Submission Type	Breakout/Quick/Lightning/Poster
ID	7766
Abstract Type	Breakout

Abstract Title

Burkholderia Cepacia Bloodstream Infections Among Skilled Nursing Facility Residents — United States, 2016

Abstract

BACKGROUND: On September 22, 2016, Maryland Department of Health and Mental Hygiene was notified of 4 *Burkholderia cepacia* bloodstream infections among skilled nursing facility (SNF) residents receiving intravenous therapy. Multistate notification occurred on September 28; clusters were reported in 4 additional states. We sought to determine outbreak scope, identify source, and prevent additional cases.

METHODS: Cases were initially defined as blood cultures yielding *B. cepacia* in SNF residents receiving intravenous therapy after August 1. Jurisdictional health alerts were disseminated to aid case finding. We abstracted patient medical records and visited affected SNFs in 2 states in late September to identify possible infection sources. Suspect products were cultured; patient and product isolates were typed by using pulsed-field gel electrophoresis (PFGE).

RESULTS: All patients resided at SNFs supplied by Pharmacy A, which began distributing saline flushes from Manufacturer X on September 1. By using an updated case definition requiring residence at an SNF using Manufacturer X flushes, we identified 153 cases from 57 facilities in 5 states with first positive blood cultures during September 10–November 11. On October 3, *B. cepacia* was isolated from unopened Manufacturer X saline flushes obtained from an affected facility. PFGE patterns were indistinguishable in 111/127 (87.4%) patient isolates from all 5 states and 6/7 (85.7%) product isolates. A second PFGE pattern from 1/7 (14.3%) product isolates and 8/127 (6.3%) patient isolates differed by 1 band. Implicated products were recalled on October 4.

CONCLUSIONS: Epidemiologic and laboratory evidence indicates contamination of saline flushes produced by Manufacturer X was the outbreak source. Investigation into the cause of contamination and surveillance for additional cases is ongoing.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Infectious Diseases; Outbreaks
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	8613
Abstract Type	Breakout
Abstract Title	A Longitudinal Comparison of Oregon Clostridium Difficile Infection Data Reported to EIP and NHSN, 2012-2015

Abstract

BACKGROUND: *Clostridium difficile* is a significant cause of morbidity and mortality, infecting almost half a million patients in the United States each year. Current surveillance systems used to track *C. difficile* infections (CDI) include the National Healthcare Safety Network (NHSN) and the Emerging Infections Program (EIP). Past comparisons of data collected from these surveillance systems point to the need for more analyses and examination of consistency between systems over time.
METHODS: We compared incident Oregon inpatient CDI cases reported to EIP and NHSN from January 2012 through December 2015. Cases were matched by catchment area, facility admission and specimen collection dates. We examined longitudinal trends in the proportion of discrepancies by catchment area, surveillance protocols, and reporting errors between the EIP and NHSN data.
RESULTS: The total number of CDI events reported into both EIP and NHSN has increased from 2012-2015, with discordance between the two systems decreasing over time. Data were also examined to identify any systematic errors in the application of surveillance protocols.
CONCLUSIONS: EIP and NHSN provide robust surveillance systems that provide complimentary accurate data. Increasing accuracy over time may indicate increased accuracy of such complementary surveillance systems over time. Lessons from Oregon can be leveraged by other jurisdictions to perform their own quality improvement work, allowing limited staff resources in public health agencies and healthcare facilities to be used efficiently.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Surveillance; Emerging Infections; Healthcare Associated Infections (HAI)
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	8271
Abstract Type	Breakout
Abstract Title	Carbapenem-Resistant Enterobacteriaceae (CRE) Infection Clusters in New York State Hospitals, 2015

Abstract

BACKGROUND: State law requires New York State (NYS) hospitals to report all laboratory-identified carbapenem-resistant Enterobacteriaceae (CRE) clinical cultures to the National Healthcare Safety Network (NHSN). State regulation also requires that regulated facilities report outbreaks of communicable diseases to the NYS Nosocomial Outbreak Reporting Application (NORA). An outbreak is defined as an increased incidence above the baseline. NYS encourages reporting of outbreaks so that timely information on emerging infections can be disseminated and so that health department staff can offer epidemiologic assistance and laboratory support.
METHODS: We used the SaTScan temporal scan statistic to identify the most likely clusters of hospital onset (HO) CRE in the 2015 NHSN data. We performed the scan test by species (*Klebsiella, Enterobacter, E. coli*) at three resolutions (facility-wide, NHSN location type, and subgroups of location if available) within each hospital. The maximum cluster size was set to 60 days. We asked hospital infection preventionists (IPs) to retrospectively evaluate whether the newly identified SaTScan clusters represented possible outbreaks.
RESULTS: In 2015, 109 (62%) NYS hospitals reported 1,303 incident cases of HO CRE in NHSN. SaTScan identified 14 clusters with average duration of 10 days. Hospitals evaluated 12 of the clusters: 3 were subsequently reported as outbreaks to NORA, 2 were the result of previous under-reporting of positive cases to NHSN and should not have been identified as incident clusters, and 7 were not considered outbreaks by the IPs. In many cases the IPs suspected that the patients previously carried CRE, but no previous hospital lab results were available. Two separate outbreaks were reported to NORA, but these were not considered statistically significant by SaTScan.
CONCLUSIONS: This activity heightened IPs' attention to CRE surveillance and outbreak reporting, and may complement the IP's routine process by using a high temporal resolution (daily vs. monthly). Limitations to this method include lack of information on patient movement within the facility, and lack of control for prevalent cases. In addition, more timely identification of the clusters would have improved the ability of the IPs to evaluate CRE transmission. Further work is needed to better define outbreaks so that outbreak reporting is more consistent across the state.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Antimicrobial Resistance; Healthcare Associated Infections (HAI); Surveillance
Consider for Different Presentation?	Yes

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Submission Type Breakout/Quick/Lightning/Poster

ID 7697

Abstract Type Breakout

Abstract Title Epidemiology of Carbapenem-Resistant Enterobacteriaceae—Connecticut, January 2014–December 2015

Abstract

BACKGROUND: Carbapenem-resistant Enterobacteriaceae (CRE) are responsible for 9,000 infections and 600 deaths annually in the United States. To assess the public health importance of these infections in Connecticut, the Department of Public Health (DPH) required laboratory reporting of CRE effective January 1, 2014.
METHODS: CRE was identified as clinical isolates from the family Enterobacteriaceae obtained from any sterile site, sputum, or urine. Cases were classified as confirmed if they met the genus, clinical source, and antibiogram components of the case definition, and as suspect if they had insufficient antibiogram data. Chart review was performed for suspect and confirmed cases reported from January 1, 2014–December 31, 2015. Reports were assessed with the 2014 and the simplified 2016 case definitions to quantify any variance of case classification. Data were stored in an Access database and analyzed using SAS 9.4.
RESULTS: DPH received 296 CRE reports among 239 patients; 77% have been reviewed. Reports of non-hospitalized patients (85, 37.3%) were excluded. Of the remaining 143 (62.7%), 138 (96.5%) were classified as confirmed (112) or suspect (26). Among 126 unique patients, the median age was 72 years (range, 1–98), 64 (50.8%) were females, and 87 (69%) were White. Most CRE cases (124, 90%) were *Klebsiella pneumoniae* (50), *Enterobacter cloacae* (47), or *Escherichia coli* (20). Urine (63.8%) was the most common culture source followed by the respiratory tract (23.2%). Most cultures were collected in the emergency department (ED) (63, 45.7%) or in the intensive care unit (ICU) (41, 29.7%); 56 (41%) were hospitalized ≥3 days prior to culture. Most (108, 78%) had antibiotic therapy in the 60 days prior to culture; 95 (69%) had a history of ≥1 additional multidrug-resistant organisms (MDROs), and nearly 106 (77%) had ≥1 invasive devices at the time of culture. The 2014 and 2016 case definitions were applied to 144 reports with antibiogram information. The number of CRE reports classified as cases was not statistically significantly different when comparing the two case definitions.
CONCLUSIONS: Most hospitalized cases had at least one known risk factor for CRE including ≥1 additional MDROs or ≥1 invasive devices. Most cultures were collected in the ED or ICU highlighting the significance of proper communication of CRE status within and between facilities upon patient transfer. There was no difference in the case classification between the two definitions, allowing for consistent characterization of cases over time. Data in 2017 will include genetic characterization of isolates.

Submission Complete? Yes

Committee Infectious Disease

Topic Healthcare-associated Infections

Keywords Data Collection; Healthcare Associated Infections (HAI); Epidemiology

Consider for Different Presentation? Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7880
Abstract Type	Breakout

Abstract Title Evidence of Health Care Transmission of *Candida Auris:* an Investigation of 2 Cases — Chicago, Illinois, 2016

Abstract

BACKGROUND: *Candida auris* is an emerging, multidrug-resistant yeast causing invasive infections globally but not reported in the United States before 2016. In August 2016, the Chicago Department of Public Health was notified of 2 patients with *C. auris* infections who were treated at the same acute care hospital (ACH) and long-term acute care hospital (LTACH). We investigated possible health care transmission to guide control measures.

METHODS: Cases were defined as *C. auris* isolated from clinical cultures. We reviewed medical records to identify overlaps in time and location; sampled patients' rooms; and screened patients, ACH ward-mates, and LTACH patients for colonization. Isolates were analyzed using whole genome sequencing (WGS).

RESULTS: *C. auris* was isolated from Patient 1's bloodstream in May and Patient 2's urine in July. These patients had 3 overlapping ACH admissions during March–July, but wards differed. In April, 3 days separated their hospitalizations on the same LTACH ward. In August, we detected *C. auris* colonization of index patients' skin, nares, vagina, and rectum. *C. auris* was present on mattress, bed rail, chair, table, and window ledge surfaces in Patient 1's hospital room. Three (6%) of 50 sampled LTACH patients, hospitalized on the same ward as both index patients, exhibited *C. auris* colonization; no ACH ward-mates were colonized. All available patient isolates were highly related (<10 single nucleotide polymorphisms) by WGS.

CONCLUSIONS: Nearly indistinguishable *C. auris* strains were isolated from patients exposed to a single Chicago LTACH ward, indicating likely health care-associated transmission. Persistent colonization of patients, health care environment contamination, and ward-mate colonization necessitate ongoing patient and environmental surveillance, strict adherence to Standard and Contact Precautions, and thorough environmental decontamination to control spread.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Infectious Diseases; Emerging Infections
Consider for Different Presentation?	Yes

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Submission Type Breakout/Quick/Lightning/Poster

ID 7833

Abstract Type Breakout

Abstract Title Exploratory Analysis of Surveillance Data Reported to NHSN's Multidrug-Resistant Organism/*C.Difficile* (MDRO/CDI) Module

Abstract

BACKGROUND: CDC's National Healthcare Safety Network (NHSN) collects surveillance data on healthcare-associated infections (HAIs) from almost all acute care, long-term acute care, and inpatient rehabilitation facilities in the U.S. The Multidrug-resistant Organism/*Clostridium difficile* (MDRO/CDI) Module of NHSN enables facilities to report laboratory-identified events (LabID Events) based on positive microbiologic test results for specified drug-resistant organisms such as methicillin-resistant *Staphylococcus aureus* (MRSA), carbapenem-resistant Enterobacteriaceae (CRE), and vancomycin-resistant *Enterococcus* spp. (VRE). In 2013, the Centers for Medicare & Medicaid Services (CMS) Inpatient Quality Reporting program introduced a requirement for participating facilities to report positive MRSA blood and CDI specimens to NHSN's MDRO/CDI Module. While national and state MRSA and CDI data are published annually in CDC's National and State HAI Progress Report, the extent of NHSN surveillance in healthcare facilities of the non-required organisms has not been previously described.
METHODS: We analyzed MDRO/CDI Module data for the two most recent years for which data are available, 2015 and 2016, to identify the number, geographic location, and types of healthcare facilities performing surveillance of VRE, extended-spectrum cephalosporin-resistant (ESC-R) *Klebsiella* spp., CRE, methicillin-sensitive *S. aureus* (MSSA), and MDR-*Acinetobacter* spp. LabID events were categorized as healthcare facility-onset (HO; > 3 days after patient admission) or community-onset (CO; ≤ 3 days after patient admission). National HO incidence rates and CO prevalence rates, as well as percentile distributions, were calculated for each MDRO.
RESULTS: In 2015, there were 631 facilities reporting at least 1 month of in-plan VRE data, 594 facilities reporting CRE, 142 facilities reporting MDR *Acinetobacter* spp., 129 facilities reporting ESC-R *Klebsiella* spp., and 88 facilities reporting MSSA. The number of facilities reporting data varied by facility type and state. National incidence and prevalence rates were calculated for each organism using the appropriate denominator (i.e., patient days and admissions). Updated results using 2016 data will be available to present at the conference.
CONCLUSIONS: Among the non-CMS required MDROs, VRE and CRE were the organisms most frequently brought under surveillance by facilities, likely due to state HAI reporting mandates. Fewer facilities reported LabID event data for ESC-R *Klebsiella* spp., MSSA, and MDR-*Acinetobacter* spp. Additional analyses, such as regression modeling, can be performed to establish a risk-adjusted measure for those organisms where sufficient data exist. Providing national benchmarks for the non-required organisms would allow for facility/state comparisons to national data, aid in identifying opportunities for prevention, and encourage additional reporting into the MDRO/CDI Module.

