophysiology or as a result of treatment and therapy. To assure that this potentially vulnerable patient population is protected from harm, the prevention of nosocomial infections is a primary focus of all healthcare providers. The NIH CC Hospital Epidemiology Service leads an aggressive surveillance program to identify infection control risks as well as a robust risk mitigation and staff education program.

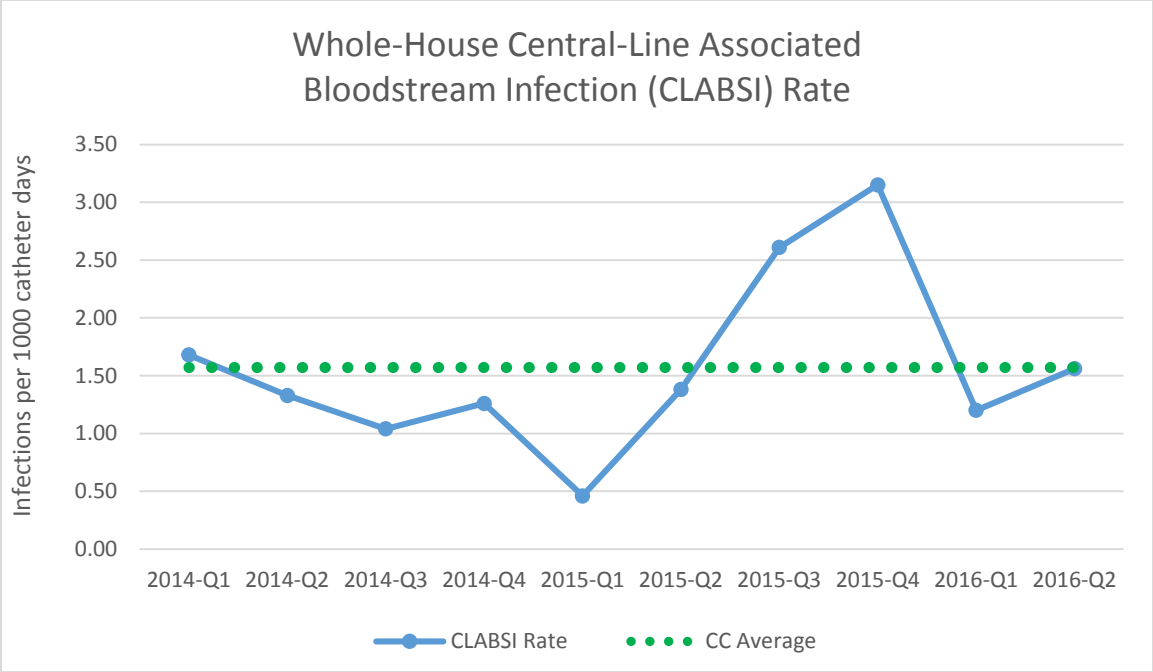


The NIH CC follows the Centers for Disease Control and Prevention (CDC) and World Health Organization (WHO) hand hygiene guidelines. The NIH CC employs two methods to assess hand hygiene adherence:

(1) Unit-based observers collect data monthly (blue line on graph above). These observers are known to the patient care staff. Data collected by these unit-based observers indicate that staff perform appropriate hand hygiene more than 90% of the time.

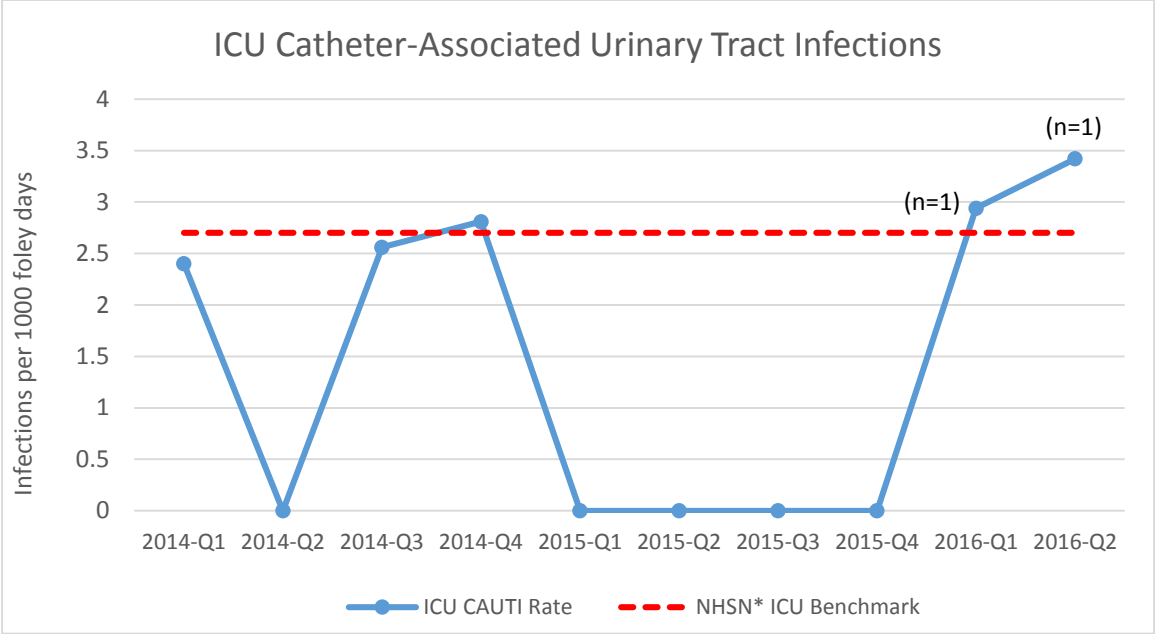
(2) The Hospital Epidemiology Service deploys independent "secret shoppers" who surreptitiously observe and collect hand hygiene adherence data in the patient care units and clinics. Adherence rates observed by the independent observers are consistently lower than the data collected by the unit-based observers and are more aligned with hospital hand hygiene adherence rates reported in the literature.

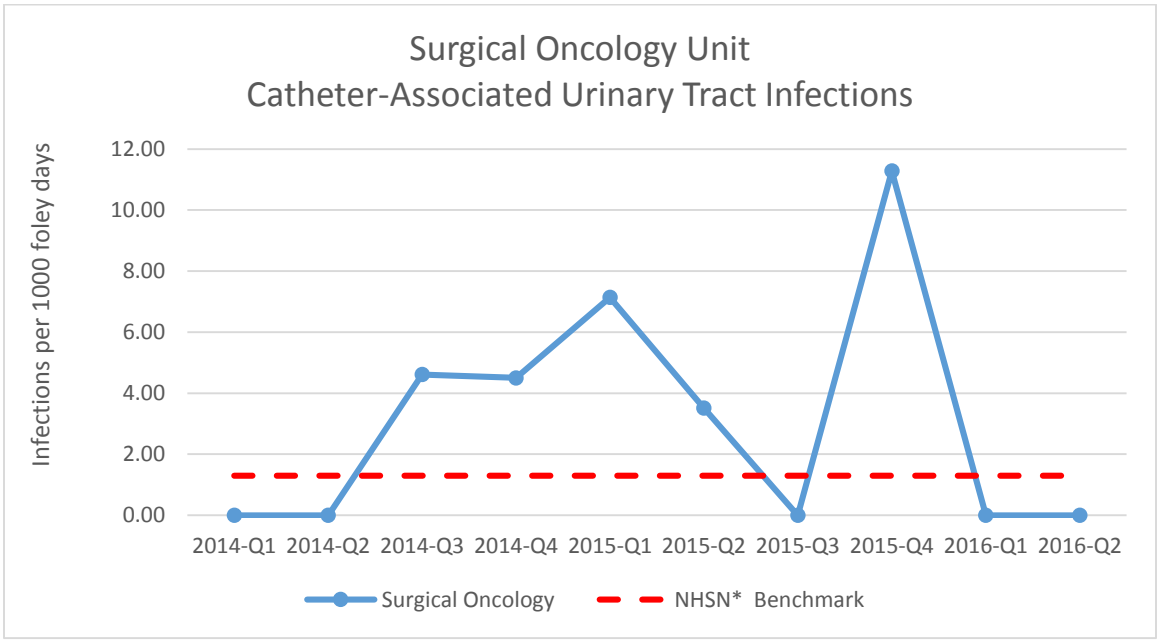
Moving forward, the Hospital Epidemiology Service will work with the Nursing Department to re-train the unit-based observers in an effort to assure that the data collection methods are aligned and more consistent between the two observer groups. Ideally, the Hospital Epidemiology Service would like to use independent observers for all data collection.



The Hospital Epidemiology Service, the Infectious Diseases Consultation Service, and the Procedure, Vascular Access, and Conscious Sedation (PVCS) Service participate in the Venous Access Devices Task Force, a group that meets regularly to review positive blood cultures in patients with central venous catheters and to determine which cases meet the definition of a central line-associated bloodstream infection (CLABSI). The Hospital Epidemiology Service provides CLABSI data to the Nursing Department for NDNQI reporting. Neither CDC nor most hospitals track CLABSI rates in the entire hospital population (CDC and most institutions track CLABSI rates only in ICUs); therefore, no data are available for benchmarking.

In response to an upward trend in the whole-house CLABSI rate in 2015, the NIH CC launched a quality improvement initiative to understand the etiology of the increased rate and to design and implement strategies for CLABSI prevention. The primary cause identified for the rise in infections was a change to a needleless device to connect and access central lines. Aggressive, sweeping interventions were implemented, and the house-wide CLABSI rate decreased concomitantly with those efforts. In an effort to continue a downward trend in the infection rate, the CLABSI prevention group conducts root cause analyses on a select set of the infections to further identify systems issues that may present opportunities for improvement to better prevent CLABSIs. The primary goal of the project is to achieve a target of zero CLABSIs by December 2016.



