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2177. Use of an Analytic Application for Management of Infection Prevention Data

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Background. Healthcare-associated infections (HAI) are a significant cause of morbidity and mortality for patients and continue to be an area of focus for public health programs. In the era of mandatory reporting, hospital infection prevention and control (IPC) departments are responsible for HAI data collection and management. Enumeration of infection and denominator data is often a manual and time-intensive process, which increases the potential for errors. In 2014, IPC and data analytics departments partnered to optimize data collection/reporting through the creation of a QlikView™ application, the Infection Control Dashboard (ICD).

Methods. ICD was developed through an iterative process from 2014 to 2015 at a quaternary care children's hospital and is comprised of infection data from the hospital electronic surveillance system and electronic medical record software. The first release was May 2014. Iterations included development of statistical process control charts and filters to view data by date, unit, pathogen, HAI type, and patient details. ICD was finalized in May 2015 and refreshes daily for numerator and denominator data to identify actionable information in close to real-time. Time spent on data collection/reporting was tracked and compared pre- and post-ICD implementation.

Results. Post-implementation, time spent on external reporting decreased from 12 to 6 hours monthly and shifted from data collating to validation. Over 12 months, IPC received an average of 25 (mean 25.5, range 16–29) data requests per month. Using ICD, average time spent per data pull decreased from 80 to 27 minutes, saving more than 22 hours per month. Additional real-time applications included standard data displays for internal sharing and tracking infection rates by type, location, or department. ICD also allowed for internal review of detailed denominator data, facilitating validation between internally and externally reported data.

Conclusion. Development of an automated data visualization tool improved HAI data management and reporting, streamlined workflow, and increased employee productivity. Use of this type of tool in IPC programs can improve data quality and enable departments to focus on targeted interventions in near-real time based on data trends.

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2178. Detection of Key Potential Healthcare Pathogens Using Periodic Point Prevalence Surveillance

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Background. Surveillance for asymptomatic carriage of multidrug-resistant (MDR) pathogens is useful to determine the burden of these organisms and help guide infection prevention strategy. We currently perform surveillance cultures for Gram-negative multidrug-resistant pathogens (GNMDR) in the ICUs on a monthly basis. We added a quarterly point prevalence survey to all hospital units for these and other key pathogens over one year to determine whether our program should expand beyond the ICU and include other organisms.

Methods. Rectal samples were collected quarterly for 1 year starting June 2016 at NorthShore University HealthSystem, a four-hospital, 789 bed system. All hospitalized patients present on the day of the point prevalence testing had a double-headed rectal swab collected. One swab was plated to VACC agar (Remel) for culture of GNMDR and VRE, and the second was plated to CCFAHT (Anaerobe Systems) for *C. difficile* (Cdif) culture. All samples were collected on a specified day at each of our 4 hospitals, one hospital per week, and sent to the central microbiology lab for processing. Testing for GNMDR included the following pathogens: Carbapenem-resistant Enterobacteriaceae (CRE), ESBLs, and Gram negative organisms susceptible to ≤2 drug classes.

Results. A total of 987 surveillance samples were collected. The number of patients with MDR in the ICU vs. non-ICU units is described in Table 1. There was an 11% greater difference in the percentage of patients colonized with GNMDR and Cdif in non-ICU patients compared with ICU patients ($P = 0.006$). An important discovery was three patients colonized with CRE outside the ICU that were previously unknown. The burden of ESBL, VRE and Cdif carriage was also greater outside the ICU.

Table 1. Comparison of Patients in ICU vs. Non-ICU with Important Hospital Pathogens

	Number of Patients With:						
	No. Tests	Important Pathogens (%)	ESBL	CRE	MDR	VRE	Toxigenic Cdif
Non-ICU	833	175 (21%)	79	3	5	64	47
ICU	154	17 (11%)	10	2	1	1	7

Conclusion. The point prevalence surveillance uncovered a significant amount of MDRs in our non-ICU units, particularly three CREs that were previously unknown. These results suggest there is a large burden of MDR organisms outside the ICU.

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2179. Variability in the Application of Surveillance Definitions for Central Line-Associated Bloodstream Infection Across U.S. Hospitals

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Background. In 2015, the Centers for Disease Control and Prevention (CDC) and the Centers for Medicare and Medicaid Services (CMS) reminded hospitals of the importance of using standardized surveillance definitions to report healthcare-associated infections (HAIs). Concerns remain, however, about how hospitals apply these definitions.

Methods. We performed a survey via the Society for Healthcare Epidemiology of America's Research Network exploring reporting differences for central line-associated bloodstream infection (CLABSI) in U.S. hospitals. Three patient scenarios were presented, and respondents were asked to determine whether the infection was a CLABSI reportable to the CDC's National Healthcare Safety Network (NHSN), a secondary bloodstream infection, or an infection present on admission. Hospitals were also asked how they adjudicate cases when having a difficult time determining the type of infection, including whether hospitals contact NHSN, ask for physician or committee guidance on HAI determination, or rely solely upon NHSN definitions.

Results. We sent the survey to 88 U.S. hospitals and received a response from 42 (48%). The respondents included 32 infection preventionists (IPs) and 10 non-IPs involved in infection prevention. Respondents correctly classified the case 79.4% of the time (100 out of 126 reviewed scenarios, 3 per respondent), assigned an attribution that would have led to under-reporting 14.3% of the time (18/126), and assigned an attribution that would have led to over-reporting 6.3% of the time (8/126). Respondents from academic medical centers (AMCs) were more likely to accurately report infections with no under reporting (P-value 0.03) than respondents from other types of hospitals. When adjudicating difficult cases, 38/42 (90%) stated that they use the NHSN manual and/or write to NHSN, but physician input (18/42, 43%) or committee input (10/42, 24%) were also common. Of note, 4/42 hospitals (10%) stated that they rely only on physician/committee input.

Conclusion. Our findings suggest variability in the application of NHSN surveillance criteria for CLABSI, with a high reliance on physician or committee review. This appears to result in higher under-reporting by non-AMCs.

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2180. Incidence and Outcomes of Ventilator-Associated Events, Utilising Centre for Disease Control Criteria in a Tertiary Intensive Care Unit, Victoria, Australia

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Background. Ventilator-associated pneumonia (VAP) is a common complication of admission to intensive care units (ICU), and may be associated with significant morbidity, mortality and healthcare cost. While VAP surveillance is a desirable element