Submission Complete? Yes

Committee Infectious Disease

Topic Healthcare-associated Infections

Keywords Healthcare Associated Infections (HAI); Surveillance; Antimicrobial Resistance

Consider for Different Presentation? Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	8100
Abstract Type	Breakout
Abstract Title	Identifying Possible Hospital Outbreaks of Clostridium Difficile with Satscan and the National Healthcare Safety Network (NHSN)

Abstract

BACKGROUND: Los Angeles County Department of Public Health (LACDPH) requires that general acute care hospitals (GACHs) report suspect *Clostridium difficile* infection (CDI) outbreaks. However, approaches to identify outbreaks vary by facility and often are subjective. To more objectively and systematically identify outbreaks, we assessed the ability of SaTScan, a statistically-based cluster detection software, to detect reported CDI outbreaks from GACHs using National Healthcare Safety Network (NHSN) data.
METHODS: All CDI outbreaks reported to LACDPH by GACHs from 2010 through 2016 were reviewed. For GACHs with a documented outbreak, healthcare facility-onset CDI cases reported to the laboratory-identified (LabID) module of NHSN were analyzed iteratively before and during the reported outbreak by month. A prospective, purely temporal discrete Poisson analysis at both the facility and unit (unique patient care area) level was performed in SaTScan. Statistically significant clusters at the $p < 0.10$ level were compared to reported outbreaks for the date detected, number of cases, and duration.
RESULTS: Seven CDI outbreaks across six GACHs were reported to LACDPH from 2010 through 2016. Reported outbreaks had a median 12 cases (range: 3-38) over a median 49 days (range: 6 to 160). Facility-level SaTScan analysis identified three of the reported outbreaks with clusters including a median 15 cases (range: 3-136) over 30 to 457 days. One such outbreak would not have been detected via SaTScan until 50 days after it was reported. SaTScan would have signaled the others 68 and 216 days earlier than reported, before 17 and 58 subsequent cases occurred, respectively. In all seven outbreaks, SaTScan unit-level analysis identified at least one unit per facility with significantly increased CDI during the outbreak time period. Unit-level clusters had a median 5 cases (range: 2-17) over 61 days (range: 30-517). Five reported outbreaks were focused on a single unit; SaTScan analyses identified four of these units, in which three could have been identified 2 to 185 days earlier, before 2 to 10 subsequent cases occurred. In one facility, SaTScan identified clusters in multiple units adjacent to the unit reported, 98 days earlier than the reported outbreak, and identified 15 additional cases.
CONCLUSIONS: SaTScan is a free software that can systematically identify potential outbreaks, sometimes earlier than traditional reporting. Unit-level analysis is likely more sensitive than facility-level analysis. Health departments and GACHs may consider complementing traditional reporting methods with temporal scan statistics.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Outbreaks; Surveillance; Healthcare Associated Infections (HAI)
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7706
Abstract Type	Breakout
Abstract Title	Implementation of Competency-Based Training Programs for Infection Control in Tennessee Acute Care Hospitals

Abstract

BACKGROUND: Consultative Infection Control Assessment and Response (ICAR) visits at Acute Care Hospitals (ACH), performed by the Tennessee Department of Health (TDH), found gaps in education in various areas of infection control. The ICAR results showed there is often no consistent competency validation, or auditing being performed. In order to determine the needs of Tennessee ACHs and provide the most useful resources to address these gaps, TDH created a survey about the infection control training and auditing practices in ACHs.

METHODS: TDH developed a survey on infection control training and competency for the following domains: hand hygiene, personal protective equipment (PPE), injection safety and environmental cleaning. Competency-based training was defined as the education of a process or skill with return demonstration under supervision. The survey was distributed via e-mail to the ACH Infection Preventionists in Tennessee. The survey was open for a two-week period; 28 (25%) facilities completed it. Data analysis was performed in SAS 9.4.

RESULTS: Forty-six percent of facilities required any personnel to demonstrate competency with hand hygiene following each training; all of these facilities required nursing staff to demonstrate competency compared to 23% for physicians. Fifty- three percent of facilities required any personnel to demonstrate competency with PPE selection and use. Among these facilities, all required the nursing staff to demonstrate competency, but only 20% required physicians to do so. For preparation and administration of injections, 52% of facilities required personnel to demonstrate competency; all facilities required nursing staff but only 14% for physicians. A majority of facilities (85%) required competency with environmental cleaning following each training with 91% requiring environmental services and 26% requiring nursing staff to demonstrate competency. Overall, facilities that didn't require personnel to demonstrate competency reported lack of staff and lack of support from the education staff as their biggest barriers.

CONCLUSIONS: Return demonstration is the best way to show competency and provide staff an opportunity to learn in a non-threatening method. There was an overwhelming lack of competency training across the different infection control domains in acute care hospitals in Tennessee. These data also show differences in training across healthcare personnel roles, with physicians infrequently required to demonstrate competency. The facilities reported a lack of staff as a barrier to implement adequate training, but did not express a lack of support from hospital leadership. TDH will use this information to provide trainings and tools to facilities to address these gaps.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Infection Control
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	8396
Abstract Type	Breakout
Abstract Title	It Takes a Village: Controlling a Methicillin-Resistant *Staphylococcus Aureus* (MRSA) Outbreak in the Neonatal Intensive Care Unit (NICU)-2016

Abstract

BACKGROUND: MRSA is a bacteria resistant to a variety of antibiotics. The NICU population is particularly vulnerable to healthcare-associated colonization and infection with MRSA. In July 2016, a New Jersey hospital reported an outbreak to the New Jersey Department of Health (NJDOH). The initial-line list revealed seven trimethoprim-sulfamethoxazole (TMP/SMX) resistant MRSA infections and six colonizations among NICU patients dating back to March 2016. This report prompted an outbreak investigation by NJDOH.
METHODS: Upon reporting to NJDOH, the hospital began weekly active surveillance testing (AST) for MRSA. Positive and negative cohorts were established for rooms and staff in the NICU. Babies in both cohorts were placed on contact precautions. MRSA positive babies were decolonized. Visitors were restricted to parents or guardians, later the facility implemented a parent mentor program to improve visitor hand hygiene compliance. Unannounced site visits were conducted by NJDOH in August and November 2016. Available isolates were sent to the Centers for Disease Control and Prevention (CDC) for pulse field gel electrophoresis (PFGE).
RESULTS: The investigation lasted from August to December 2016. Twenty-six cases of MRSA were identified between March and December 2016. This included eight invasive infections and 18 colonizations; three cases died during the investigation, though the cause of death is unknown. Following the implementation of control measures, zero cases were reported in September; however, five cases were reported in October. Further investigation revealed a breakdown in cohorting of the patient-care technicians in early October. Isolates from 24 cases were sent to CDC for PFGE, where two clusters were identified: 16 TMP/SMX-resistant isolates matched MRSA Group E, three TMP/SMX-susceptible isolates matched a USA 300 strain. As of December 2016, the facility continues to conduct AST, though there are no MRSA positive patients in the NICU. Standard precautions have been reinstated.
CONCLUSIONS: Systematic surveillance, broad infection control measures, and laboratory testing are all important tools that were used to control this outbreak. A major difficulty identified was that the affected NICU did not have an established AST program in place, so the true background rate of MRSA colonization in the unit was unknown. The unit plans to permanently adopt several of the control measures implemented in response to the outbreak, including AST and physical cohorting of MRSA positive babies. Most importantly, strict adherence to cohorting all staff can be very difficult but is essential in preventing the spread of MRSA.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Infectious Diseases; Infection Control; Antimicrobial Resistance
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	8611
Abstract Type	Breakout
Abstract Title	Multistate Outbreak of Burkholderia Cepacia Complex Infections Among Non-Cystic Fibrosis Patients - United States, 2016

Abstract

BACKGROUND: *Burkholderia cepacia* complex (Bcc) is an emerging cause of healthcare-associated outbreaks often due to contamination of medical products. In May 2016, hospitals in two states notified public health authorities of clusters of suspected healthcare-associated Bcc infections among non-cystic fibrosis patients in intensive care units (ICUs). Molecular analysis identified a previously undescribed Bcc species and the isolates were indistinguishable across facilities in separate regions of the country, suggesting contamination of a common product as an outbreak source.

METHODS: We sought to identify common exposures including devices, medications, and oral and skin care products. A national call for clusters of Bcc in non-cystic fibrosis patients was issued to assist case finding. A confirmed case was the first clinical culture on or after 1/1/2016 of Bcc from a hospitalized patient matching an outbreak strain by molecular typing. A suspect case was a culture yielding Bcc with unknown strain type from a patient in a facility with a confirmed case; once the source was identified, this was expanded to include patients with unknown Bcc strain exposed to the implicated product. Products were cultured for presence of Bcc and isolates were compared by pulsed-field gel electrophoresis (PFGE). National drug codes were collected from medical records to identify medication manufacturers.

RESULTS: Two distinct PFGE patterns of Bcc, labeled Pattern A and Pattern B, were identified from multiple facilities. Sixty-two confirmed cases (48 [77.4%] Pattern A, 14 [22.6%] Pattern B) and 46 suspect cases were identified in 11 states. Fifty of 62 (80.6%) confirmed cases had a positive respiratory culture; however, 11 (17.7%) had a primary or secondary Bcc bloodstream infection. Unopened oral liquid docusate from one facility tested positive for Bcc. In response CDC issued a nationwide health alert recommending facilities immediately suspend use of liquid docusate. Subsequently, docusate products and a water sample from the docusate production line at Manufacturer X grew Bcc including product isolates indistinguishable from clinical isolates with Patterns A and B. Forty-seven (97.9%) Pattern A and 10 (71.4%) Pattern B cases had documented exposure to liquid docusate from Manufacturer X. The manufacturer issued a voluntary recall of liquid docusate, which was later extended to all their manufactured liquid products.

CONCLUSIONS: Epidemiologic and laboratory evidence indicated this large multi-state outbreak of Bcc among susceptible ICU patients was due to contamination of a non-sterile oral liquid docusate product. This investigation demonstrates the importance of timely reporting of unusual clusters of illness and coordinated public health investigation.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Outbreaks; Water; Healthcare Associated Infections (HAI)
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7537
Abstract Type	Breakout
Abstract Title	To Boldly Go Where Few Have Been Before: Infection Control Assessment and Response in the Outpatient Dialysis Setting

Abstract

BACKGROUND: The hemodialysis process requires frequent bloodstream access, which increases risk for healthcare-acquired infections (HAI) among hemodialysis patients. Outpatient hemodialysis facilities are a common setting for hepatitis C outbreaks reported to the Centers for Disease Control and Prevention (CDC). The Infection Control Assessment and Response (ICAR) Program provides funding for state and local health departments under CDC's Epidemiology and Laboratory Capacity Program. ICAR complements existing public health HAI programs by facilitating direct assessment of infection prevention practices and identification of gaps in outpatient dialysis facilities. Objective, non-regulatory ICAR assessments aim to build trust and partnerships between dialysis facility staff and public health departments.

METHODS: Outpatient dialysis facilities are recruited via health department outreach to receive ICAR assessments. Facilities are interviewed using a standardized, hemodialysis-specific assessment tool regarding infection prevention practices in eleven domains and direct observations of practice are completed for seven activities using CDC audit tools. Awardees are encouraged to provide immediate feedback and additional resources to assist facilities to address gaps and make improvements. Assessment forms are de-identified and submitted quarterly to CDC for aggregate data analysis. We examined responses to interview questions and percent adherence from audits performed to identify common gaps.

RESULTS: Between October 2015 and October 2016, 20 health departments completed 168 dialysis facility assessments. Eighteen facilities (11%) were selected because of a current or past outbreak, 11 (7%) based on input from a quality improvement organization or survey agency, and 3 (2%) based on data reported to the National Healthcare Safety Network (NHSN). Most (112 [67%]) facilities were owned by large dialysis organizations; 26 (15%) were hospital-affiliated. Half of assessed facilities (51%, n=85) were not participating in HAI prevention programs. Common infection control challenges identified included suboptimal distance separating adjacent treatment stations (156 [96%]) and absence of a separate room for storage and preparation of injectable medications (60 [79%]). Complete adherence to CDC-recommended practices for central venous catheter exit site care was reported in only 21 (13%) facilities. Observed infection control practices with the lowest pooled percent adherence to CDC-recommended steps included routine surface disinfection of the dialysis station (19%), catheter exit site care (28%), and hand hygiene (46%).

CONCLUSIONS: Outpatient dialysis facility ICAR visits identified multiple infection prevention gaps and opportunities for improvement. The ICAR program can help build relationships between public health and dialysis facilities that can then be leveraged to address infection prevention challenges in this setting.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Infection Control; Healthcare Associated Infections (HAI); Capacity / Capacity Building
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7509
Abstract Type	Breakout
Abstract Title	Using National Healthcare Safety Network Central Line-Associated Bloodstream Infection and Catheter-Associated Urinary Tract Infection Data to Identify Potential Clusters

Abstract

BACKGROUND: The Tennessee Department of Health (TDH) requires acute care hospitals to report central line-associated bloodstream infections (CLABSI) and catheter-associated urinary tract infections (CAUTI) in intensive care units and medical, surgical, and medical-surgical ward locations to the National Healthcare Safety Network (NHSN). TDH distributes monthly reports to facilities regarding NHSN data quality and completeness as well as quarterly reports summarizing HAI performance. However, until 2016 TDH did not systematically review CLABSI or CAUTI data to identify potential clusters of infections.

METHODS: Using SAS 9.4, NHSN data were analyzed to identify potential clusters of infections and organisms at the unit-level, location type (ICU vs. ward), and facility-level. For each potential cluster, a report was generated including a table summarizing monthly data for the location, the CAUTI/CLABSI rate, organisms isolated, and a visual display of the CAUTI/CLABSI rate, compared to the facility-wide and statewide CAUTI/CLABSI rate over the previous 12 months. Twice a month, the reports are reviewed by HAI staff to identify significant clusters of infections and distributed to the hospital when follow-up is warranted. After sharing the report with the hospital, follow-up is conducted via email or phone.

RESULTS: Since implementing the reports in October 2016, 28 potential clusters have been identified. Of the potential clusters, 22 were reviewed and determined to not require any follow-up with the facility. Generally, these are situations with a single-month increase, followed by several months with no additional infections. Six reports were shared with the hospital infection prevention staff and follow-up was conducted. In one case, follow-up was conducted via phone call with infection prevention staff where TDH provided consultation and additional prevention resources to the hospital. In all 6 cases, the infection prevention staff were already aware and addressing the increase in infections.