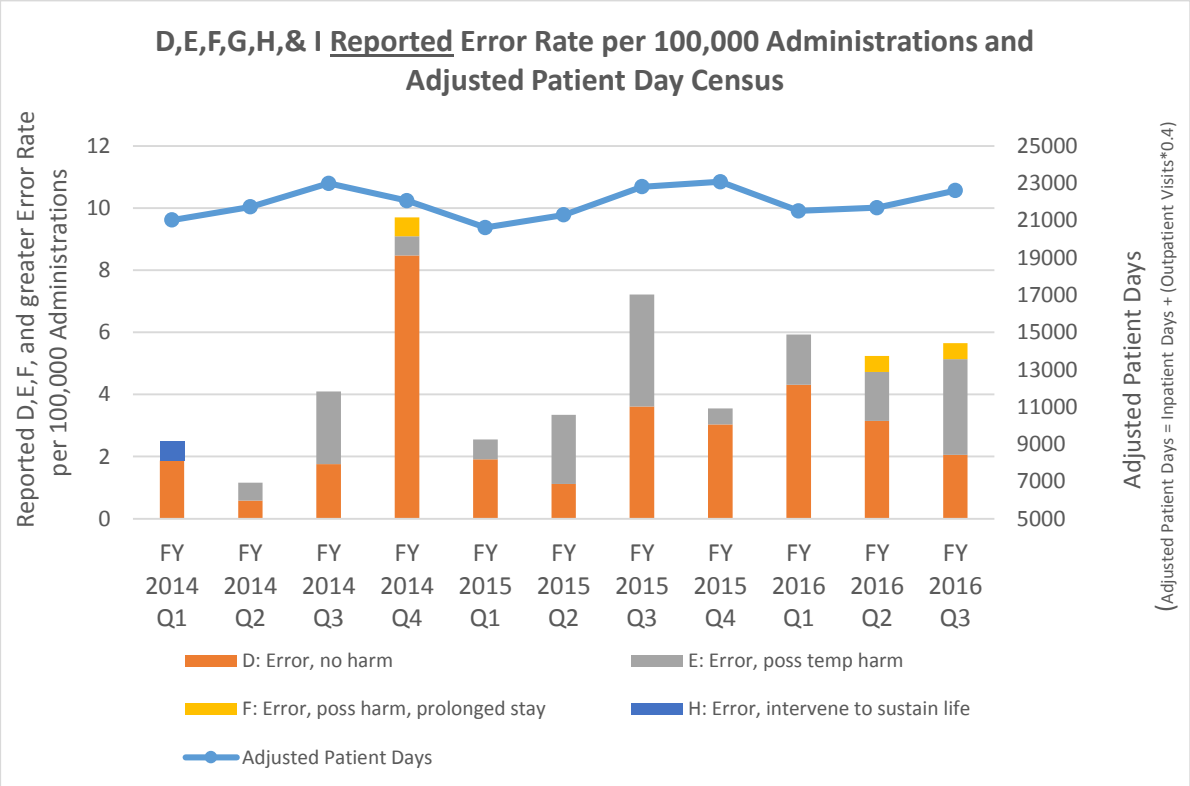


The NIH CC implements evidence-based practices to prevent indwelling catheter-associated urinary tract infections (CAUTI). A multidisciplinary performance improvement project, including staff from the Nursing Department, the Hospital Epidemiology Service, the Department of Clinical Research Informatics, and surgery representatives meet periodically to review strategies to mitigate risk and to monitor performance data. Urinary catheters are not widely used in the NIH CC except in the ICU and on the surgical oncology unit; therefore, CAUTI data are reported only for those two units. The CAUTI rate in the ICU generally remains below the CDC National Healthcare Safety Network (NHSN) benchmark; however, in the first and second quarters of 2016 a single CAUTI in each quarter pushed the rate above the threshold.

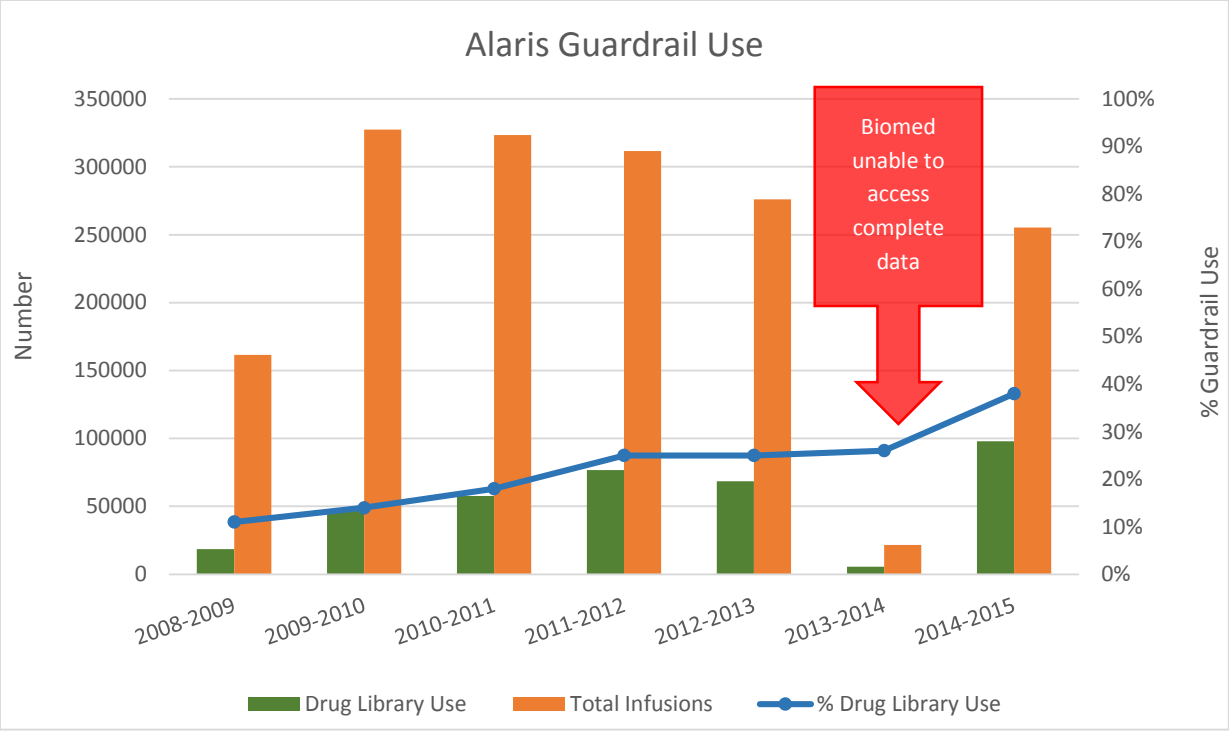
MEDICATION MANAGEMENT

The NIH CC Pharmacy Department tracks all medication related events reported to the Occurrence Reporting System and classifies all errors using the National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) classification system (see table below). Medication management data are reported to the Pharmacy and Therapeutics Committee and the Clinical Quality Committee.

Category	*Description*
Category A:	Circumstances or events that have the capacity to cause error
Category B	An error occurred but the error did not reach the patient
Category C	An error occurred that reached the patient but did not cause patient harm
Category D	An error occurred that reached the patient and required monitoring to confirm that it resulted in no harm to the patient and/or required intervention to preclude harm
Category E	An error occurred that may have contributed to or resulted in temporary harm to the patient and required intervention
Category F	An error occurred that may have contributed to or resulted in temporary harm to the patient and required initial or prolonged hospitalization
Category G	An error occurred that may have contributed to/resulted in permanent patient harm
Category H	An error occurred that required intervention necessary to sustain life
Category I	An error occurred that may have contributed to or resulted in the patient's death



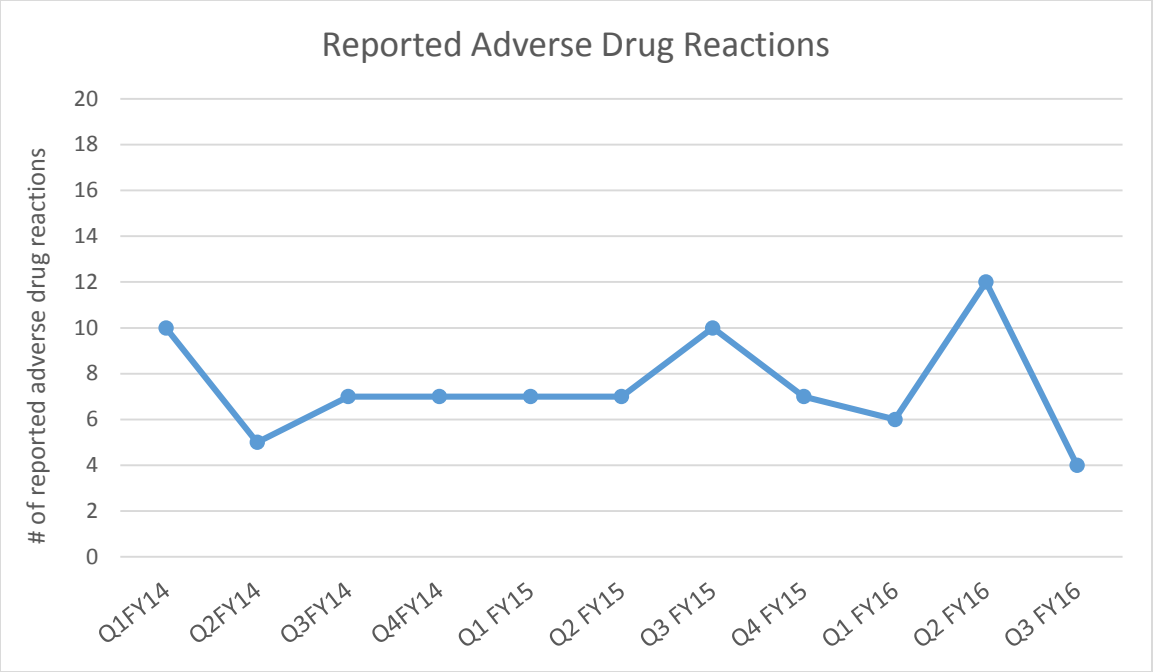
Each medication error classified as a D through I is investigated and appropriate risk mitigation strategies are designed and deployed.



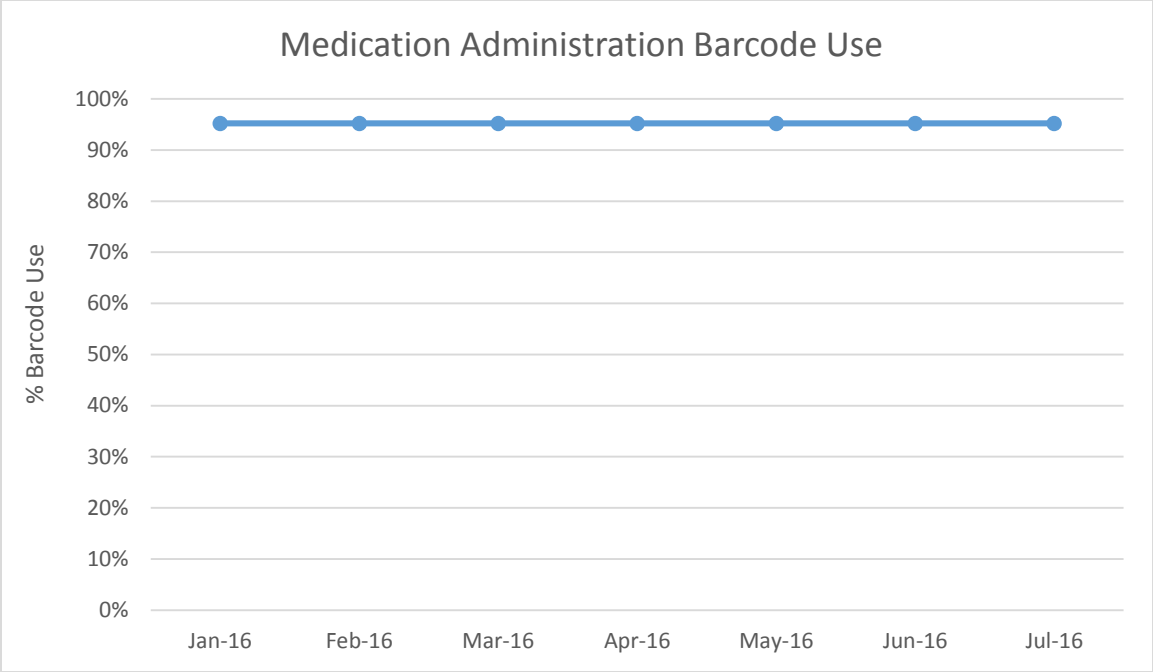
The NIH CC strives to employ health information technology to support the safe, effective, and efficient delivery of medications.

The NIH CC's infusion pump system (Alaris) is equipped with a dose-error-reduction system called Guardrails Safety Software". The Guardrail software is a program within the pump that is designed, based on drug library parameters, to detect intravenous medication errors at the critical point of infusion delivery to the patient. Although the Guardrail Safety Software was deployed in the NIH CC in 2008, the technology has not been widely used in the NIH CC. In 2015, the Nursing Department, in collaboration with the Pharmacy Department, committed to improving the use of this medication safety feature. As part of this effort, there is an annual review of the medications included in the drug library along with a review of the Guardrails parameters. In addition, the Nursing Department launched a quality improvement project to educate all nurses on the importance of using the Guardrails Library and better understand barriers to its use. Nurses were encouraged to submit names of drugs that they would like to see added to the library. Nursing quality improvement committee members are engaged in the monthly audits of the Guardrails Library use.

Whereas use of the Guardrails Safety Software has improved steadily in the last three years, the organizational goal is to increase Guardrail use to 90% in 2017.



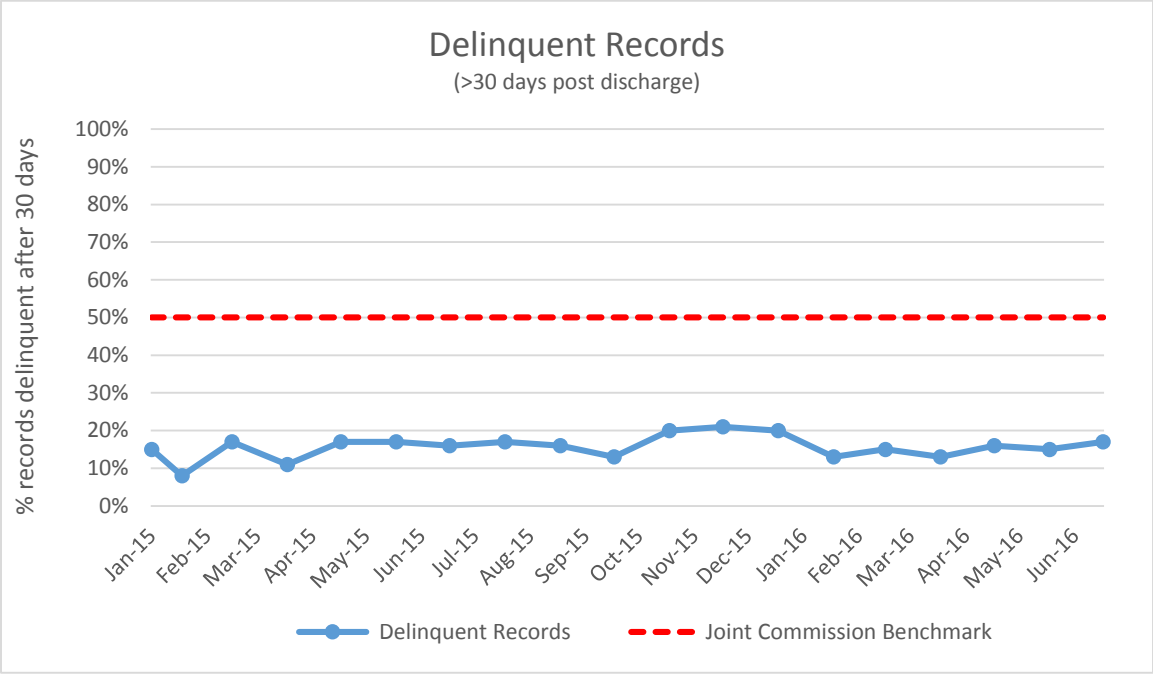
Adverse Drug Reactions (ADRs) are reported through the Occurrence Reporting System, analyzed by the Clinical Pharmacists, reviewed by the Pharmacy and Therapeutics Committee, and appropriately reported to the Food and Drug Administration. The majority of these reported ADRs are contrast reactions.



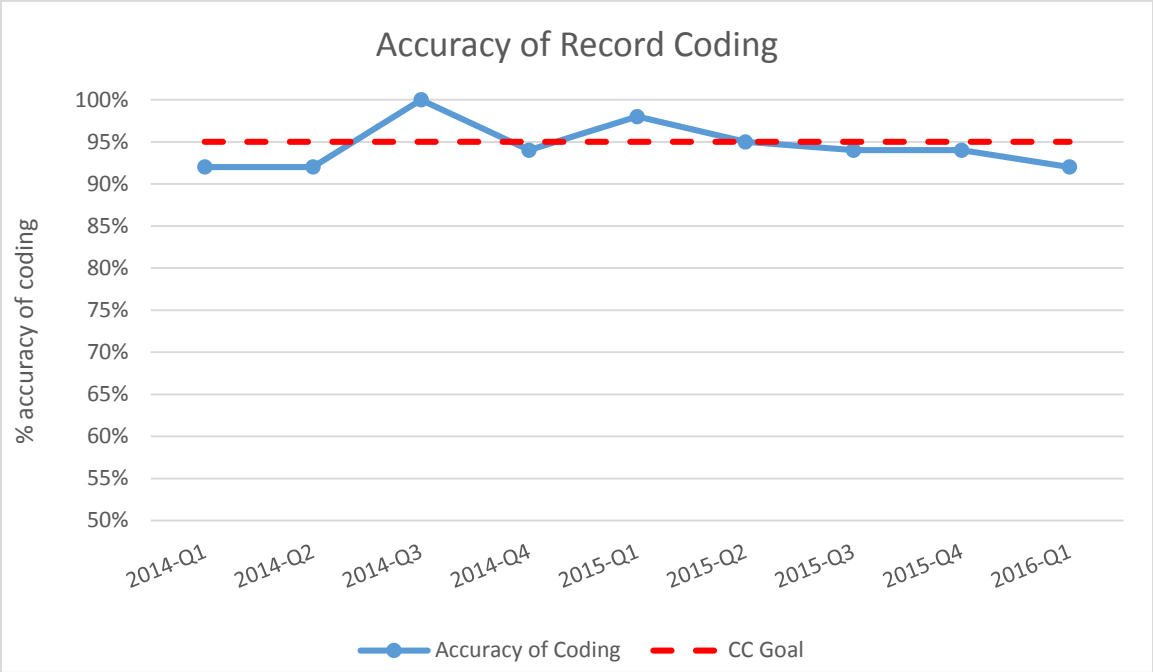
Point of care bar-code scanning was deployed to support medication administration in 2014. Adherence to the appropriate use of medication scanning at the bed-side consistently is 95% or higher. Instances of bypassing the scanning process are reviewed by nursing, pharmacy, and patient safety practitioners.

CLINICAL DOCUMENTATION

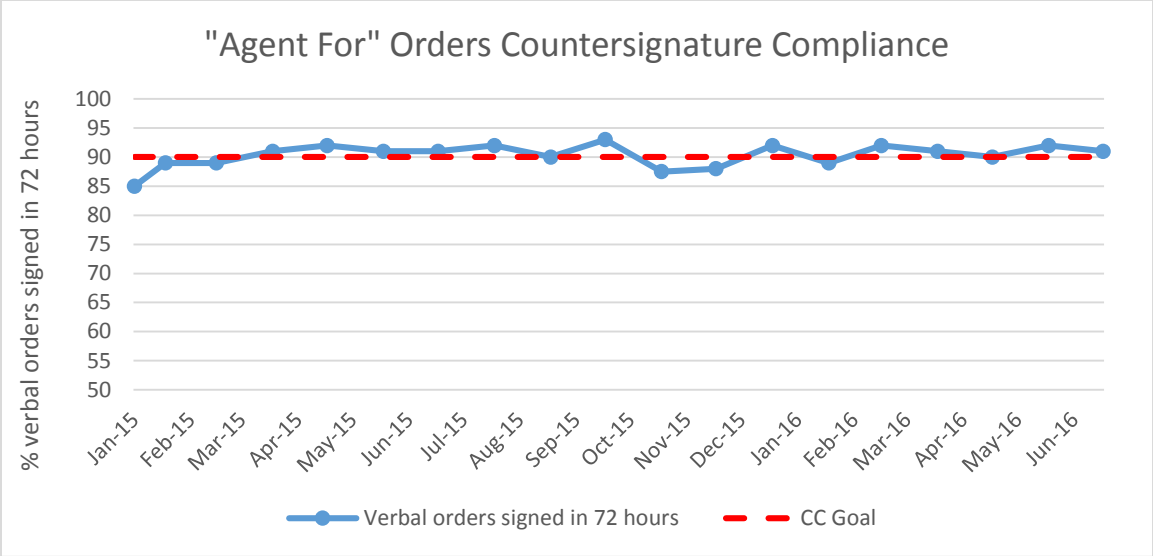
Accurate and timely documentation of clinical issues in the patient's electronic health record is key to the provision of safe and high quality of care. The NIH CC's Health Information Management Department tracks key quality metrics related to patient care. These data are presented to the Clinical Information Management Committee and the Clinical Quality Committee.