CONCLUSIONS: While in the early stages of implementation, these reports provide a method of monitoring NHSN data on a regular basis to identify potential clusters of infections or organisms. There are opportunities to refine the method of cluster detection, but the format of the report, including a visual comparison of performance across the hospital and appropriate statewide comparison has received very positive feedback from hospitals. Hospitals appreciated external review of their NHSN data and the additional resources offered. This process has also given TDH an opportunity to strengthen our relationship with hospitals and improve communication regarding suspected HAI clusters and outbreaks.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Surveillance
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7640
Abstract Type	Lightning
Abstract Title	Assessment of Perception and Use of First Hospital-Specific Healthcare-Associated Infection Feedback Reports, Georgia

Abstract

BACKGROUND: Healthcare-associated infections (HAI) cause an estimated 722,000 infections and 75,000 deaths annually, and are often preventable. Regular monitoring and use of HAI data by hospitals is needed to target infection prevention resources. The Georgia Department of Public Health created 125 hospital-specific HAI feedback reports to provide a summary of 2014 data reported by the facility to CDC's National Healthcare Safety Network (NHSN) with state and national benchmarks for comparison. We assessed how facilities perceived and used the reports.

METHODS: In October 2015, we sent the HAI summary reports to the CEO and NHSN administrator of hospitals participating in the Centers for Medicaid and Medicare Services Quality Reporting Requirement. Reports provided the hospital's standardized infection ratio (SIR), SIR interpretation, Georgia's SIR, number of infections, Health and Human Services HAI reduction goal, number of infections to prevent to reach the goal, status as a top five contributor to Georgia's SIR, and estimated cost per infection. We invited recipients to take a voluntary online survey March 2016 which asked about the report's receipt, accuracy, usefulness, frequency, suggested format changes, and desired training.

RESULTS: There were 41 survey respondents, representing 33% of Georgia hospitals that received reports. Most (81%) indicated receipt by the NHSN administrator and 32% indicated additional staff should receive the report. Twenty-nine percent (29%) of respondents did not know if the report was accurate; 5% said it was inaccurate. Most (83%) found the report useful, specifically the estimated cost per infection (69%), Georgia's SIR (69%), and single table format (59%). The most common uses of the report were to present HAI data to facility leadership (58%), assess progress toward goals (42%), and prioritize infection prevention activities (42%). One respondent justified hiring additional staff. Suggested report additions were the previous year's data (68%), number of predicted infections (51%), and 95% confidence interval for the SIR (38%). Over half (60%) wanted training, mostly (79%) in the form of reference documents.

CONCLUSIONS: The HAI summary reports were a useful tool for sharing data, self-assessment, and prioritization within hospitals. The most important report features were the estimated cost per infection and state comparison data. In response to suggestions, the 2015 feedback report included the number of predicted infections and 95% confidence interval for the SIR. That 29% of respondents did not know if the report was accurate reflects underutilization of data and highlights the continued role for state-conducted data analysis and hospital-specific reporting.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Surveillance; Evaluation; Healthcare Associated Infections (HAI)
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7581
Abstract Type	Lightning
Abstract Title	Evaluation of a CRE Sentinel Surveillance System in North Carolina

Abstract

BACKGROUND: Carbapenem-resistant Enterobacteriaceae (CRE) cause approximately 9,300 healthcare-associated infections annually and are resistant to nearly all antibiotics. Mortality rates up to 50% have been reported. During March 1, 2015 to September 1, 2016, the North Carolina Division of Public Health (NC DPH) implemented CRE sentinel site surveillance. Public health epidemiologists (PHEs) at the state's seven largest hospital systems conducted CRE surveillance by reviewing laboratory results, submitting case report forms (CRFs), and coordinating the submission of isolates for molecular phenotyping. We evaluated this surveillance system to assess performance and inform CRE policy decisions.
METHODS: Referencing CDC guidelines, we conducted semi-structured interviews with PHEs and laboratory personnel to assess simplicity, data quality, acceptability, stability, and overall usefulness of the system. We assessed data completeness, timeliness, and predictive value positive (PVP) by analyzing surveillance database variables using SAS. PVP was calculated as the proportion of reported cases that met the case definition. We compared facility-level variables reported to the National Healthcare Safety Network (NHSN) in 2015 between the seven surveillance sites and all other NC acute care hospitals (n=98) to assess representativeness.
RESULTS: Simplicity was moderate; surveillance involved 16 key individuals across nine organizations. Flexibility was high; all system components (e.g. electronic CRF, Access database) were developed, maintained, and readily adaptable by DPH. Data completeness was high; four of 37 (10.8%) key variables had missing values in more than 10% of records. Acceptability was high with six of seven (85.7%) PHEs and four of six (66.7%) clinical laboratorians willing to continue voluntary surveillance. Stability was moderate in terms of personnel and programs; four of seven (57.1%) PHEs and six of six (100%) clinical laboratorians indicated there was another individual at their facility capable of performing CRE surveillance responsibilities. Timeliness was low (median 34.5 days from specimen collection to report to DPH and median 61 days from specimen collection to arrival at the State Laboratory of Public Health). PVP was 94.4%. Representativeness was moderate; sentinel sites represented 6,043 of 21,603 (28.0%) acute care hospital beds and 1,731,622 of 5,291,220 (32.7%) acute care hospital patient days reported in NHSN.
CONCLUSIONS: The system has been useful in describing the burden of CRE in NC; its flexibility will permit improvements to simplicity, acceptability, data quality, and timeliness. Feedback from key stakeholders emphasized the need for a standardized CRE case definition that incorporates clinical and laboratory components. The future of CRE surveillance in NC is under discussion.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Antimicrobial Resistance; Evaluation
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	8147
Abstract Type	Lightning
Abstract Title	Extent of Training of the Infection Prevention Contact in Acute Care Facilities, Nursing Homes and Ambulatory Surgery Centers in Nebraska.

Abstract

BACKGROUND: Efforts to decrease Healthcare Associated Infections (HAIs) are increasing. To accomplish improved infection prevention (IP) practices in acute and long term care facilities it is important to have an understanding of the level of IP training of the lead in infection control (IC) at each institution and to know how much time is devoted to the practice of IC at each facility.
METHODS: A survey was sent by fax to all acute care hospitals, PPS (prospective payment system) and CAH (critical access hospitals), skilled nursing facilities (SNF), and ambulatory surgery centers (ASCs). Follow up faxes were sent to non-responders. The questions asked: who is the lead contact for IC, what percentage of an FTE (full time employee) was devoted to IP, have they had any training in IP including an APIC (Association for Practitioners of IC) course, NICN (Nebraska IC Network) course, or CIC (Certification in IC and Epidemiology) certification courses and were they CIC certified.
RESULTS: There are 29 PPS hospitals in Nebraska, all replied. 25 reported their IC contact had some level of specific IP education, only 12 or 41% were CIC certified. Of CAHS, 52 of the 64 responded, 44 or 86% had some level of IP training, 4 or 8% were CIC certified. 36 of 47 ASCs replied, 27 reported the lead IP had some IP training, 2 were CIC. There are 228 SNFs, 155 replied. 52 or 35% of the IP contact had some level of IP training, 1 was CIC. In PPS hospitals, 80% had a (FTE) devoted to IC, with 86% having .75 FTE. 1/3 of CAHs had one FTE but 1/3 had less than 25% FTE. In ASCs, 72% had less than 25% FTE for IP. In SNFs, 1/3 had a FTE, more than 50% had less than .25 FTE.
CONCLUSIONS: Most PPS hospitals had at least one FTE devoted to IC and most had specialized training in IP. Less than 50% were CIC. 1/3 of the IC contacts at SNFs had specialized training in IC. IC contacts at CAHs and ASCs had higher levels of IP training than expected (86% and 75%, respectively.) There was a wide range of the amount of time was devoted to IP in CAHS, SNFs, and ASCs. In summary, more consistent levels of CIC certification should be encouraged at acute care institutions. In non-acute care facilities an increased level of training and time spent on IC might be appropriate.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Professional Development; Infection Control
Consider for Different Presentation?	Yes

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Submission Type Breakout/Quick/Lightning/Poster

ID 8574

Abstract Type Lightning

Abstract Title Impact of 2015 Cauti Definition Change on Clabsi Rates

Abstract

BACKGROUND: Annual changes to National Healthcare Safety Network (NHSN) Patient Safety Component surveillance definitions may affect rates from year to year due to modifications in infection classifications. Central line-associated bloodstream infections (CLABSI) may be considered primary infections that are not related to infections at another site or secondary infections that are related to other infections that identify the same blood pathogen in a different clinical specimen. This study investigates the hypothesis that the observed CLABSI rates in Louisiana in 2015 were due to the exclusion of Candida species and yeasts from the catheter-associated urinary tract (CAUTI) infection definition.
METHODS: CLABSI and CAUTI cases from adult critical care units were extracted from the Louisiana NHSN Data Use Agreement Group. Rates were calculated as the number of infections divided by the number of device-days. Rates were compared from year to year for statistically significant changes. Data were analyzed in SAS version 9.3 and with the NHSN Statistics Calculator.
RESULTS: The overall CLABSI rate rose from 1.22 to 1.62 from 2014 to 2015 ($p=0.003$). The rate of these infections that were identified with Candida species or yeast rose from 0.27 to 0.40 ($p<0.0001$) from 2014 to 2015. The rate of CAUTI with secondary CLABSI decreased from 0.10 to 0.04 ($p=0.016$), and the overall CAUTI rate fell from 1.85 to 1.33 ($p<0.0001$) from 2014 to 2015. The aforementioned measures did not significantly change from 2013 to 2014.
CONCLUSIONS: Increases in CLABSI rates and commensurate decreases in CAUTI rates from 2014 to 2015 may be the result of NHSN definition updates that excluded Candida species and yeasts from the 2015 CAUTI definition. Aside from CLABSI rates, other infection measures may be affected by the definition update. These data demonstrate concomitants that may be incurred from NHSN definition updates. NHSN rates may be affected by a number of factors, including competent surveillance processionals and adherence to standardized Patient Safety Component definitions.

Submission Complete? Yes

Committee Infectious Disease

Topic Healthcare-associated Infections

Keywords Infection Control; Infectious Diseases; Healthcare Associated Infections (HAI)

Consider for Different Presentation? Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	8442
Abstract Type	Lightning
Abstract Title	Outbreak Reporting By Hospitals and Nursing Homes - New York State, 2010-2015

Abstract

BACKGROUND: Hospitals and nursing homes are required to report all outbreaks and certain communicable diseases to the New York State Department of Health (NYSDOH) Nosocomial Outbreak Reporting Application (NORA). New York State (NYS) also has a role-based directory which allows communication with healthcare personnel, such as infection control practitioners (IPs), when contact information for a person with that role is populated by facilities. As part of performance improvement activities, in 2013 the NYSDOH began contacting facilities that had not reported to NORA and those with no personnel listed in the IP role.
METHODS: A total of 175 hospitals and 613 nursing homes in NYS were analyzed, after excluding Critical Access Hospitals, facilities with 25 or fewer acute care or residential beds, and facilities not open during the time periods analyzed. A facility was considered to be underreporting if it submitted zero NORA reports from 2010 to 2012 or 2013 to 2015. Reporting was analyzed during these two time periods to determine trends. Data from the role-based directory was analyzed to determine if facilities with an assigned IP role were more likely to report. The analysis was performed using SAS 9.3 and Excel.
RESULTS: The number of outbreaks reported to NORA by hospitals increased from 2010-2012 (N=616 total reports) to 2013-2015 (N=930). The number of unique hospitals that reported to NORA between the two time periods decreased from 133 to 132. The number of outbreaks reported to NORA by nursing homes increased from 2010-2012 (N=2,531) to 2013-2015 (N=3,144). The number of unique nursing homes that reported to NORA between the two time periods increased from 518 to 579. Approximately 96% of nursing homes with a person listed in the IP role reported to NORA at least once, compared to 84% of nursing homes with no person listed in the IP role (chi-square $p<0.05$). No significant difference was found among hospitals with or without a listed IP role.
CONCLUSIONS: There was a marked increase in the number of outbreaks reported to NORA during 2013-2015 compared to 2010-2012. This may be related to NYSDOH outreach. A limitation is that the earliest IP role data available was from January 2016, one month after the time period analyzed. Timely and complete reporting of communicable diseases is critical for NYSDOH response activities. NYSDOH's efforts to contact facilities with low compliance should be continued, including an assessment of the barriers to NORA reporting.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Outbreaks; Infection Control; Healthcare Associated Infections (HAI)
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7591
Abstract Type	Poster
Abstract Title	Assessing the Use of Potentially Contaminated Heater-Cooler Devices in Tennessee Healthcare Facilities