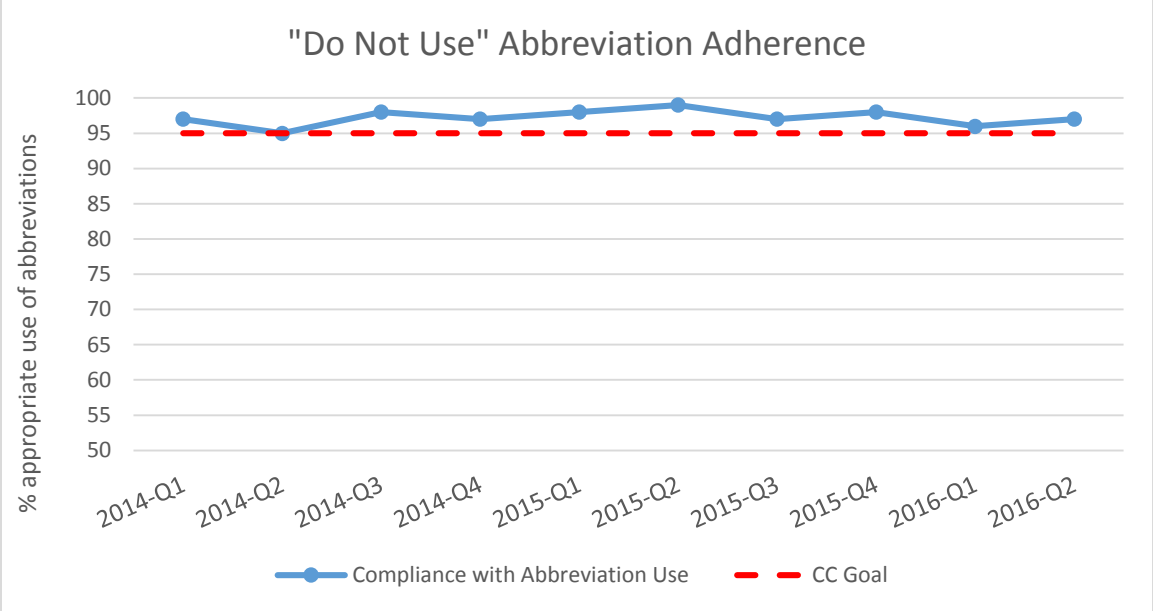
Medical records are classified as delinquent if they are not completed within 30 days after inpatient discharge or outpatient encounter. This timeframe for completion is longer than in a typical hospital setting to allow adequate time for complex test results associated with clinical care and clinical research to be included in the final discharge summary report that is sent to patients' outside clinicians. The following elements are monitored and reported: inpatient admission history and physical examination, operations performed in the surgical suite, inpatient discharge summary, outpatient first registration, and any other elected dictated medical report (e.g., outpatient summary, outpatient single visit, interim summary, or an addendum summary to a previously dictated report). Any individual who fails to complete his or her delinquent medical records within 15 calendar days after notification from the Health Information Management Department is required to appear before the Medical Executive Committee with their Branch Chief and their Clinical Director or Clinical Center Department Head to explain the reason for noncompliance. If a satisfactory explanation is not provided, the Medical Executive Committee immediately suspends that individual's medical staff privileges for 29 days. The Joint Commission set a threshold that 50% of appropriate records must be completed within the organization's identified documentation requirement (e.g., 30 days). The NIH CC consistently meets this Joint Commission benchmark.



The NIH CC does not require the coding of medical records for the purposes of billing; however, the accurate categorization of patient encounters facilitates the retrieval of information for purposes of clinical research and clinical performance improvement. The NIH CC sets an internal benchmark of 95% accuracy of all coding. The NIH CC contracts with an outside consultant who performs quarterly coding quality review activities. This consultant provides quarterly education roundtable discussions where recurring coding issues are reviewed and education regarding new coding guidelines are discussed. The NIH CC performance is closely aligned with the threshold. Performance dipped slightly below 95% in Quarter 4 2015 and Quarter 1 2016 due to the implementation of ICD-10 coding requirements. The Health Information Management Department continues to conduct ongoing education regarding coding errors associated with ICD-10 coding practices.



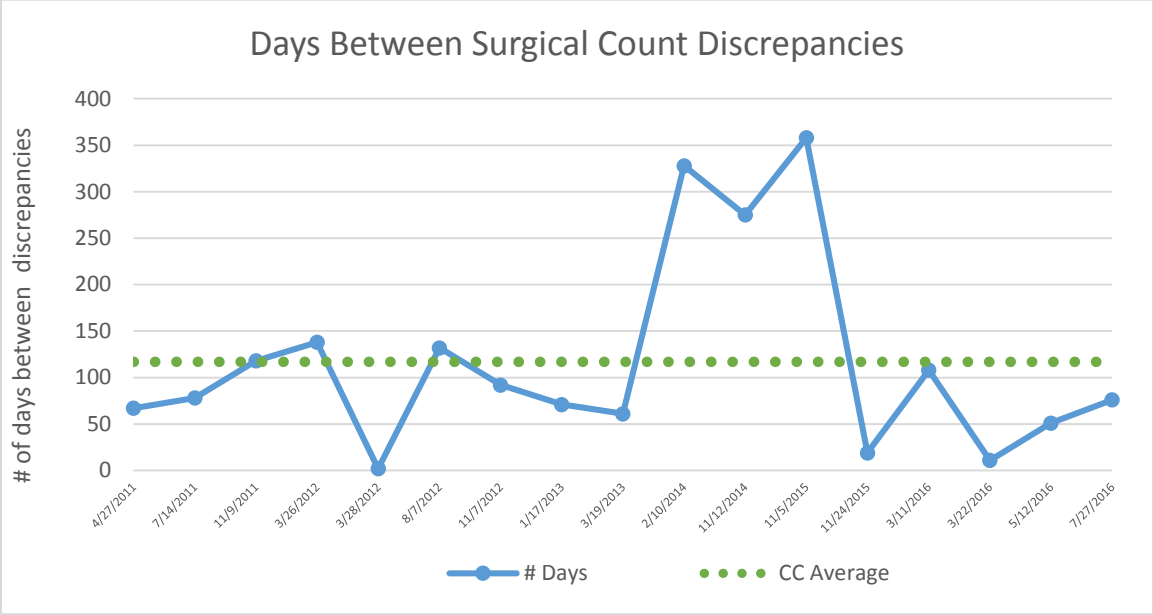
As dictated by NIH CC policy and Joint Commission requirements, "agent for" orders (those orders entered into the electronic health record by an approved surrogate of the licensed independent practitioner) are only to be used in emergency situations or when access to the NIH CC's electronic health record is not possible. Practitioners must countersign all "agent for" within 72 hours of the order entry. Compliance with this threshold is consistently met by NIH CC practitioners.



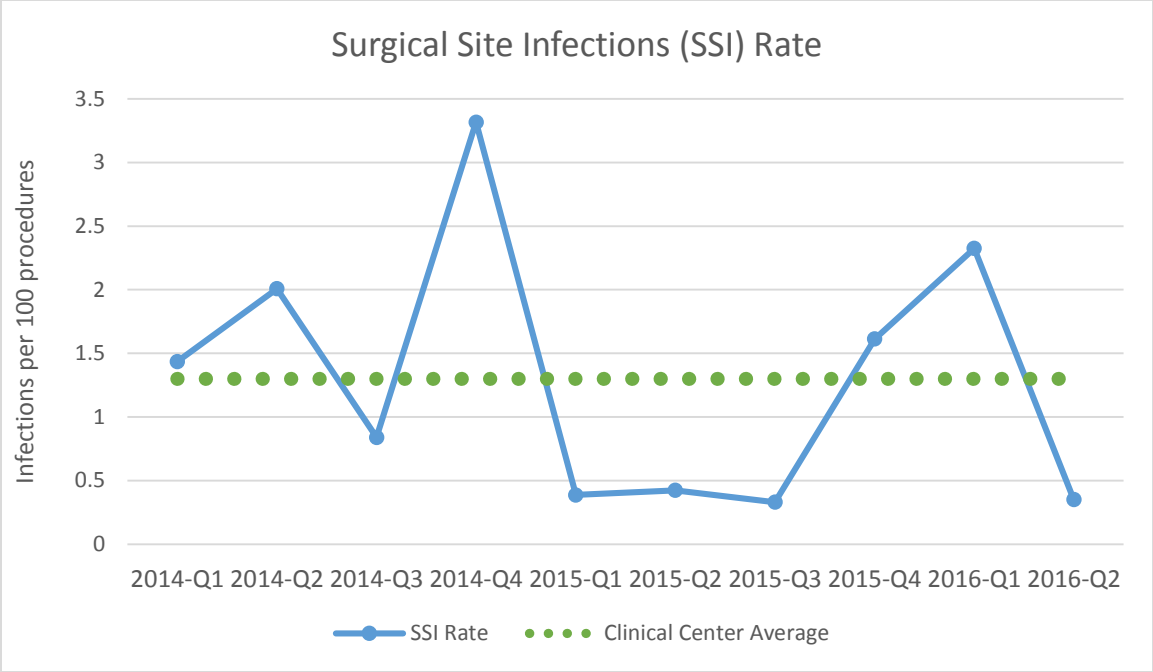
The use of abbreviations is associated with medical errors and near misses. With the goal of eliminating error-prone abbreviations from handwritten, pre-printed and electronic forms of communication, the Joint Commission issued a Sentinel Event Alert and subsequently established a National Patient Safety Goal related to "do not use" abbreviations. In collaboration with the Joint Commission, the NIH CC set a goal of 90% compliance with the Joint Commission and the NIH CC internal policy requirements related to the use of abbreviations.