Abstract

BACKGROUND: Investigators in Switzerland reported a cluster of six patients diagnosed with *Mycobacterium chimaera* in the spring of 2015. All six cases had open-chest surgery performed in facilities with Stöckert 3T Heater-Cooler System manufactured by LiveNova PLC (formerly Sorin Group Deutschland GmbH). Between January 2010 and August 2015, the U.S. Food and Drug Administration (FDA) received thirty-two Medical Device Reports (MDRs) regarding infections associated with heater-cooler devices (HCD). In October 2015, FDA released the first official recommendations, regarding the use of Sorin 3T devices. In October 2016, FDA updated their recommendations and the Centers for Disease Control and Prevention (CDC) utilized the Health Alert Network advising hospitals to notify patients who were potentially exposed to this HCD. The Tennessee Department of Health (TDH) developed a RedCAP database to determine which facilities had heater-cooler devices, as well as determine compliance with FDA/CDC recommendations.
METHODS: TDH identified 47 facilities from 2014 and 2015 hospital discharge data, as well as the National Healthcare Safety Network, which performed at least one of the following procedures: abdominal aortic aneurysm repair, cardiac surgery, coronary bypass with chest incisions, and coronary bypass with chest and donor incisions, or heart transplant. Infection preventionists were targeted at each facility, but they were encouraged to consult perfusionists. Facilities were asked about the manufacturer of HCDs. If Sorin 3T devices were used at any point, they were also asked about the dates of use and implementation of manufacturer's 2015 instructions and FDA/CDC recommendations.
RESULTS: Twenty-six facilities reported the use of any HCD and 18 (69%) used at least one Sorin 3T device. A majority of Sorin 3T users had implemented October 2015 FDA recommendations (94%) and reviewed microbiology laboratory databases for *M. chimaera* or *M. avium* complex cultures (67%). Very few facilities had implemented informed consent or prospective surveillance. Twelve facilities utilized data sources such as the Society of Thoracic Surgeons (STS) database and Hospital Discharge data to identify potentially exposed patients. Among these twelve facilities, it was estimated approximately 18,133 patients were possibly exposed to potentially contaminated HCDs.
CONCLUSIONS: TDH utilized survey information collected to raise awareness and identify gaps in implementation of current FDA/CDC recommendations. Additionally, this survey provided TDH a preliminary understanding of the number of potentially exposed patients. TDH was able to use these survey data to rapidly ascertain potential exposures in two suspect case investigations.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Infectious Diseases; Health Care
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	8164
Abstract Type	Poster
Abstract Title	Comparing Healthcare-Associated Group a *Streptococcus* Infections to Community-Associated Group a *Streptococcus* Infections in Minnesota, 2000-2013

Abstract

BACKGROUND: Group A *Streptococcus* (GAS) causes invasive infections in healthcare facility and community settings. We compared demographic, clinical and microbial characteristics of healthcare-associated (HA) and community-associated (CA) cases in Minnesota.
METHODS: Population- and laboratory-based active surveillance of invasive (i) GAS is conducted within CDC's Active Bacterial Core surveillance. Cases are infections with GAS isolated from a normally sterile site, or wound if accompanied by necrotizing fasciitis. Cases are defined as HA if they occur in a person who had surgery (postsurgical) or delivered an infant (postpartum) ≤7 days before culture, or GAS was cultured ≥3 days after hospital admission (hospital-onset-[HO]) (categories not mutually exclusive). Clinical information is obtained by record review. Isolates are submitted to CDC for *emm* typing.
RESULTS: From January 1, 2000 to December 31, 2013, 2,428 iGAS cases were reported. Of these, 206 (8.5%) were classified as HA; 99 (48.1%) were HO, 76 (36.9%) postsurgical, and 47 (22.8%) postpartum. Among persons with HA iGAS, median age was 40 years, and 124 (60.2%) were female. Among persons with CA iGAS, median age was 53 years, and 1003 (45.1%) were female. HA iGAS cases were significantly younger (p<0.001), more often female (p<0.001), American Indian (p=0.019), or non-white (p=0.001) than CA iGAS cases. Excluding postpartum cases, the age and sex of both HO and postsurgical iGAS cases were similar to CA cases, although race differences persisted (p=0.008). Presence of comorbidities did not differ between HA (53.4%) and CA (57.2%) cases, but comorbidities were more common in HO vs. CA cases (p=0.021). GAS was more frequently isolated from peritoneal fluid (OR 3.52, p=0.009), bone (OR 2.55, p=0.014) and internal body sites (OR 2.94, p=0.008) of HA compared to CA cases. Case fatality ratios were lower for HA than CA cases (5.8% vs. 10.1%; p=0.049). Associations remained after adjusting for presence of comorbidities. *Emm* results were available for 2,178 (89.7%) GAS isolates; 48 *emm* types were identified. The distribution of *emm* types among HA and CA cases were similar.
CONCLUSIONS: After exclusion of postpartum cases, differences in patient race and specimen source between HA (HO and postsurgical cases) and CA iGAS cases persisted. Racial differences remained after adjusting for presence of comorbidities. These differences could be attributed to differences in socioeconomic status, access to healthcare or other risk factors not measured by surveillance. Further investigation may help guide future prevention efforts.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Infectious Diseases; Epidemiology
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	8562
Abstract Type	Poster
Abstract Title	Costs Associated with a Public Health Response to Drug Diversion-Colorado, 2016

Abstract

BACKGROUND: Drug diversion by health care workers (HCWs) puts patients at risk for blood borne pathogens (BBPs). Six US outbreaks secondary to HCW drug diversion have been reported since 2004. The opioid epidemic may accelerate incidence; HCWs are more likely to abuse prescription drugs than the general population. Drug diversion investigations can be expensive for public health departments due to extensive staff time to determine patient risk and track patient notifications and test results. In January 2016, the Colorado Department of Public Health and Environment (CDPHE) received a report of a surgical technician diverting fentanyl, putting ~3,000 patients at risk. We report a cost analysis of the public health response which included investigation and patient notification.
METHODS: Personnel time for the CDPHE response was determined by reviewing archived documents and conducting interviews with staff, and included all staff time associated with the investigation and response. Hospital time and costs, including cost of hospital staff time, patient notifications, patient testing, and responding to public and patient questions, were not included. Time was broken down into categories for each part of the investigation and hours of staff time were converted to cost based on staff salaries and overhead costs.
RESULTS: CDPHE's response required 24 employees from disease control, legal, communications, and emergency preparedness for a total of 1,026 hours of staff time. The investigation included interviewing the HCW and co-workers, determining risk to patients, providing testing recommendations for notified patients, coordinating with the hospital, and managing test result data. Extensive subject matter expertise from CDPHE leadership was also required. The estimated cost for the CDPHE response was $74,480. The breakdown was as follows: $6,643 for the investigation to assess patient risk, $16,216 for coordination with the hospital, $13,758 for monitoring and analysis of patient test results, $15,891 for leadership involvement, $7,364 for media, legal, and emergency preparedness involvement, and $14,608 for overhead costs.
CONCLUSIONS: A public health investigation following a possible BBP exposure due to HCW drug diversion is cost-intensive. When a patient notification is required based on risk assessment, this also increases cost to public health, even when the healthcare facility conducts the patient notification and testing. Given the extensive costs required for drug diversion investigations, efforts should be directed toward prevention.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Cost-Effectiveness; Healthcare Associated Infections (HAI)
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	8263
Abstract Type	Poster

Abstract Title

Epidemic Keratoconjunctivitis Outbreak Due to Human Adenovirus Type 8 — US Virgin Islands, 2016

Abstract

BACKGROUND: Epidemic keratoconjunctivitis (EKC) is caused by human adenoviruses (HAdV); outbreaks have been linked to eye-care settings. In October 2016, increased cases were reported in St. Thomas, U.S. Virgin Islands. We investigated factors associated with infection and provided infection control recommendations.
METHODS: A case was defined as a clinical diagnosis of acute conjunctivitis by an ophthalmologist or optometrist in a patient in St. Thomas during June 1–November 10, 2016. Medical records were reviewed and conjunctival swabs from patients and environmental samples from high-contact surfaces and eye-care equipment were tested for HAdV using real-time PCR.
RESULTS: We identified 70 patients who met the case definition; of 12 tested for HAdV, 9 (75%) were positive for HAdV type 8. Median age was 46 years (range, 9 months–90 years); 27 (39%) were male. Ocular symptoms included redness (66%), watery discharge (44%), and pain (33%). Severe signs included corneal infiltrates (19%) and pseudomembranes (7%). Ten patients (14%) had eye-care clinic exposure within the month preceding symptom onset. A symptomatic household or family contact was documented for 9 (13%) patients. HAdV was detected in 9 (20%) of 44 environmental samples from practices where patients had previous eye-care visits, including eye-care equipment and hand sanitizer dispensers.
CONCLUSIONS: During this community outbreak of HAdV, prior practice visits among patients and positive environmental samples from eye-care clinics suggested healthcare-associated transmission. Recommendations included implementation of strict infection control practices in healthcare settings, advising patients on HAdV infection prevention, and enhanced EKC surveillance to detect additional transmission.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Local Epidemiology; Outbreaks
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7889
Abstract Type	Poster
Abstract Title	Equipping Skilled Nursing Facility Staff to Achieve New CMS Requirements for Antimicrobial Stewardship

Abstract

BACKGROUND: Approximately 4.1 million Americans receive healthcare in skilled nursing homes (SNF) each year. Up to 70% of SNF residents receive an antibiotic each year, and up to 75% of these antibiotics are prescribed incorrectly. Antibiotic use in SNFs varies considerably, suggesting an opportunity for improvement. *Clostridium difficile* and antibiotic resistant infections are more common in SNFs with high antibiotic use. Centers for Medicare and Medicaid Services (CMS) recently updated conditions of participation mandating that all long term care facilities establish an antimicrobial stewardship program (ASP). Currently, most SNFs lack formal ASPs.
METHODS: A subcommittee to the Washington State Department of Health HAI Advisory Committee was formed to strategize how to assist SNFs to meet the new CMS requirements for stewardship. This group included representatives from Washington and Idaho State and local public health, the states' quality improvement organization, Washington State SNF survey agency, local chapters of Association for Professionals in Infection Control, SNF trade associations, SNF providers, and stewardship experts. EQuIP—Education, Quality, Infection Prevention—for Long Term Care (LTC) is modeled after a similar program for critical access hospitals, and was conceived to provide webinar-based education focused on critical knowledge for establishing an ASP and for strengthening infection prevention (IP); web-based tools, templates and resources; mentors experienced in IP and stewardship available to field questions from SNF staff; and collaborative learning. A gap survey based on the CDC Core Elements of Stewardship for Nursing Homes was developed and disseminated to all SNFs in Washington and Idaho. Results from the survey will be used to develop the curriculum for webinars.
RESULTS: The gap survey was disseminated in December 2016 and results will be summarized in January 2017. The first webinar is planned for late January 2017, and subsequently will occur monthly. We will track the number of participants on webinars and number of electronic visits to the EQuIP for LTC website, as well as results of an annual survey of facility stewardship and IP resources. SNFs formally enrolled in EQuIP for LTC will be encouraged to track available data such as antibiotic use, *Clostridium difficile* infections, and antibiotics ordered without indication.
CONCLUSIONS: New CMS requirements for LTC facilities to establish an ASP may present challenges. EQuIP for LTC will provide education, support and resources to staff in SNFs to successfully meet the new regulatory requirements and improve care for residents.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Collaboration; Antimicrobial Resistance; Healthcare Associated Infections (HAI)
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7663
Abstract Type	Poster
Abstract Title	Identifying Gaps in Infection Control through a Clostridium Difficile Prevention Collaborative in Acute Care Hospitals

Abstract

BACKGROUND: The primary objective of the *Clostridium difficile* infection (CDI) prevention collaborative is to decrease rates of CDI while optimizing antimicrobial use in acute care hospitals (ACH) within the state. Strategies include improving early detection techniques, communication between transferring facilities, infection control and environmental cleaning, and antibiotic stewardship.
METHODS: Facilities targeted for enrollment were based on the combined ranking of facilities by community-onset cumulative attributable difference (CO-CAD) and hospital-onset standardized infection ratio (HO-SIR). A total of 8 facilities agreed to participate. Seven facilities were visited while one was assessed via online questionnaire and phone interview. Site visits included open-ended interviews with executive leadership, department directors, and front-line staff including nurses, CNAs, and environmental services staff and a walk-through assessment of the physical environment. Frontline staff also completed an online facility assessment survey (Likert-type scale).
RESULTS: Laboratorians reported rejection of formed stools "Always" at 50.0% and duplicate stools as "Always" at 42.9%. Facility percent positivity over the previous 6 months (# positive tests/total # performed) ranged from 3.9% to 25.9%. When asked "How often do physicians adhere to hand hygiene policies" only 15.5% of respondents responded "Always". Facility-wide antibiograms were published and available in most facilities for use as prescriber tools. Responses by administration to the online-survey were not significantly different when compared to those of frontline staff for infrastructure-related questions. Healthcare onset rate for participants decreased during collaborative period but not significantly (Figure 1). An assessment report with resources was provided after each visit. A webinar series was produced covering the common gap areas.
CONCLUSIONS: Common gaps present amongst facilities include hand hygiene (particularly among physicians), lack of documented indications for prescribed antibiotics, and adherence to appropriate testing guidelines. The downward trend in healthcare-onset rate was not significant; however, the collaborative highlighted several areas of improvement for each facility. The partnership between the state health department and quality improvement organization increased success of the collaborative.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Infection Control; Healthcare Associated Infections (HAI)
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7981
Abstract Type	Poster
Abstract Title	Identifying Transmission of Multidrug-Resistant Organisms in an Indiana Long Term Care Facility and Recommendations to Control Transmission

Abstract

BACKGROUND: Multidrug-resistant organisms (MDRO) in healthcare facilities create challenges for infection control. In July, 2016, a long term care (LTC) facility reported four tracheal residents tested positive for *Acinetobacter baumannii* based on admission surveillance cultures. After reviewing other residents' charts, prior MDRO infection within the last year was identified among 13 residents.

METHODS: The LTC facility's screening protocol for newly admitted/readmitted tracheal residents required collecting a tracheal aspirate for culture. The attending physician then determined if positive results were attributable to colonization or infection. If residents were infected, the physician prescribed appropriate treatment. A point prevalence survey was conducted on all trach residents to determine the status of patient infection and whether transmission was occurring within the facility or being imported. The survey required the collection of trach aspirates/sputum cultures for *Pseudomonas* /*Acinetobacter* and stool samples/rectal swabs for carbapenem-resistant *Enterobacteriaceae* (CRE). Isolates were sent to the Indiana State Department of Health (ISDH) Laboratory and Centers for Disease Control and Prevention (CDC) for testing.

RESULTS: Based on pulsed-field gel electrophoresis (PFGE) results from the point prevalence survey, two main clusters of *Klebsiella* were identified, cluster A and cluster B, each containing two isolates. Two other *Klebsiella* isolates were closely related to cluster A and four others were related to cluster B. In addition, two clusters of *Acinetobacter* were identified, cluster A had four isolates and cluster B had two isolates. Additionally, two other *Acinetobacter* isolates were found to be related to cluster A and B, respectively. Finally, one cluster of *Pseudomonas* was identified with two indistinguishable isolates, which were the rectum and the sputum sample from the same resident. The remaining eight *Pseudomonas* isolates were unrelated.

CONCLUSIONS: Since all *Klebsiella* and *Acinetobacter* isolates were indistinguishable or closely related, transmission of those organisms likely occurred within the facility. Most of the *Pseudomonas* isolates were unrelated, suggesting importation. The ISDH and the CDC recommended that the LTC facility continue surveillance screening for newly admittance/readmitted trach residents; however, the screening protocol should be expanded to include rectal screening for CRE. Staff education is crucial in implementing tiered transmission-based precautions which includes appropriate hand hygiene, personal protective equipment, and contact precautions. Diligent environmental cleaning of frequently touched surfaces and equipment is also recommended.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Antimicrobial Resistance
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7725
Abstract Type	Poster
Abstract Title	Infection Control and Antibiotic Stewardship in South Carolina Nursing Homes

Abstract

BACKGROUND: Over 4 million Americans are admitted to or reside in nursing homes each year. It is estimated that 380,000 people die of infections in LTCFs every year and up to 75% of antibiotics in this setting are prescribed incorrectly. These statistics demonstrate the need to improve infection control infrastructure in these facilities. The South Carolina Department of Health and Environmental Control (DHEC) sought to determine the status of infection control and antibiotic stewardship practices in Nursing Homes.
METHODS: DHEC designed a survey to evaluate the status of infection control and antibiotic stewardship policies and practices in Nursing Homes. DHEC collaborated with the Carolinas Center for Medical Excellence (CCME), the state's quality improvement organization, to distribute the survey. CCME enrolled 130 Nursing Homes (NH) into the Action Collaborative for Excellence (ACE). DHEC attended 3 ACE learning sessions across the state where a total of 54 NHs were present; 50 facilities completed the survey (93%).
RESULTS: The majority of NHs (74%) didn't have a dedicated infection preventionist (IP), with 30% of NHs identifying the Assistant Director of Nursing (ADON) and 22% identifying the DON as the person responsible for infection control activities. Ninety-four percent of NHs reported that they have evidence-based infection control policies and procedures available for staff. All facilities had provided training on hand hygiene in the last 12 months, but only 66% provided training on infection surveillance and 26% on antibiotic stewardship. NHs reported that they always receive information from a transferring facility about a patient's infection status 22% of the time, often receive information 38% of the time and sometimes receive information 38% of the time. Only 24% of facilities reported following the updated McGeer criteria for surveillance definitions; 22% of NHs said they often prescribe antibiotics for asymptomatic bacteriuria and 46% said they sometimes prescribe. Only forty-eight percent of NHs reported having a leader for antibiotic stewardship activities.
CONCLUSIONS: LTCFs struggle to keep a consistent, qualified person to oversee the infection control program. This is problematic as LTCFs admit sicker residents in higher numbers than in the past. Facilities can enhance their ICP by sending a delegate to a formal IP training program where they can ascertain skills, tools and resources to establish and continually improve their infection control program. DHEC used these results to target facilities for participation in the consultative Infection Control and Response visits.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Infection Control; Healthcare Associated Infections (HAI)
Consider for Different Presentation?	Yes

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Submission Type Breakout/Quick/Lightning/Poster

ID 8291

Abstract Type Poster

Abstract Title Infection Control Assessment and Response Program: Long-Term Care Facilities in Houston, Texas, 2016

Abstract

BACKGROUND: Over five million Americans are admitted to or reside in nursing homes, skilled nursing or assisted living facilities (collectively known as long-term care facilities or LTCFs). Healthcare-associated Infections (HAIs) are a major cause of hospitalization and death in these facilities. Each year in the United States an estimated 380,000 deaths in LTCFs are caused by HAIs. The Infection Control Assessment Tools (IC Tools) have been developed by CDC for awardees under the Epidemiology and Laboratory Capacity (ELC) Infection Control Assessment and Response (ICAR) Program, to assist health departments in assessing infection prevention practices and guide quality improvement activities at healthcare facilities. The objective of this study is to examine the aggregate findings obtained from on-site infection control assessments of LTCFs conducted by the Houston Health Department (HHD).
METHODS: Between March-December 2016, ten LTCF on-site assessments were conducted by the HHD via the IC Tool. The IC Tool is a fillable Word document with 74 Yes/No questions. All responses were obtained via a discussion with the person responsible for coordinating the infection prevention program (infection preventionist or IP) at the facility. The applied definition of an active infection prevention competency-based training program is in accordance with the CDC's recommendation which includes trainings, competency validations, audits and feedbacks. Descriptive analysis was performed by ICAR Database tool v4_1.
RESULTS: Among the ten LTCFs, the mean of total staff hours per week dedicated to infection prevention activity was 21 hours (ranged from 4-40 hours/week). The mean of total licensed bed capacity in the LTCFs was 117 beds (ranged from 37-200 beds). In eight facilities, the IP had not received infection prevention and control training and in no facility was the IP certified in infection control. The number of facilities with an active competency-based training program were as follows: hand hygiene (n=5), personal protective equipment (n=4), injection safety (n=4) and environmental cleaning (n=3).
CONCLUSIONS: Although education and training of the IP are at the discretion of the hiring facility, certification in infection control is highly recommended. The Association for Professionals in Infection Control and Epidemiology recommends 40hrs per week dedicated to infection control per 150-250 beds. Further studies are needed to identify the effective number of staffing hours for the IP in LTCFs. Education on competency-based training in all areas of infection control is needed for LTCFs within Houston. In 2017, HHD will be conducting additional on-site visits to further expand the ICAR program.

Submission Complete? Yes

Committee Infectious Disease

Topic Healthcare-associated Infections

Keywords Epi / Lab Capacity (ELC); Infection Control; Healthcare Associated Infections (HAI)

Consider for Different Presentation? Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	8581
Abstract Type	Poster
Abstract Title	Infection Control Educational Content in Nursing and Allied Health Schools in Nebraska

Abstract

BACKGROUND: Approximately three quarters of a million health-care associated infections (HAIs) occur each year in the US. HAIs may be preventable close to 50 percent of the time. The Nebraska DHHS is interested in the quality and quantity of infection prevention education in nursing and allied health programs. These programs were contacted to determine how much time was devoted to infection prevention in their curriculum.

METHODS: A request was sent to thirty-six nursing school programs for a description of infection prevention content within their 2016-2017 HAI curriculum. We received responses from thirteen nursing schools with various degree programs, including Bachelors of Science in Nursing (BSN), Masters of Science in Nursing (MSN), Licensed Practical Nursing (LPN), and Associate Degree in Nursing (ADN) and Registered Nursing (RN) programs. An additional survey was sent to sixty allied health programs regarding infection prevention curriculum. Questions included an overall infection prevention curriculum description, time spent on specific subjects (i.e., hand hygiene, PPE use, antibiotic resistance, and injection safety), HAI prevention lectures, and awareness of infection prevention resources. We received responses from only eight allied health programs of varied concentrations such as dentistry, dental hygiene, physician assistant, medical laboratory technician, and occupational therapy.

RESULTS: For nursing schools, BSN and LPN/ ADN programs provided the most in depth curriculum description. There was a range of zero to thirty-one hours on infection prevention within each nursing schools' overall program content with an average of 12.6 hours. Aspects of infection control practice such as hand hygiene, transmission precautions, and disinfection and sterilization had ranges of zero to two hours, zero to three hours, and zero to one hour respectively. The majority of allied health programs who responded to our survey spent between ten and forty-five hours overall on infection prevention with an average of thirty hours. We particularly found a lack of time spent on injection safety, hazmat and bioterrorism, and antibiotic resistance. Time spent on each of those subjects ranged between zero and six hours.

CONCLUSIONS: We found an extensive range of time and infection prevention topics presented to students in nursing schools and allied health programs. The low level of survey completion from allied health schools suggests there may be less attention paid to infection prevention topics in those programs not responding. More consistent and topic specific educational training in nursing and allied health will likely increase adherence to infection control recommendations when these professionals enter practice.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Infection Control
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7669
Abstract Type	Poster
Abstract Title	Long-Term Care Facility NHSN Enrollment Challenges, 2016

Abstract

BACKGROUND: The Centers for Medicare and Medicaid (CMS) require infection reporting for long-term care facilities (LTCF). The National Healthcare Safety Network (NHSN) offers option for submission of these data. While NHSN provides instructions, many facilities do not have the expertise to complete the process without assistance. The state health department (SHD) and the CMS contracted Quality Improvement Organization (QIO) combined efforts to facilitate enrollment.
METHODS: Staff members from QIO and SHD became official notaries to expedite enrollment. A total of 56 facilities were approached for enrollment and began the process independently. Live/recorded webinars were offered as well as instructional documents, facility visits, follow-up emails, and weekly phone calls. SAS 9.4 was used to determine time from start of efforts until each specific step in the enrollment process and time in between steps. Each average represents values for facilities completing that particular step.
RESULTS: Average days until facilities received SAMS cards ranged from 19.0-88.0, median=56.0 (n=20) (Fig.1). For those facilities completing the process and have conferred rights (n=17), this process took an average of 63 days, ranging from 29.0-110.0. Days between the notarization of ID documents and receipt of SAMS card was an average of 30.6 days ranging from 23.0 to 38.0. Time limiters included staff turnover, incorrect/insufficient identity documentation, and delays in receipt of automated emails. As of December 2016, 7 facilities were required to restart the SAMS process for various reasons.
CONCLUSIONS: LTCF facilities face challenges, but the partnership between agencies helps LTCFs to successfully enroll and begin reporting. Factors contributing to the success of enrollment include technical knowledge and capabilities, staff retention, and resources. As NHSN enrollment is not mandatory, other priorities often take precedent. Ongoing activities include assistance for unenrolled facilities, surveillance/monitoring education, intervention opportunities, and emphasis on data quality. This may have been due to the large volume of enrollment requests.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Infection Control; Surveillance
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	8159
Abstract Type	Poster
Abstract Title	Mortality Rates and Cause of Death Among *Clostridium Difficile* Cases in a Metropolitan Area, Denver, Colorado 2011-2015

Abstract

BACKGROUND: The Centers for Disease Control and Prevention (CDC) estimates 29,000 people died within 30 days of infection with *Clostridium difficile* (CD) in 2011. The Colorado Department of Public Health and Environment (CDPHE) conducts active, population-based surveillance of CD among residents of the Denver metropolitan area. We determined mortality rates and causes of death among patients with CD in Colorado, and evaluated underlying conditions among patients who died within 30 days of incident CD infection.
METHODS: Incident CD cases from 2011-2015 were matched with death record data from the Colorado State Death Registry from 2011 to January 2016 to identify patients who died within 30 days of their most recent incident positive CD test and to identify up to 11 causes of death. An incident case was defined as any toxin or molecular assay positive test in a patient without a positive test in the previous 8 weeks. Death data was merged with data collected during retrospective medical record review on selected patients as part of population-based surveillance. Comparisons of the frequency of selected underlying conditions was conducted.
RESULTS: Of 16,537 patients with at least one incident CD-positive test from 2011-2015, 1059 (6.4%) died within 30 days. Ten percent of cases aged 65 years or older died within 30 days of their CD-positive test. Seventy-eight percent of all deaths that occurred within 30 days occurred among those 65 years and older. Deaths within 30 days decreased from 2011-2015 (7.5% to 5.7%). Enterocolitis due to CD was the most common underlying cause of death (13.7% of cases); among contributing causes of death and underlying causes of death, sepsis (unspecified organism) was most common (25.8% of cases). Chronic kidney disease, chronic liver disease, chronic pulmonary disease, congestive heart failure, diabetes and dementia were more prevalent in patients who died than those who did not.
CONCLUSIONS: Most deaths occurring following a positive CD test occurred in patients 65 years and older. CD infection and sepsis were the two most common causes of death and the prevalence of chronic underlying conditions was higher among patients that died within 30 days of a positive CD test. Further analysis is needed to explain the link, if any, to the underlying conditions and causes of death found in cases that died within 30 days of an incident CD test.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Co-Morbidity; ICD
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7932
Abstract Type	Poster
Abstract Title	Preparing Non-Acute Long Term Care Facilities for Newly Mandated Clostridium Difficile Surveillance

Abstract

BACKGROUND: A coordinated approach to public health surveillance is necessary to prevent the spread of healthcare-associated infections (HAIs); however, much work is needed to increase the availability of standardized surveillance data from non-acute healthcare settings. To address this surveillance gap, the National Healthcare Safety Network (NHSN) Long-Term Care (LTC) module was released in 2012 to track HAIs within long-term care facilities. In 2016, the District of Columbia (DC) implemented a new regulation mandating skilled nursing facilities (SNFs) to report *Clostridium difficile* infections (CDI) and selected MDROs to the Department of Health (DOH) through NHSN. Implementing this regulation requires in-depth training and supervision of surveillance practices by the SNFs as they learn to navigate and correctly report. Lessons learned during a pilot round of trainings will be used to improve and customize trainings for the remaining facilities.
METHODS: DC DOH presented the updated regulations to the DC Healthcare Association (DCHCA), which represents the 18 DC SNFs, and partnered with Delmarva Foundation (DF), the DC quality improvement organization (QIO), to conduct a pilot NHSN training. DF recruited five SNFs to participate in online trainings twice a month between September and November 2016. These webinars highlighted the importance of surveillance and the benefits of NHSN, and provided step-by-step enrollment instructions. DF led the webinars, using slides from CDC and DF, and DC DOH assisted. Each SNF was assigned a mentor from DF or DOH who provided additional one-on-one assistance. Mentors conducted on-site visits to assist facilities with unit mapping and conferring of rights.
RESULTS: New reporting requirements and the use of NHSN was well received by the SNFs. Five SNFs were enrolled in NHSN by the end of November 2016, and four completed facility mapping in December 2016. Major challenges identified during the onboarding process were: 1) fully understanding the technical specifications for NHSN (i.e., using the correct internet browser); 2) lack of familiarity with seemingly basic logistical tasks, such as where to find a notary public for identity verification; 3) the need for one-on-one assistance for initial NHSN navigation and facility survey completion and 4) mapping patient care units that have dynamic patient populations.
CONCLUSIONS: Successful implementation of the NHSN LTC module requires personalized and proactive hands-on technical support to ensure all facilities understand the fundamental principles of standardized infectious disease surveillance. These lessons can help inform other health departments implementing surveillance in long-term care facilities to help contain the spread CDI and MDROs.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Surveillance; Epidemiology
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	8568
Abstract Type	Poster