SURGERY SPECIFIC MEASURES

In 2015, the role of "Surgeon-in-Chief" was established to provide guidance and oversight of the clinical quality and safety of the surgical activities in the NIH CC. One of the 2016-2017 goals of the new Surgeon in Chief is to establish a coordinated program for measuring and managing surgical complications across all surgical programs



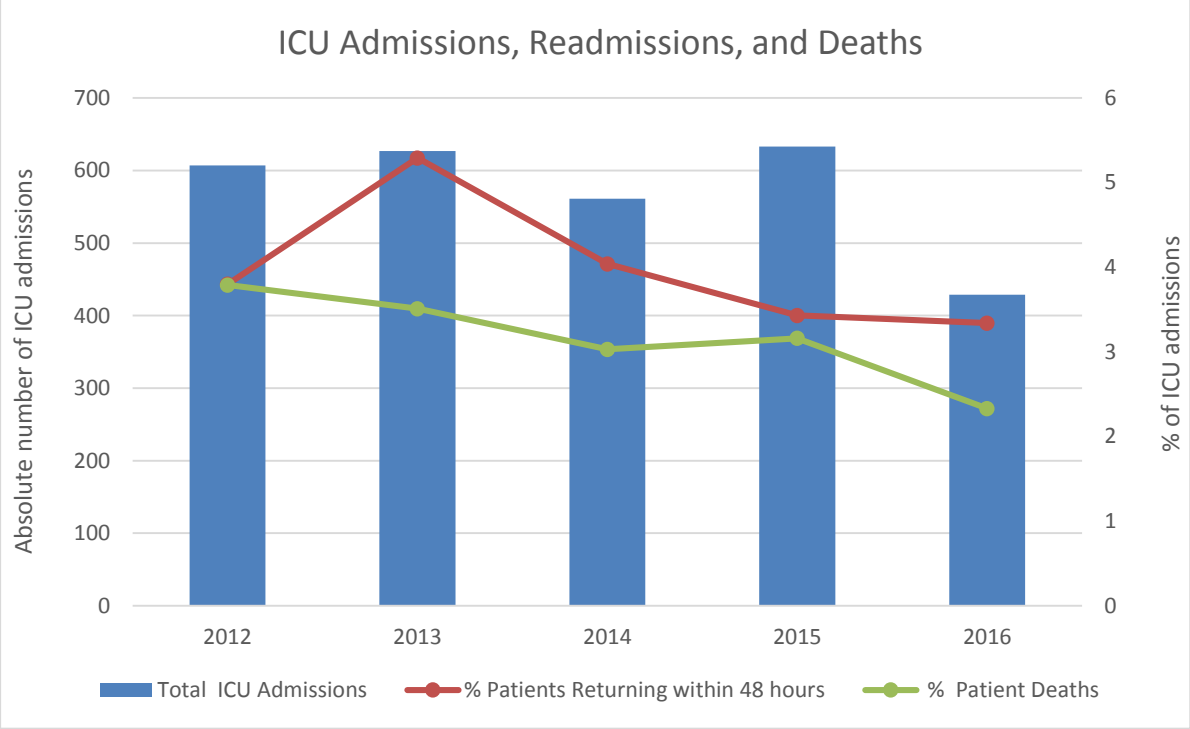
The NIH CC has not experienced a retained foreign object in a patient in over a decade; however, as a surrogate marker, we follow instances in which the surgical teams experience "count discrepancies" prior to the conclusion of the case (e.g., before incision closure). These relatively rare events are viewed as near misses and are considered possible signals for a potential future error; therefore, the NIH CC closely tracks count discrepancies. As noted above, the frequency of count discrepancy reports has increased in the last three quarters. All of the last four count discrepancies are associated with a surgical procedure that requires multiple tumors to be removed using small containment bags. In response to this cluster of events, the operating room team, in collaboration with the NIH CC clinical quality and patient safety program, has assessed the surgical procedure for risk points, reviewed the current surgical instrument count policy with staff, and discussed with staff the importance of being attentive to human factors issues such as distractions and communication barriers.

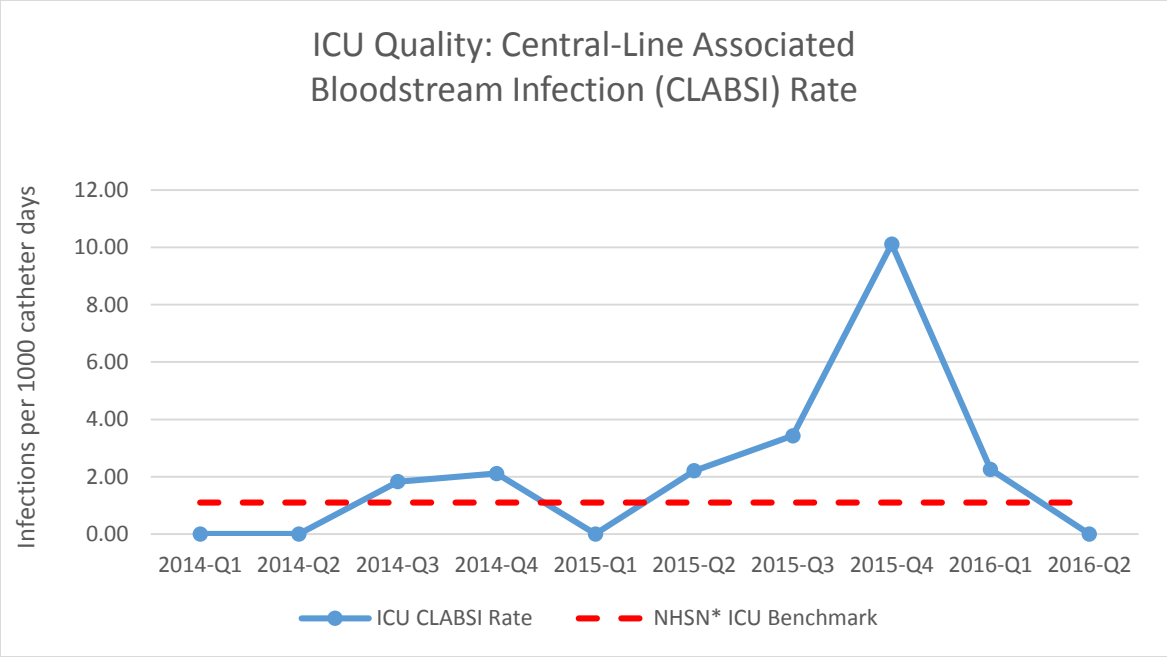


In accordance with best practice recommendations from The Joint Commission and The Surgical Care Improvement Project, the Hospital Epidemiology Service conducts surveillance of surgical site infections (SSIs) through routine review of surgical patient charts and microbiology data for positive cultures, through review of perioperative antibiotic administration relative to incision time, and by auditing postoperative antibiotic discontinuation within 24 hours of surgery. Surgical prophylactic antibiotics are administered according to CC Perioperative Antibiotic Guidelines. The Hospital Epidemiology Service also conducts reviews when concerns are raised about possible increases of SSIs in special populations. Starting in the 2nd quarter of 2016, notifications are sent to the responsible surgeons for each surgical site infection.

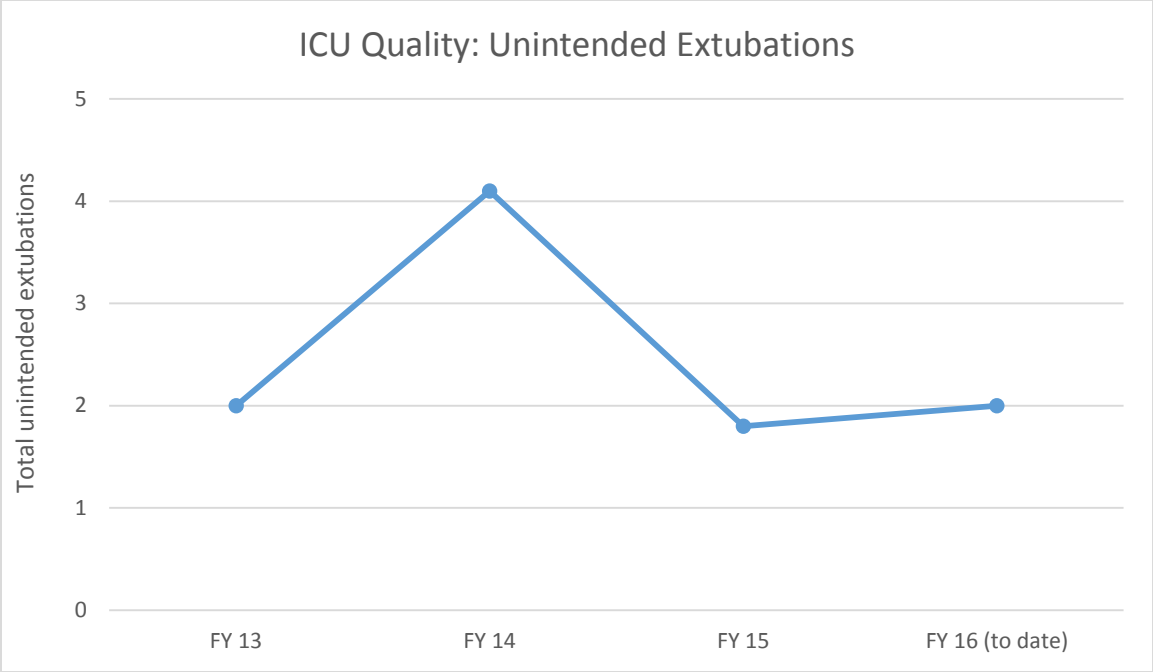
CRITICAL CARE MEDICINE AND INTENSIVE CARE UNIT MEASURES

The Critical Care Medicine Department (CCMD) recognizes the importance of activity and performance metrics to assess the quality of care. Such programs are essential for assuring that NIH CC patients receive superior critical care services. The department makes an active effort to keep abreast of national trends and expectations in quality improvement. CCMD and the ICU staff have multiple meetings and conferences throughout the year to develop, analyze, and improve performance, based on such data.