Abstract Title

Targeted Assessment for Prevention Strategy in Outpatient Hemodialysis Facilities

Abstract

BACKGROUND: TAP strategy uses the Cumulative Attributable Difference (CAD) calculated from the Standardized Infection Ratio (SIR), determining the number of infections a given facility needs to avert to meet an infection reduction goal. It is has been applied to HAI data reported to NHSN from hospitals. This easily understood CAD target is much more motivating for healthcare providers than the SIR. CADs can be ranked, and this can be used to prioritize facilities for prevention program development and tracking. The Connecticut HAI Program is now piloting the use of TAP using a modified CAD calculation for outpatient hemodialysis centers.
METHODS: All 44 outpatient hemodialysis centers in Connecticut reported dialysis event (DE) data to NHSN in 2015. NHSN does not calculate the SIR for DE data; therefore, we could not use SIRs to calculate TAP. Because SIR is derived from infection rates, we modified the CAD calculation using rates. For this project, TAP were calculated from DE rates for BSI. The prevention goal was the statewide dialysis BSI rate. In 2015 all hemodialysis facilities in Connecticut reported catheter utilization (associated with higher BSI rates) and prevention process measure (PPM) data to NHSN. For PPM, facilities perform observations of infection control prevention by staff in the facilities and track adherence to proper practices.
RESULTS: Eight of 44 facilities (18%) had BSI CAD over 2.0. These facilities reported 63.6 excess infections over baseline, 24% of the 256 BSI reported from outpatient hemodialysis centers in the state that year. If the eight facilities all achieved the 2015 statewide rate, it would drop from 0.67/100 patient-months to 0.51, considerably below the most recent (2014) national rate (0.64). High CAD facilities had a higher rate of catheter access than other facilities, 18.3 vs. 17.3%, nearly statistically significant (p=0.52). Overall, three key PPM (hand hygiene observations, catheter and fistula care) were not significantly different between high CAD and other facilities. However, PPM varied among high CAD facilities: one facility, with a CAD of 17.1, contributing 26% of excess BSI in the state, had a very low percentage (36%) of adherent catheter care observations.
CONCLUSIONS: With modification, CAD can be used in facility types that are not currently using the SIR. Such analyses can be used to develop a TAP strategy for these facilities. Combing CAD rankings with prevention process metrics can be useful for planning focused interventions for high priority facilities to impact HAI outcomes.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Outcome Measures; Prevention
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7895
Abstract Type	Poster
Abstract Title	Validation of National Healthcare Safety Network (NHSN) Laboratory-Identified Event Data in Tennessee

Abstract

BACKGROUND: Acute care hospitals (ACH) have been required to report laboratory-identified (LabID) event data to the Tennessee Department of Health (TDH) through the National Healthcare Safety Network (NHSN) since July 2010. Facilities are required to report two types of LabID events: positive Methicillin-resistant *Staphylococcus aureus* (MRSA) blood cultures and positive laboratory test results for *Clostridium difficile* (CDI) toxin A and/or B. TDH conducted a validation of NHSN LabID event data to assess data quality and to identify common reporting errors and misconceptions among Tennessee facilities.
METHODS: TDH used the NHSN external validation toolkit and selected 31 facilities for validation during 01/01/2015–06/30/2015. Twenty three facilities were selected for MRSA and 23 for CDI. Up to 60 positive laboratory specimens were reviewed for each selected event type (MRSA and/or CDI). Patient medical records, including location within the facility and laboratory records, were reviewed to determine if the selected specimen met LabID event criteria
RESULTS: TDH reviewed 512 positive MRSA blood culture results and identified 446 reportable MRSA events. Of the 446 reportable events, 66 had not been reported and 57 events were reported with errors. An average of 3.86 MRSA events per facility were not reported during the evaluation period and an average of 2.6 (range = 0–10) MRSA events per facility contained one or more errors. TDH reviewed 535 positive CDI stool specimen results and identified 516 reportable CDI events. Of the 516 reportable events 53 were not reported and 70 events were reported with errors. An average of 2.6 CDI events per facility were not reported during the evaluation period and an average of 3.2 (range = 0–10) CDI events per facility contained one or more errors. Clinical decision support software (CDSS) was utilized by 63% of facilities while 33% entered data manually. Using a chi-squared test there was no significant difference in reporting accuracy in facilities using CDSS in event identification compared to facilities that manually identified events (72.57% vs. 72.72%, p=0.9655).
CONCLUSIONS: Validation of NHSN LabID data provided TDH with valuable information about data quality as well as common misconceptions of reporting requirements. CDSS is widely used across the state, but does not appear to improve reporting accuracy. The data validation project strengthened relationships with infection preventionists, improving communication between TDH and the ACH community through targeted education and training to ensure broader understanding of NHSN definitions and improve reporting quality.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Infection Control
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7986
Abstract Type	Quick

Abstract Title
An External Statewide Validation of Michigan National Healthcare Safety Network Data

Abstract

BACKGROUND: The validation of National Healthcare Safety Network (NHSN) data assures medical facilities are providing high-quality surveillance data through the identification and correction of reporting errors. The Michigan Department of Health and Human Services (MDHHS) has conducted its first voluntary NHSN audit of central line-associated bloodstream infections (CLABSI) and catheter-associated urinary tract infections (CAUTI) for 2014 in multiple acute care facilities statewide.
METHODS: The audit was completed using the standardized "CDC NHSN External Validation and Guidance and Toolkit, 2014." Facilities were targeted for participation using the CDC Targeted Assessment for Prevention (TAP) methodology. Volunteering facilities provided line lists of 2014 positive blood and urine cultures from all NHSN reporting critical care units. Up to 20 reported cultures and 40 non-reported cultures per infection type were randomly selected. The entire admission period was validated.
RESULTS: The validation captured 43% of Michigan critical care beds. A total of 754 admissions and 874 infection episodes were reviewed. Over 83% of urine infection episodes meeting CAUTI definition were reported correctly to NHSN. Thirteen CAUTIs were not reported, five reported events identified an incorrect event date, and three included clerical errors. Additionally, three reported CAUTIs did not meet definition. Eighty-two percent of blood infection episodes meeting CLABSI definition were reported correctly to NHSN. Eleven CLABSIs were not reported and two reported events identified an incorrect event date. Three reported CLABSIs did not meet definition. NHSN event criteria was correctly applied to 97% of aggregate urine and 96% of aggregate blood infection episodes. Clinical overruling, misidentification of new infections, and complicated medical reports were major causes of reporting errors.
CONCLUSIONS: Validation results indicate Michigan acute care facilities are almost always identifying reportable CAUTIs and CLABSIs and correctly applying NHSN definitions. The elimination of clinical judgement from the reporting process is necessary for improving reporting accuracy. This feedback will help empower infection prevention staff to more accurately apply NHSN definitions.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Hospital Data
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7856
Abstract Type	Quick
Abstract Title	Deciphering the Details of Inter-Facility Patient Transfers in Washington, District of Columbia

Abstract

BACKGROUND: The emergence and spread of multi-drug resistant organisms (MDROs) is a serious public health threat. Healthcare-associated infections (HAIs) caused by these bacteria result in significant morbidity and mortality, and add considerable costs to the healthcare system due to prolonged and costlier treatments. To prevent the spread of MDROs, inter-facility communication and a coordinated regional approach are recommended. Patients at increased risk of MDRO infection are often chronically ill, and receive care in multiple healthcare facilities (HCFs), thus serving as mobile reservoirs for the transmission of these bacteria to other patients. Patient transfers represent an important point of intervention, and the complex interactions within and between HCFs during this process that enable MDROs to spread must be better understood in order to develop effective interventions. The District of Columbia (DC) Department of Health (DOH) formed an HAI Advisory Committee (DCHAC) in 2016 to bring together stakeholders from acute and long-term healthcare settings to address this and other HAI prevention issues.
METHODS: DCHAC developed a survey consisting of quantitative and qualitative questions to understand patient transfer practices utilized by each facility and facility type (e.g. skilled nursing facility [SNF], acute care hospital [ACH]), as well as the impact of transferring facilities' practices. The ten ACHs and 18 SNFs in DC were asked to complete the paper survey and email responses to the DOH. Qualitative data were analyzed thematically in a multi-step process using the constant comparative method that is central to grounded theory.[1]
RESULTS: All ten ACHs and eight SNFs completed the survey. Processes, personnel involved, infrastructure, and capacity varied widely by HCF. Transferring and receiving facilities often reported contradictory information. Major challenges reported by HCFs when transferring patients included the administrative and medical capacity of the receiving facility, insurance authorization, timely and adequate transportation, and continuation of care. When receiving patients, the primary challenge cited was poor or inaccurate communication of clinical information by the transferring HCF, as well as by appropriate staff within the receiving facility.
CONCLUSIONS: There is a lack of communication and objective understanding among HCFs about the practices and challenges encountered by other facilities in the patient transfer process. Previous dialogue and prevention efforts were often misinformed due to preconceived assumptions about other facilities' practices. These survey data provided valid information for discussion and prompted productive conversation leading to identification of proposed interventions, reinforcing the need for regional collaboration and properly informed inter-facility communication to prevent the spread of MDROs.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Infection Control; Prevention
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7972
Abstract Type	Quick
Abstract Title	Do C. Difficile Standardized Infection Ratios Predict Antibiotic Use in Acute Care Hospitals Reporting to the National Healthcare Safety Network?

Abstract

BACKGROUND: The Antibiotic Use and Resistance (AUR) module of the Centers for Disease Control and Prevention's (CDC's) National Healthcare Safety Network (NHSN) enables hospitals to report data on antibiotics administered to patients in inpatient care locations. . Hospitals also report Laboratory identified Clostridium difficile events to NHSN, and CDC reports these data on behalf of the hospitals to the Centers for Medicare and Medicaid Services (CMS) in accordance with CMS reporting requirements. Antibiotic use has a central role in the pathogenesis of C. difficile infections, and the purpose of this analysis is to assess whether facility-wide C. difficile event standardized infection ratios (SIRs) are associated with overall antibiotic use rates among acute care hospitals.

METHODS: In 2015, 52 hospitals reported both facility-wide inpatient AU and *C. difficile* data to NHSN. Standardized Antibiotic Administration Ratios (SAARs) (antibiotic days of therapy (DOT)/ predicted antibiotic DOTs)) were calculated for all antibiotics in the AUR protocol for hospital onset *C. difficile* event SIR quartiles. Consecutive pairwise antibiotic use rates across CDI SIR quartiles were compared for statistical significance using a binomial exact with mid-p test using SAS 9.3.

RESULTS: Overall SAARs increased across the three lowest CDI SIR quartiles (1^{st} to 2^{nd} SAAR Ratio: 1.142 (1.140, 1.145); 2^{nd} to 3^{rd} SAAR Ratio: 1.265 (1.262, 1.268); all p-values < 0.0001, Table). SAARs were highest in the third quartile of the SIR and decreased in the fourth CDI SIR quartile.

CONCLUSIONS: Overall SAARs in 52 acute care hospitals show a statistically significant increase as *C. difficile* event SIRs increase; except in the highest quartile of SIRs, where antibiotic use data were less precise. This presentation provides useful insight into the relationship between overall inpatient antibiotic use and hospital onset *C. difficile* events in acute care hospitals. More data is needed to determine if this relationship holds across a larger cohort of acute care facilities.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Epidemiology; Healthcare Associated Infections (HAI); Surveillance
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7838
Abstract Type	Quick
Abstract Title	Healthcare-Associated Legionnaires' Disease — United States, 2014

Abstract

BACKGROUND: *Legionella* , the bacterium causing Legionnaires' disease (LD), a severe pneumonia, can be transmitted through a building's water system. However, transmission is preventable through environmental infection control. Healthcare facilities with vulnerable populations pose known risks for *Legionella* transmission, but the burden of healthcare-associated LD is unknown. We used national reporting data to describe the burden and outcomes of potentially healthcare-associated LD.
METHODS: We analyzed data from 12 states that included comprehensive exposure data for ≥95% of legionellosis cases reported to CDC in 2014. We defined confirmed cases as those meeting Council of State and Territorial Epidemiologists criteria. Potentially healthcare-associated cases reported inpatient, outpatient, visitor/volunteer, or work-related exposures to healthcare facilities during some portion of the ten days before illness onset. Case-fatality rates (CFRs) were compared using Fisher's exact test.
RESULTS: We identified 1,181 confirmed cases (1.8/100,000 population), of which 243 (20.6%) were potentially healthcare-associated. CFR was higher for potentially healthcare-associated cases (10.3%) than for non-healthcare-associated cases (5.3%; $P < .01$). Among potentially healthcare-associated cases, 112 (46.1%) reported inpatient exposures (CFR 14.3%); 77 (31.7%) reported outpatient visits (CFR 9.1%); 25 (10.3%) reported visitor/volunteer visits (CFR 0.0%); and 16 (6.6%) reported employee visits (CFR 0.0%). Ten (4.1%) reported >1 type of exposure (CFR 10.0%).
CONCLUSIONS: LD in those with healthcare exposures accounted for a substantial proportion of the total reported LD burden. Among persons with potentially healthcare-associated LD, patients experienced higher mortality than non-patients. New guidance for water management practices is available to reduce the risk of *Legionella* transmission in buildings with complex water systems including healthcare facilities.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Waterborne Disease; Healthcare Associated Infections (HAI); Infectious Diseases
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7810
Abstract Type	Quick
Abstract Title	Investigation of Klebsiella Pneumoniae Carbapenemase (KPC)-Producing Carbapenem Resistant Enterobacteriaceae (CRE) in a Skilled Nursing Facility—Pennsylvania, 2016

Abstract

BACKGROUND: *Klebsiella pneumoniae* Carbapenemase (KPC)-Producing Carbapenem Resistant *Enterobacteriaceae* (CRE) have a resistance mechanism that can spread rapidly, making prevention crucial. In October 2016 a 120-bed skilled nursing facility voluntarily notified the Pennsylvania Department of Health of 6 cases of CP-CRE among residents since January 2016. We gave recommendations following CDC guidelines for CRE. We investigated to identify risk factors and prevent further cases.