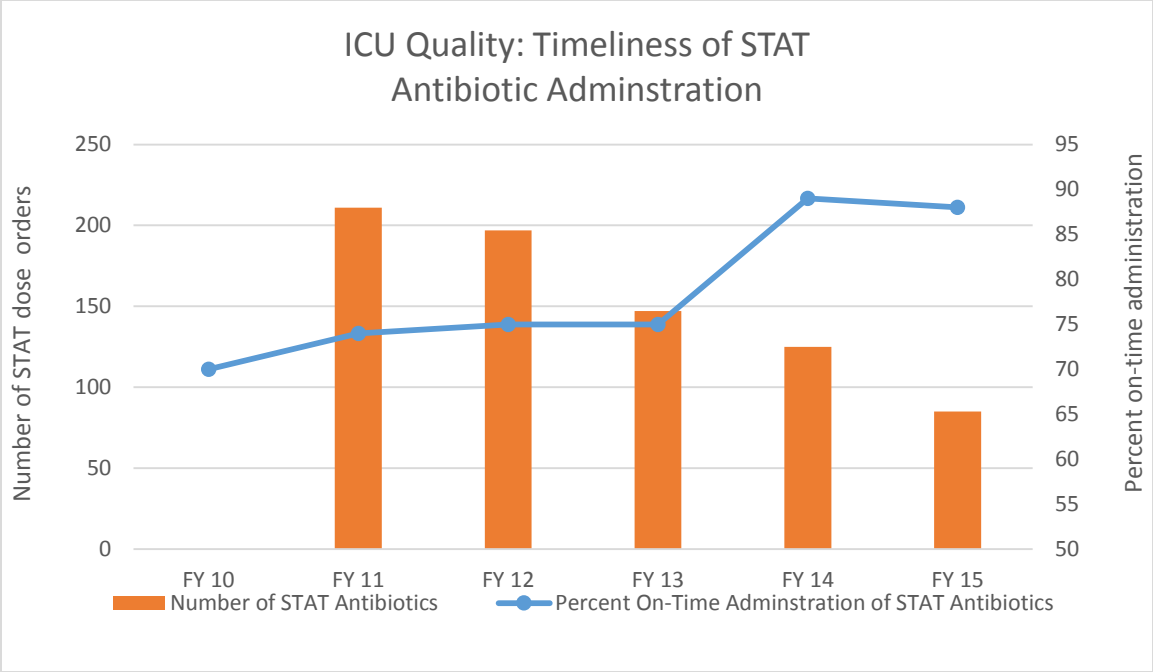




In the last quarter of 2015, the ICU experienced an uptrend in CLABSIs. The primary cause identified for the rise in infections (in the ICU and house-wide) was a change to a needleless device to connect and access central lines. Aggressive, sweeping interventions were implemented, and the ICU and house-wide CLABSI rates decreased concomitantly with those efforts. As part of the hospital's organizational response to this house-wide rate increase, the ICU team initiated a rigorous education and training project for all ICU staff who are involved in the care and maintenance of central venous access devices. The interventions included further training the staff about the new needleless access system and revising standards of practice (SOP) for catheter care (both on the patient care units as well as in the ICU). Changes to the SOPs included the introduction of antiseptic impregnated dressings, the use of alcohol disinfection caps, and one-on-one training in how to use each item in a newly designed catheter dressing kit. The ICU CLABSI rate showed improvement from 10.2/1000 in the fourth quarter of 2015 to 0/1000 catheter days in quarter 2 of 2016. The ICU team will continue to monitor this trend and implement interventions, as appropriate.



Unintended extubations are occasional events in the adult ICU and may lead to potentially fatal complications. The NIH CC ICU team monitors unintended extubations and analyzes the events for contributing factors such as sedation levels and need for soft restraints, as well as the patient's level of preparation for extubation and whether or not the team waited too long to extubate. The team uses a tracking tool to catalogue information about the extubation which includes the method of tube stabilization, the time which the extubation took place, the patient's level of sedation, and whether or not the patient needed to be re-intubated. This information is reviewed quarterly during the ICU morbidity and mortality conference for trends and triggers that could alert the team to areas for potential improvement. No trends have been identified in the last four quarters.

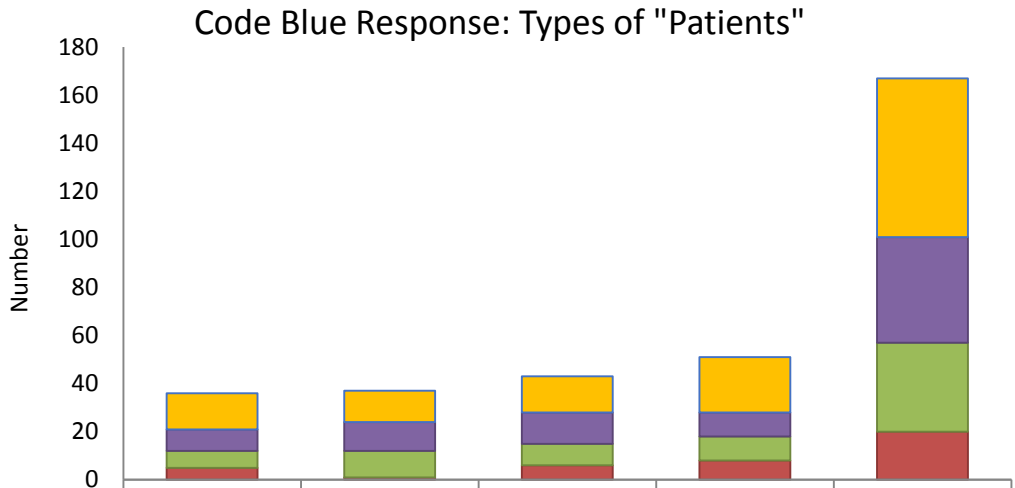


Early antibiotic administration has been associated with improved survival in diverse clinical settings. In an effort to improve timing of antibiotic delivery in our ICU, the team monitored the timing of antibiotic administration with the goal of 100% of STAT antibiotic infusions initiated within 60 minutes of electronic order entry.

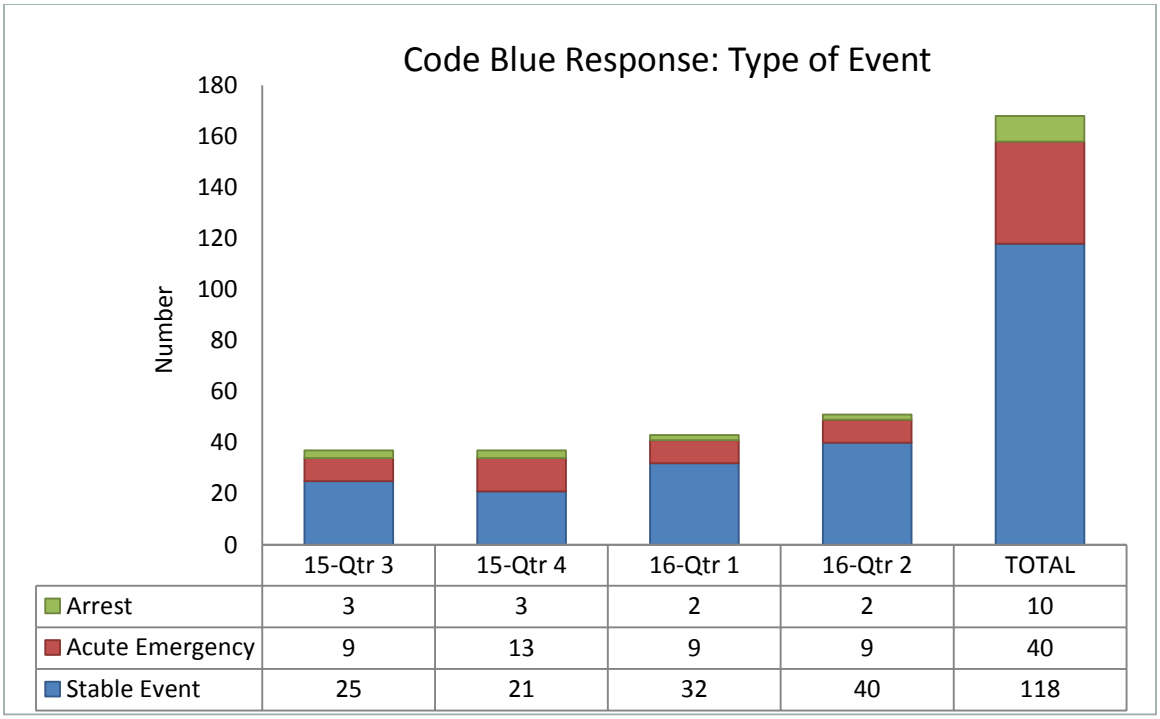
A subset of intravenous antimicrobials was selected for surveillance based on frequency of use and clinical relevance. A computer-based program was designed to assess the length of time between STAT antibiotic order entry and administration for all patients receiving a STAT antibiotic order. Seven predominant steps in STAT antibiotic workflow were identified and additional "time stamps" were added to the existing surveillance system to better characterize obstacles in workflow. Assessment of each step allowed for identification of areas for potential process improvement leading to proposed interventions.

This effort resulted in an improvement from 70% on-time delivery to 90% on-time delivery in the ICU. In 2016 we are focused on achieving 100% on-time delivery for all antibiotics ordered STAT.

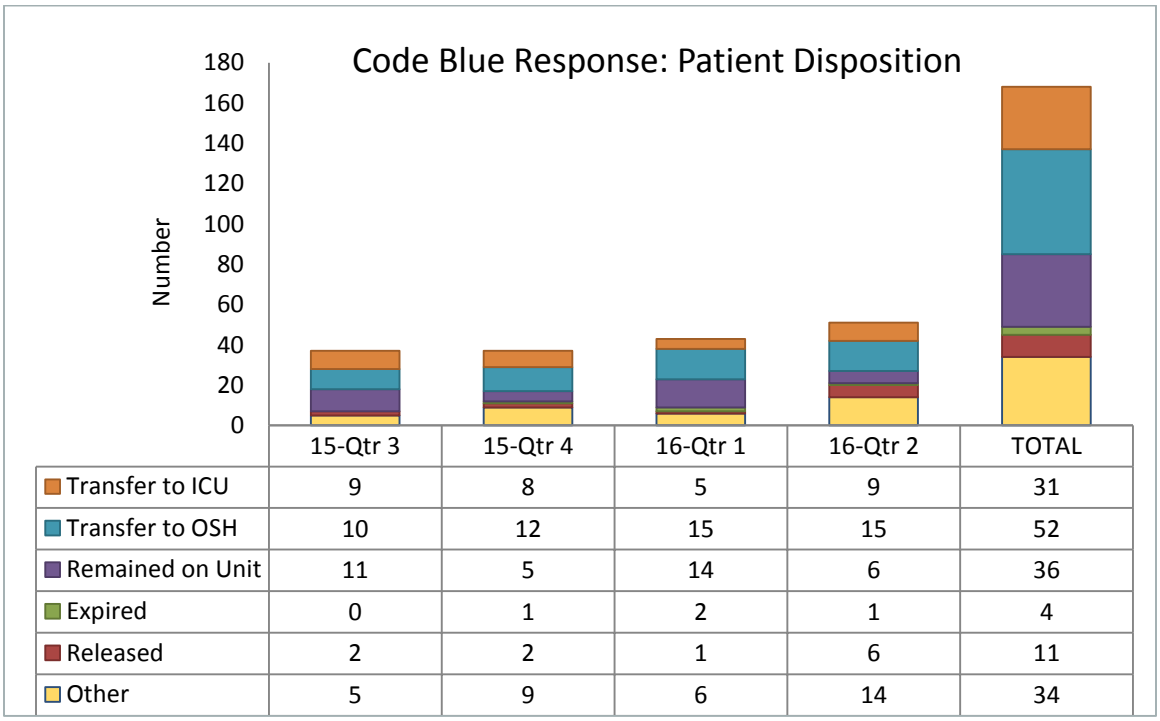
The Critical Care Medicine Department oversees the Code Blue and Rapid Response teams in the NIH CC. As the data below illustrate, these response teams are activated for emergencies involving patients, staff and visitors. The emergency response teams collect and analyze data about each activation to assure that these services are provided in a timely, effective, efficient, and appropriate manner. These data are presented to the CPR Committee, the Clinical Quality Committee, and the Medical Executive Committee.



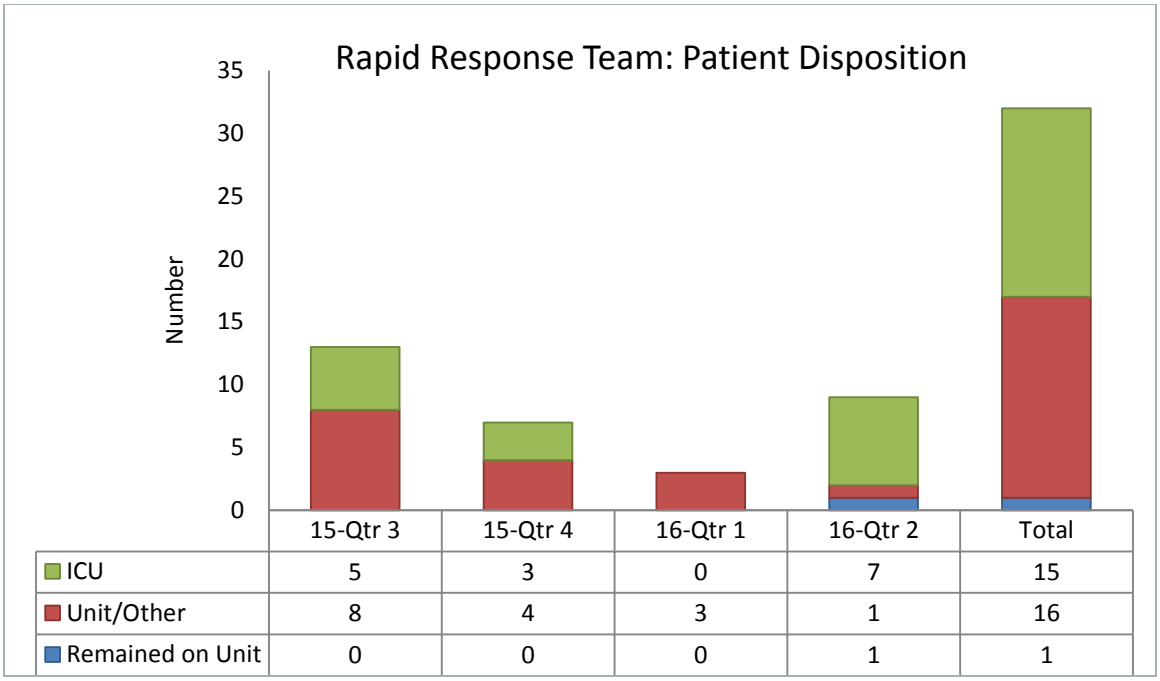
	15-Qtr 3	15-Qtr 4	16-Qtr 1	16-Qtr2	Total
Inpt	15	13	15	23	66
Outpt	9	12	13	10	44
Employee	7	11	9	10	37
Visitor	5	1	6	8	20
Incorrect Calls	0	0	0	0	0



	15-Qtr 3	15-Qtr 4	16-Qtr 1	16-Qtr 2	TOTAL
Arrest	3	3	2	2	10
Acute Emergency	9	13	9	9	40
Stable Event	25	21	32	40	118



	15-Qtr 3	15-Qtr 4	16-Qtr 1	16-Qtr 2	TOTAL
Transfer to ICU	9	8	5	9	31
Transfer to OSH	10	12	15	15	52
Remained on Unit	11	5	14	6	36
Expired	0	1	2	1	4
Released	2	2	1	6	11
Other	5	9	6	14	34

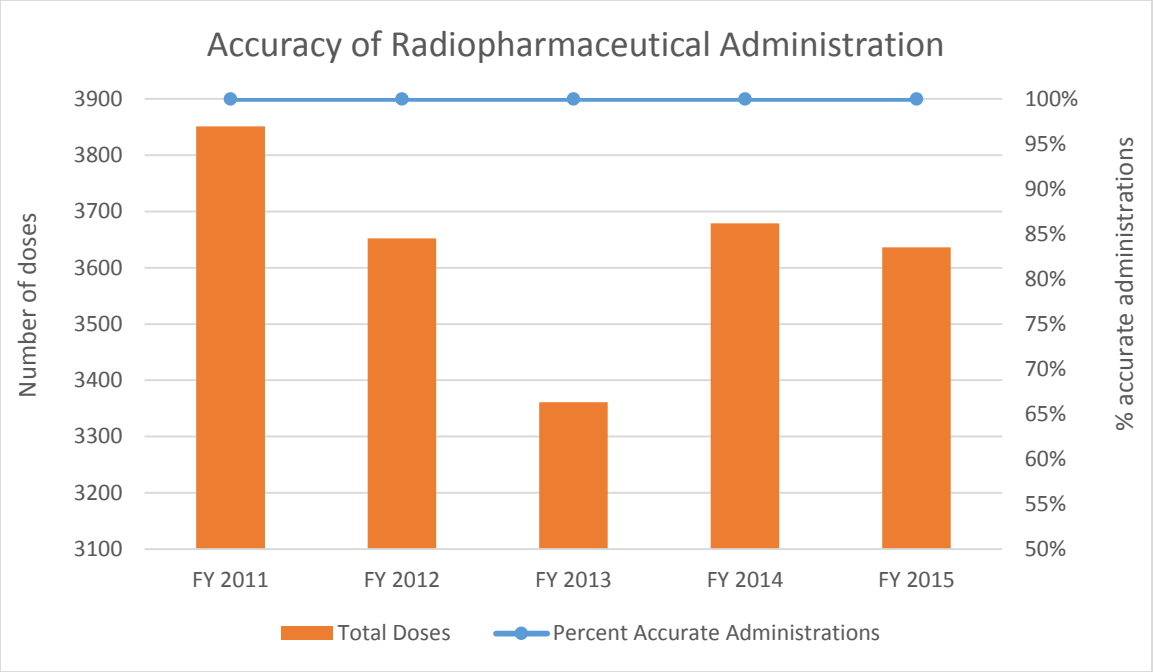


	15-Qtr 3	15-Qtr 4	16-Qtr 1	16-Qtr 2	Total
ICU	5	3	0	7	15
Unit/Other	8	4	3	1	16
Remained on Unit	0	0	0	1	1

RADIOLOGY SPECIFIC MEASURES

The National Council on Radiation Protection and Measurements reported recently that Americans received seven times more medical test radiation exposures in 2006 than was the case in the 1980s. CT and cardiac nuclear medicine studies accounted for much of this increased medical radiation exposure. In an effort to assure that NIH CC patients are not exposed to undue radiation, the Department of Radiology and Imaging Sciences initiated a project to track patient radiation exposure and, in instances when radiation exposure exceeds the 50 mSv threshold, the radiologist will communicate these findings to the patient's primary care team. In response to 76 exams exceeding the 50 mSv threshold, letters were sent to the protocol principal investigators alerting them to the event. In most instances, the higher doses were the result of patients with large mass requiring more energy from the CT scanner.

Equipment	Exams Below Threshold (50mSv)	Percent of Exams Below Threshold	Exams Above Threshold (50mSv)
PETCT TBI	325	100%	0
PETCT NM	1699	100%	0
PETCT MIC	116	100%	0
PETCT MCT	573	100%	0
Discovery670	52	100%	0
CT Toshiba	1432	99.72%	4
CT TBI	42	100%	0
CT MIC	11	100%	0
CT FORCE 2	5625	99.12%	50
CT FORCE 1	6277	99.65%	22
Total	**16152**		**76**

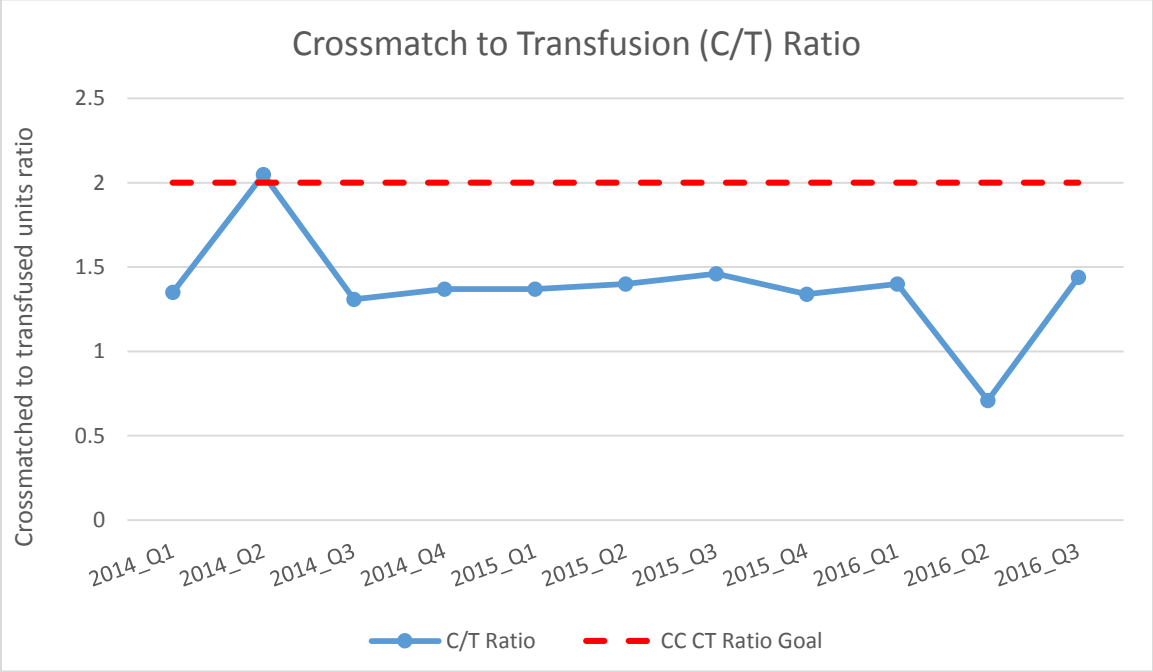


As is the case for other medication-related events, the Nuclear Medicine Department closely tracks events related to radiopharmaceutical administration. For purposes of monitoring this indicator, a misadministration is defined as the delivery of a dose that differs from the prescribed dose by 20% or more, the administration of a wrong radioactive drug, and/or the delivery to the wrong individual.