METHODS: On October 26, we completed a site visit to review prevention measures and observe infection control practices. We performed case finding by reviewing medical records. A case was defined as a specimen positive for CRE from any site during 2016 in a facility resident. Rectal surveillance cultures were collected during November 7–15 from 4 residents who were known to be positive for CRE and 7 residents who had a CRE-positive roommate in the past 2 years. Specimens were sent to CDC for culture, mechanism testing, and PFGE. In December, we conducted a point prevalence survey. Rectal screening of 77/88 (88%) residents was completed and specimens were tested for KPC by polymerase chain reaction. We performed a cohort analysis to examine risk factors for colonization using Fisher's Exact Test.

RESULTS: Suboptimal infection control practices were observed including poor technique with personal protective equipment and urinary catheter care, and inadequate environmental cleaning; we provided recommendations accordingly. We confirmed 7 cases of clinically-diagnosed CRE. All were urine specimens from patients with indwelling urinary catheters. Surveillance specimens revealed one colonized roommate for a total of 8 cases. All available surveillance (n=5) and clinical (n=3) specimens were identified as KPC-CRE. PFGE revealed two clusters of closely related patterns and several unrelated patterns. Our point prevalence survey revealed 13 additional cases of KPC-CRE for a total of 21 cases. The only independent risk factors for colonization were a history of another multidrug-resistant organism (17% among non-colonized residents vs. 46% among colonized residents; p=0.03) and room location on wing A (41% vs. 85%; p=0.01). Indwelling urinary catheters were common in clinically-diagnosed residents but were not a risk factor for colonization. In addition to recommendations for CRE control according to CDC guidelines, we recommended rectal screening for CP-CRE of new admissions to the facility.

CONCLUSIONS: KPC-CRE cases likely occurred in this facility due to multiple importations and intra-facility transmission, particularly on wing A. Although recommendations were made to reduce transmission within the facility, regional prevention efforts are needed to reduce the likelihood of reintroduction of KPC-CRE.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Antimicrobial Resistance
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7613
Abstract Type	Quick
Abstract Title	Outbreak Detection and Response within Acute Care and Critical Access Hospitals in Hawaii

Abstract

BACKGROUND: Efficient detection and response to healthcare associated infection (HAI) outbreaks is vital in minimizing patient harm and preventable healthcare expenditures. Issues with detection and investigation may lead to underreporting of facility outbreaks. To better understand outbreak burden and improve facility reporting in Hawaii, we examined HAI outbreak count, detection, and response within acute care hospitals (ACHs) and critical access hospitals (CAHs) across the state in 2015.
METHODS: Using Epi Info 7, an online survey was created and distributed to ACH and CAH infection preventionists (IPs) (N=27) statewide. The self-report survey contained five multi-part questions on 2015 outbreak burden, methods of detection, and investigation process. Using frequency data, results from the survey were analyzed both in aggregate form and by facility type (ACH/CAH). Significant differences in outbreak detection and investigation by facility type were ascertained using Fisher's exact test in SAS v 9.4.
RESULTS: Completed surveys were received from 14 ACHs and 8 CAHs (N=22; 82% response rate). Nine (41%) hospitals experienced at least one outbreak during 2015. Among all facilities, detection methods most often included identification of an unusual organism or organism of concern (21; 96%), alerts from the laboratory (19; 91%), and notifications from the health department (19; 91%). Number of detection methods utilized ranged from 2 to 7, with no single method used by all facilities. Ten (46%) facilities reported they would complete all 10 outbreak investigation steps recommended by Association for Professionals in Infection Control and Epidemiology (APIC). This comprised 13% of CAHs (n=1) and 63% of ACHs (n=9). ACHs were significantly more likely than CAHs to implement several of the recommended steps, including establishing a preliminary case definition (100% vs 50%; p=.01) and developing a line list (71% vs 12%; p=.02). Eight (41%) facilities indicated they lacked available resources or capacity to respond to an outbreak and would seek assistance from the Hawaii State Department of Health (HDOH).
CONCLUSIONS: Hospitals throughout Hawaii have varying capacity to detect and investigate HAI outbreaks. Many facilities, especially CAHs, are not completing all recommended investigation steps; a substantial proportion would need additional support to address an outbreak. Results from this study are helpful in understanding gaps in outbreak detection and investigation capacity that may lead to underreporting. Next steps will involve exploring reasons behind observed gaps and collaborating with facilities to improve HAI outbreak detection, investigation, and reporting in Hawaii.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Infection Control; Outbreaks; Healthcare Associated Infections (HAI)
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7782
Abstract Type	Quick
Abstract Title	Outbreak of Group a Streptococcus in a Long-Term Care Facility — Illinois, 2016

Abstract

BACKGROUND: In February, 2016, the Cook County Department of Public Health (CCDPH) identified a group A *Streptococcus* (GAS) outbreak associated with long-term care facility (LTCF) A. CCDPH initiated an epidemiologic investigation, including a carriage survey and a case-control study. Infection control observations and policy review helped identify lapses in practices and protocols, particularly those associated with wound care equipment and practices.
METHODS: Between February and April 2016, 7 GAS cases with history of recent admission to LTCF A were identified after they were admitted to local hospitals. Available isolates were identified as type 89.0 by *emm* typing performed at CDC's Streptococcal laboratory. A case was defined as a patient with history of recent admission to LTCF A with a positive culture for GAS *emm* type 89.0. Three health care providers identified as asymptomatic GAS carriers were colonized by *emm* types that differed from the outbreak strain and from one another. A chart review found that all cases had a history of chronic wounds. A screening of wounds identified four cases of GAS carriage. Additionally, four residents who had previously screened negative later developed GAS infection during the surveillance period. To determine risk factors for acquiring GAS, a case-control study was conducted using 15 case-residents and 21 control-residents (residents with a negative surveillance culture in wound who did not develop infections at a later time).
RESULTS: Multiple lapses in infection control practices during wound care therapy and Vacuum Assited Closure VAC placement/replacement were noted. Wound care therapy equipment included electrical stimulators, ultrasounds, ultrasound mist devices, ultrasound diathermy devices and ultraviolet light devices. Protocols for use, cleaning and disinfection of these devices were either not available, insufficient, or not enforced. Environmental specimens were collected from ready-to-use equipment and frequently touched surfaces and were sent for culture. Multiple microorganisms, including GAS, were recovered in six of ten specimens; GAS identified from a bedside table matched the outbreak *emm* type. LTCF A removed VACs and all equipment used to provide wound care therapy from service until protocols were developed, reviewed and implemented according to recommendations. Competency-based training for all staff responsible for use, cleaning, and disinfection of this equipment was conducted. History of undergoing wound care therapy or VAC placement at facility A was strongly associated with case status.
CONCLUSIONS: This investigation highlights the potential for GAS transmission in patients with chronic wounds who receive wound care therapy and VAC.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Infection Control; Surveillance
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7896
Abstract Type	Quick
Abstract Title	Prolonged Outbreak of Invasive Group a Streptococcal Infections Among Residents at a Skilled Nursing Facility — Pennsylvania, 2016

Abstract

BACKGROUND: Group A *Streptococcus* (GAS) can cause life-threatening invasive infections, particularly in persons with advanced age and nonintact skin. Both are common among residents of skilled nursing facilities (SNF), where GAS outbreaks can be prolonged. In February 2016, the Pennsylvania Department of Health was notified of a single case of invasive GAS infection in a resident of a 198-bed SNF; we provided recommendations the following day. Three additional GAS infections were reported during March–April. We investigated to identify cases and recommend additional control measures.
METHODS: We defined cases as symptomatic, culture-confirmed GAS infection in residents or staff since January 1, 2016. Cases were categorized as invasive (cultured from a normally sterile site) or noninvasive. We interviewed staff and observed infection control practices. During April–May, all residents (oropharynx, wounds, indwelling catheter sites) and staff (oropharynx, wounds) were screened for asymptomatic GAS. Available isolates were typed at CDC. Whole genome sequencing (WGS) was performed on select isolates.
RESULTS: We identified 1 noninvasive and 3 invasive cases during January–May; two died. Ten asymptomatic carriers (5 residents and 5 staff) were identified, received antibiotics and were recultured. Multiple infection control deficiencies were noted, including inadequate hand hygiene, lack of supplies, and poor technique with personal protective equipment; we provided recommendations to improve these deficiencies. Despite the initial interventions, we identified 2 new invasive cases during June–August; additional screening identified three carriers (2 residents and 1 staff). Among 17 available isolates from 5 cases and 12 carriers (7 resident and 5 staff), fifteen were *emm* 11 and were indistinguishable by WGS. The remaining two staff carriers were *emm* 3.1 and *emm* 89. Because all 6 case-residents had nonintact skin, we recommended infection control review by a certified wound care nurse or infection preventionist; however, this was not implemented by the facility. Mass antibiotic prophylaxis for residents and staff was administered during August 31–September 3, 2016. Those who refused were cultured and treated if GAS was identified. During November, 3 additional cases (2 residents with nonintact skin and 1 staff) occurred; all were *emm* 89 and were indistinguishable by WGS. In total, 9 cases and 13 carriers were identified. Active surveillance is ongoing.
CONCLUSIONS: This prolonged outbreak likely resulted from suboptimal infection control practices. The introduction of a new strain with subsequent intrafacility transmission, despite an aggressive mass prophylaxis campaign, highlights that strong infection control practices, particularly during wound care, are crucial to prevent and control GAS outbreaks among SNF residents.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Infectious Diseases; Outbreaks; Healthcare Associated Infections (HAI)
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7983
Abstract Type	Quick
Abstract Title	Surveillance for Transfusion-Transmitted Infections Among Pathogen Reduction Technology-Treated Platelets Using the National Healthcare Safety Network Hemovigilance Module

Abstract

BACKGROUND: Continued and emerging threats to blood safety (e.g., Zika virus) have furthered efforts to prevent transfusion-transmitted infections (TTI). Pathogen Reduction Technology (PRT) is a safety intervention that inactivates pathogens in blood products to reduce TTI risk. U.S. blood collection centers have begun implementing PRT for apheresis platelets (APH PLT) and plasma since FDA approval in 2014. The National Healthcare Safety Network (NHSN) Hemovigilance Module (HM) is a surveillance system operated by CDC which tracks transfusion-related adverse events, including TTIs, and can be used to monitor the impact of safety interventions like PRT. U.S. healthcare facilities report the occurrence of TTIs and total number of transfused blood units to the module monthly. In January 2016, the HM was modified to identify PRT-treated blood products implicated in TTIs and to quantify total number of transfused PRT-treated components. We present a summary of NHSN modifications to capture PRT-treated blood components and PRT-related data reported from January-September 2016.

METHODS: Beginning January 2016, participating facilities could report the total number of transfused PRT-treated blood products and TTIs associated with these components. Though PRT is available for plasma, data reported to HM was limited and not included in the analyses. The total number of transfused APH PLT, including those treated with PRT were quantified from January-September 2016. Total number of TTI reported among APH PLT were calculated and further stratified by PRT treatment. Rate of TTI reported per 100,000 APH PLT transfused were calculated for non PRT-treated and PRT-treated components.

RESULTS: A total of 137 facilities reported transfusing 155,367 APH PLT units during the study period. Of these, five reported transfusing 1,718 PRT-treated APH PLT. Of 17 TTI reported to the HM, nine were associated with APH PLT. None were reported among PRT-treated APH PLT units. Of these nine TTI, five were due to bacterial contamination and four did not include a pathogen description. The rate of TTI associated with non PRT-treated APH PLT was 5.8 per 100,000 transfused units.