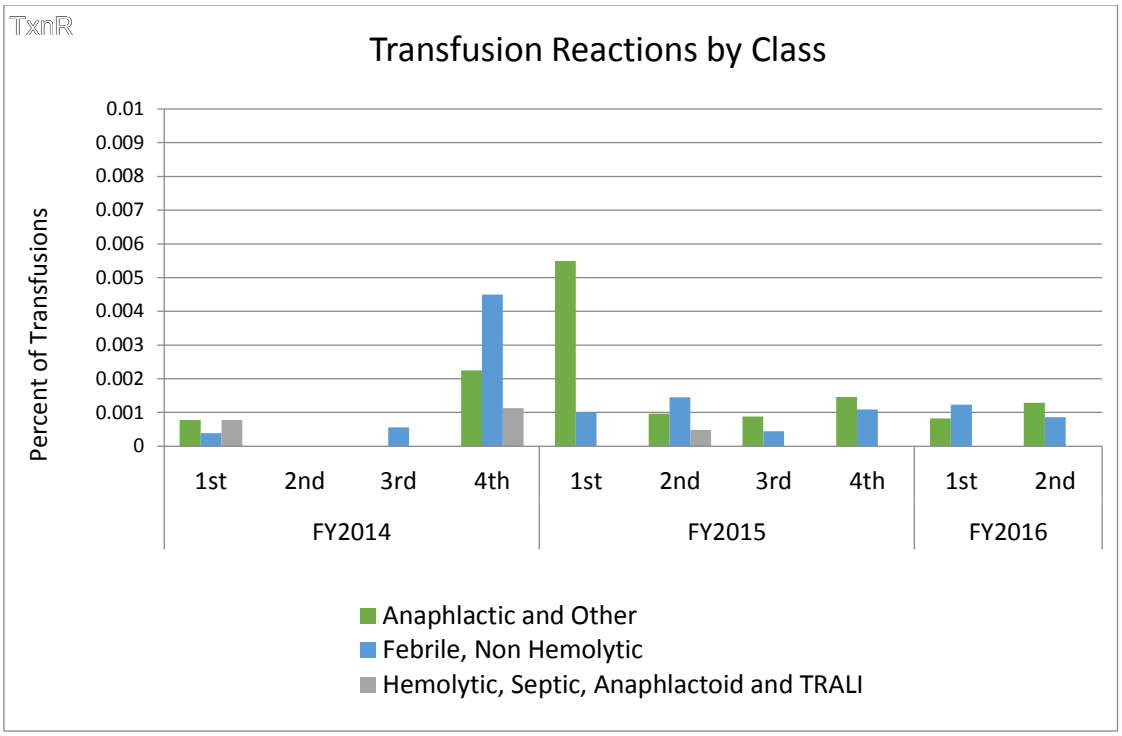
BLOOD AND BLOOD PRODUCT USE

The mission of the NIH CC Department of Transfusion Medicine (DTM) is to provide high quality patient care and hospital services in support of NIH clinical research programs. The Department of Transfusion Medicine includes an FDA-licensed blood collecting facility as well as a transfusion service, diagnostic testing laboratories, and an FDA-registered cell processing facility to manufacture human cells and tissues that are used under approved protocols.

The Transfusion Service of DTM maintains an accredited Immunohematology Reference Laboratory that supports not only the Clinical Center, but also assists other area hospitals to investigate and resolve difficult patient cases utilizing molecular testing of RBC antigens when relevant. Using key quality indicator data allows DTM to be proactive in suggesting and implementing quality and safety improvement initiatives within Transfusion Medicine.



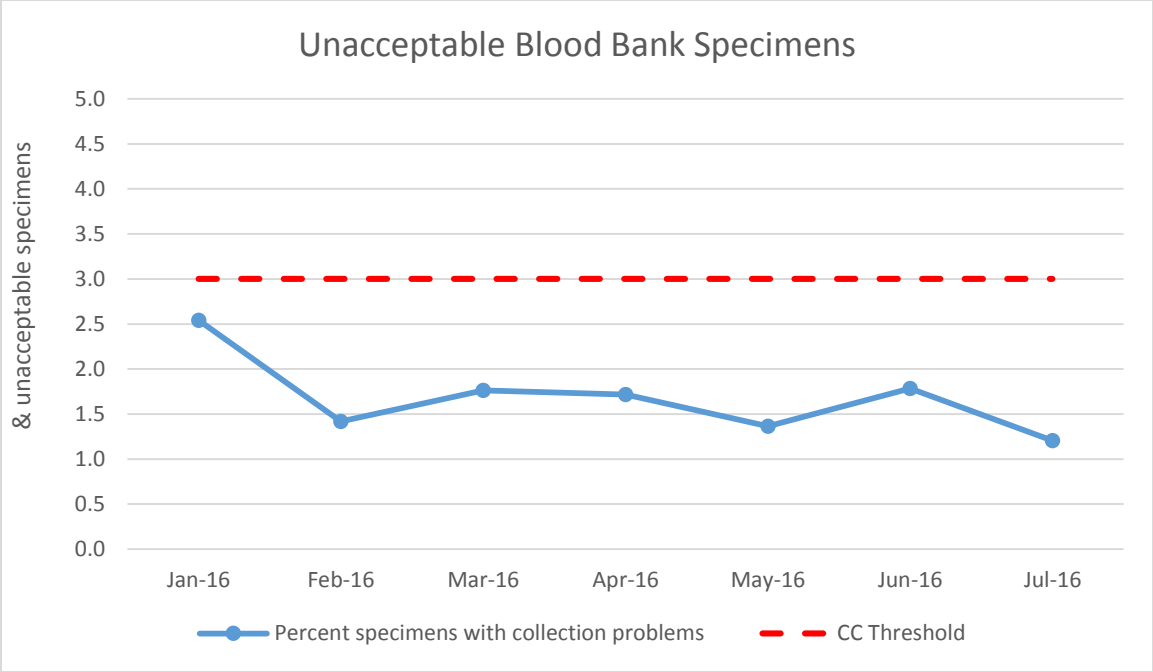
Many NIH CC patients require blood and blood products that are rare or difficult to secure. In an effort to assure that patients have life-saving blood and blood products available when needed, the NIH CC Department of Transfusion Medicine monitors blood ordering practices by evaluating the number of blood units tested and reserved for a patient compared to the number transfused to the intended patient. This metric is called the Crossmatch to Transfusion (C:T) Ratio. The NIH CC goal is to have a C:T ratio of 2.0 or less consistently. Monitoring this metric ensures that blood is not held unused in reserve when it could be available for another patient.



Unexpected reactions to blood product transfusions are recognized and reported to the Blood Bank for investigation and patient follow up as needed.

The NIH CC Department of Transfusion Medicine expects that fewer than 1% of all transfusions will be associated with a suspected transfusion reaction. These data are used to plan for safer transfusions for NIH CC patients. For example, the Department of Transfusion Medicine recently implemented a process to reduce risk associated with platelet transfusion. Platelet preparations are prepared using a plasma-reducing, psoralen treatment process (Pathogen Reduced Platelets). DTM staff are confident that this process will reduce significantly the risk of transmitting bacterial and viral infections through platelet products and may lower the number of reactions in certain categories.

DTM also participates in the CDC National Health Safety Network (NHSN) Hemovigilance Module to better understand national reaction rates and to identify national transfusion practice strategies to lower reaction rates.



Assuring the integrity and accuracy of specimens sent to the NIH CC Blood Bank is critical to the provision of safe and effective care. In an effort to avert error and risk and to identify opportunities for improvement, DTM closely monitors the accuracy of Blood Bank specimens. The internal benchmark for success is to have fewer than 3% of all specimens deemed "unacceptable." Excursions above 3% are reviewed with sample collection staff to improve sample collection and labeling. As illustrated above, the NIH CC consistently meets this standard.

STAFF INFLUENZA IMMUNIZATION

The NIH CC has a robust influenza immunization program for healthcare staff that includes mandatory immunization for staff who have patient contact. In 2015-2016, 98.2% of the 3,528 staff who have patient contact were immunized at the CC or through providers outside NIH.

Following are highlights of the program:

- The hospital educates healthcare providers, licensed independent practitioners (LIPs), and staff about the influenza vaccine and immunization guidelines, non-vaccine control and prevention measures, and the diagnosis, transmission, and impact of influenza.
- Every fall, the NIH Occupational Medical Service runs an open influenza vaccine clinic for all NIH employees at a central location in the hospital, offering immunizations free of charge.
- A multimedia campaign coordinated by the CC and NIH Communications services includes posters, announcements, and a dedicated website, www.Foiltheflu.gov.
- Influenza immunization is mandatory for all staff (employees and contractors) who have face-to-face contact with patients. The declination policy requires patient-contact staff who have medical contraindications to immunization to sign a declination form and provide documentation from a non-NIH LIP attesting to the contraindication. Staff may obtain religious exemptions using the declination form.
- The Hospital Epidemiology Service calculates immunization rates and reports the data to the Hospital Infections Committee, Clinical Quality Committee, and the Medical Executive Committee at the conclusion of each immunization campaign.