CONCLUSIONS: Since reporting began in January 2016, no TTI have been reported to the NHSN HM among PRT treated APH PLT. As adoption of PRT grows in the U.S., continued surveillance for TTI, particularly among PRT-treated components is important to describe uptake of the technology and to quantify the safety impact of this intervention. Participation in national hemovigilance is vital to monitoring for transfusion-related adverse reactions and to assessing the impact of safety interventions.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Surveillance; Emerging Infections; Healthcare Associated Infections (HAI)
Consider for Different Presentation?	Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	7510
Abstract Type	Quick
Abstract Title	Validation of National Healthcare Safety Network Dialysis Event Data — Georgia 2015

Abstract

BACKGROUND: 370,000 people in the United States rely on hemodialysis care to manage renal failure and are at risk for developing serious infections due to repeated bloodstream access. Outpatient hemodialysis facilities in Georgia are required to report three types of dialysis events (DE) monthly to the National Healthcare Safety Network (NHSN): intravenous antimicrobial starts (AMX), positive blood cultures (PBC), and pus, redness, or increased swelling at the vascular access site (PRS). Facilities must also report denominator data monthly, which categorizes patients by vascular access type. We validated reporting of DE data and identified barriers to reporting.
METHODS: We reviewed patient records from the period January 1–June 30, 2015 from 30 facilities in the Atlanta metropolitan area; 16 facilities were randomly selected, and 14 facilities were selected due to potential under-reporting, which included high catheter utilization rates and few PBCs, or no reported DEs. Up to 30 patient records were reviewed to identify DEs, using the Centers for Disease Control and Prevention's (CDC) Dialysis Event Protocol event definitions. A concordance check was performed to classify each event as either correctly, under-, or over-reported. The 21-day rule, an event reporting rule which states 21 or more days must exist between two DEs of the same type for the second occurrence to be reported as a separate DE, was applied to all events. We surveyed staff members responsible for NHSN DE data collection and reporting to evaluate surveillance knowledge and practices.
RESULTS: We reviewed 876 patient records and identified 332 DEs, including 178 (54%) AMX, 64 (19%) PBC, and 90 (27%) PRS events. Twenty percent (36) of AMX events were under-reported and 11% (20) were over-reported; 44% (28) of PBC events were under-reported and 9% (6) were over-reported; and 71% (64) of PRS events were under-reported and 15% (14) were over-reported. Among 28 staff members, common reporting issues identified through the survey included: incorrect reporting of patient vascular access type for monthly denominator (15, 54%); being unable to identify at least one NHSN-defined DE (11, 39%); being unaware of the 21-day rule (9, 32%).
CONCLUSIONS: We identified the need for improved reporting for all types of DEs. All hemodialysis facilities should have a strong working knowledge of CDC's Dialysis Event Protocol. Consistent and accurate documentation of DEs is an important part of prevention, and can help facilities detect problems, identify trends, evaluate infection prevention activities, and engage staff in quality improvement.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Surveillance; Healthcare Associated Infections (HAI); Chronic Disease
Consider for Different Presentation?	Yes

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Submission Type Breakout/Quick/Lightning/Poster

ID 8624

Abstract Type Quick

Abstract Title When Communication Breaks Down: Transmission of Carbapenem-Resistant Enterobacteriaceae

Abstract

BACKGROUND: Carbapenem-resistant Enterobacteriaceae (CRE), particularly carbapenemase-producing CRE (CP-CRE), is an emerging threat to public health. CP-CRE is believed to be one of the primary reasons for the increasing spread of CRE in the United States. Although CRE did not officially become reportable in New Mexico until June 15, 2016, this case study demonstrates the first documented transmission of CP-CRE in New Mexico.

METHODS: On November 30, 2015, New Mexico Department of Health (NMDOH) was notified via electronic laboratory reporting (ELR) of a CRE urine specimen from patient A that tested positive by Modified Hodge Test. NMDOH notified the infection preventionist (IP) at the long-term acute care (LTAC) facility; CDC recommended CRE prevention methods were initiated immediately. The isolate was sent to CDC for confirmation. On December 29, 2015, NMDOH was notified by an IP at an acute care hospital of a second patient whose respiratory culture tested positive for CRE; CDC recommended CRE prevention methods were already implemented. Patient B's isolate was shipped to CDC for confirmation. Interviews revealed patient A and patient B were roommates at the LTAC. Conference calls were held to open the lines of communication among all healthcare facilities as well as the local reference laboratory. Rectal swabs were collected from roommates at each of the healthcare facilities and sent to the local reference laboratory. An onsite visit was conducted at the LTAC and point prevalence culture surveillance was initiated.

RESULTS: CDC laboratory results confirmed that patient A and patient B were *Klebsiella pneumoniae* carbapenemase (KPC) positive for *Enterobacter cloacae* , which also had similar susceptibility reports. NMDOH screened 8 of the 10 roommates. The length of time each person roomed with either patient A or patient B varied from 2-13 days, however, all test results were negative. The original rectal swab for patient B was never tested due to an error in the paperwork submitted to the local reference laboratory; this was never communicated to the IP at the LTAC. When patient B was discharged to the skilled nursing facility, it was never communicated that patient B had pending results for CRE.

CONCLUSIONS: NMDOH identified transmission of a CP-CRE in the LTAC, which was compounded by subsequent miscommunication among healthcare facilities and the local reference laboratory. This case study illustrated the importance of communication among healthcare facilities to help prevent the spread of CRE in LTAC and other communities in New Mexico.

Submission Complete? Yes

Committee Infectious Disease

Topic Healthcare-associated Infections

Keywords Healthcare Associated Infections (HAI); Infection Control; Infectious Diseases

Consider for Different Presentation? Yes

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Submission Type	Breakout/Quick/Lightning/Poster
ID	8601
Abstract Type	Quick
Abstract Title	When Ignorance Is Not Bliss: Complications Associated with Homeopathic Injections from a Chiropractor

Abstract

BACKGROUND: Complications associated with unsafe injection practices are well documented. Numerous pathogens can spread through reuse of needles or syringes, and by preparing medication in an unsterile manner, causing morbidity and mortality. However, injection-related practices and poor outcomes have not been well described among chiropractors. This case study presents a serious injection-related complication from homeopathic medication that was compounded in an outpatient facility and injected by an advanced licensed chiropractor in New Mexico.

METHODS: The New Mexico Department of Health (NMDOH) initiated an investigation on May 16, 2016 after being notified by an acute care infection preventionist. The patient was originally admitted for a scheduled surgical procedure. Imaging, however, revealed multiple fluid-filled pockets in the hip, groin, and lumbar regions, where the patient admitted receiving injections. Specimens from the abscesses were collected for laboratory testing at the hospital, the NMDOH Scientific Laboratory Division (SLD), and the Centers for Disease Control and Prevention (CDC). Interviews were conducted. On June 2, 2016, an infection control and readiness assessment (ICAR) was conducted at the outpatient facility. The original multi-dose vials were unavailable for testing but two multi-dose vials (Sarapin® and Procaine 2%) were collected for testing at SLD. The patient's abscesses recurred despite empiric antimicrobial therapy and specimens were sent to SLD and CDC. Ultimately these abscesses lead to osteomyelitis requiring surgery.

RESULTS: Using 16S rRNA PCR[1], the CDC identified *Parvimonas micra* in two of the three original abscess specimens. SLD and the hospital were unable to grow any organisms. In addition, SLD identified organisms in both multi-dose vials: Sarapin® grew *Aspergillus unguis* and *Cladosporium herbarum* ; Procaine 2% grew *Staphylococcus* spp. and non-hemolytic and alpha-hemolytic *streptococcus* spp. ICAR revealed numerous deficiencies in infection control, injection safety, medication preparation (particularly compounding) and environmental cleaning.

CONCLUSIONS: Although NMDOH was unable to link the abscesses with laboratory confirmation, the location of the abscesses corresponded to where the injections were given. In addition, the excessive number of homeopathic medications that were compounded and the large volume injected into the sites, along with the numerous infection control deficiencies observed, strongly suggest that the abscesses were caused by the injections.

[1] The 16S rRNA PCR from abscess material is an investigational procedure. It has not been cleared or approved by the FDA. The performance characteristics have not been fully established. The results of this test should NOT be used for diagnosis, treatment, or assessment of patient health or management.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Infection Control; Infectious Diseases
Consider for Different Presentation?	Yes

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Submission Type	Roundtable
ID	8438
Abstract Type	Roundtable
Abstract Title	Growing the Garden: Expansion of Healthcare-Associated and Antibiotic Resistant Infections Programs

Abstract

Key Objectives:
Participants will discuss the impact of expanded focus and funding for healthcare-associated and antibiotic resistant infection prevention programs; and share successful strategies for growing a program by implementing new topic areas, staff engagement, and sustainability.

Brief Summary:
Healthcare-associated and antibiotic resistant infections have been identified as a major public health priority, and major investments have been made to combat these issues. The Centers for Disease Control and Prevention (CDC), state, and local health departments play a critical role in defining the magnitude of the problem and monitoring progress in reducing and eliminating these infections. CDC's Epidemiology and Laboratory Capacity funding has facilitated the growth and sustainability of state and local health department capacity to expand the role of healthcare-associated and antibiotic resistance prevention programs to include coordinating efforts among stakeholders, conducting outreach to facilities, and designing and directly leading the implementation of quality improvement activities with healthcare facilities and providers. In 2015, the response to the Ebola Virus Disease brought dramatic funding and a significant increase in focus for state and local health departments to improve infection control practices within their jurisdiction by conducting on-site visits to assess capacity and provide guidance and recommendations for identified gaps. Additionally, antibiotic resistance surveillance and control was identified as a top priority by international and national organizations with subsequent support coming from CDC to state and local health departments to increase capacity and expertise to specifically respond to these infections. Some states have been working on enhancing and expanding local infrastructure for surveillance systems to monitor trends in antibiotic use and resistance, perform outbreak response, and communicate more efficiently with healthcare providers. This roundtable represents an opportunity for participants to discuss the impact, opportunities, and challenges of expanded focus for HAI and antibiotic resistant infection prevention programs. Topics to be discussed include strategies for continued network development at the national, state, and local level, staff engagement, strategic planning, and sustainability. The overarching goal of this roundtable is to facilitate open discussion between jurisdictions and identify practical solutions and implementation strategies.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Antimicrobial Resistance; Healthcare Associated Infections (HAI)
Consider for Different Presentation?	No

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Submission Type	Roundtable
ID	8087
Abstract Type	Roundtable
Abstract Title	Progress on the Council for Outbreak Response: Healthcare-Associated Infections and Antimicrobial-Resistant Pathogens (CORHA)

Abstract

Key Objectives:
Participants will become aware of CORHA, methods for engagement with the council, and learn about the resources developed to assist in detection, reporting, investigation, and control of infectious disease outbreaks in healthcare settings.

Brief Summary:
Healthcare-associated Infections (HAIs) including antimicrobial resistant (AR) pathogens cause hundreds of thousands of illnesses and deaths among U.S. patients each year. Despite significant progress, patients are still experiencing preventable harms in the context of outbreaks and other adverse events that stem from delayed recognition of emerging infectious diseases with potential for healthcare transmission, unsafe healthcare practices, contaminated drugs and medical device risks. Consistent and coordinated approaches are needed to speed up detection of new threats, develop tools to support outbreak investigation, stop outbreaks from spreading, and better inform prevention activities. To address these needs, CDC's Division of Healthcare Quality Promotion has funded the Association of State and Territorial Health Officials (ASTHO) and the Council of State and Territorial Epidemiologists (CSTE) to create and co-lead the Council for Outbreak Response: HAI/AR (CORHA). Council membership including ASTHO, CSTE, CDC, and the National Association of County and City Health Officials (NACCHO), APIC and SHEA has been established. As additional members, partners, and workgroups come together, the Council will function as a multidisciplinary collective representing the interests of healthcare consumers; the medical community; state, local and territorial public health authorities; professional associations; and federal agencies. In 2016, CORHA grew its membership, finalized a strategic plan and governance and developed operational bylaws. CORHA also formed workgroups tasked with identifying standardized and coordinated approaches to detection, reporting, investigation, and control of infectious disease outbreaks and exposure events within healthcare facilities and in various ambulatory settings. In 2017, CORHA workgroups will prioritize getting appropriate expert input from stakeholders, developing practical guidance for outbreak detection and investigation, and promoting CORHA's mission. For this session, CORHA members will share workgroup materials and developed resources with session participants to gain feedback and help determine the future priorities of tools to be developed.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Collaboration; Antimicrobial Resistance; Healthcare Associated Infections (HAI)
Consider for Different Presentation?	Yes

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Submission Type	Roundtable
ID	8246
Abstract Type	Roundtable
Abstract Title	Public Disclosure of Healthcare Facility Outbreaks
Abstract	

Key Objectives:
To discuss public disclosure of healthcare facility outbreaks. A secondary objective is to initiate development of a potential CSTE position statement on this subject.
Brief Summary:
There is growing recognition of the need for transparency in healthcare. Infection control breaches, adverse events, and medical errors are typically disclosed to affected patients, particularly if actions by patients are indicated. Such disclosures are typically performed by healthcare facilities or organizations, often with the involvement of public health agencies. These events are often disclosed secondarily to the public, either proactively by the facility or through media reports. Similarly, outbreaks of healthcare-associated infections often involve specific healthcare facilities. However, these events are infrequently disclosed to the public, and may not be revealed to patients involved in the outbreak. There is a lack of a standard approach to these issues in the United States. Most states require by regulation or statute that healthcare facilities report outbreaks to public health agencies, which may provide assistance in their management. If an outbreak report is generated, a specific facility is rarely identified by name, and the report is typically available only upon request. When they are revealed, either through media discovery or publication (often a year or more after the outbreak), public reaction is often unfavorable to both facilities and the public health agencies involved. There is a need for public health agencies to discuss these issues, and consider a standard approach to public and patient disclosure.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Outbreaks; Policy / Policy Development
Consider for Different Presentation?	No

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Submission Type	Roundtable
ID	8357
Abstract Type	Roundtable
Abstract Title	Structured Feedback on Proposed Sampling Modifications to National Healthcare Safety Network (NHSN) Healthcare-Associated Infections Surveillance External Data Validation Methodology

Abstract

Key Objectives:

Discussion Objectives: • Gauge the feasibility and acceptability of modifications in sampling methodology in NHSN external data validation toolkit based on input from state health departments participating in validation activities.

- Identify challenges within the current and proposed new NHSN data validation sampling guidance.
- Develop ways to improve the NHSN data validation guidance and toolkit.

Brief Summary:

Healthcare-associated infection (HAI) surveillance data quality varies across healthcare facilities reporting to the Center for Disease Control and Prevention's (CDC's) National Healthcare Safety Network (NHSN) and can be improved by external validation activities. NHSN's External Validation Guidance and Toolkits, issued since 2012, recommend a targeted sampling approach that is designed to apply limited validation resources as effectively as possible and focus on identifying reporting inaccuracies in facilities with high volumes of exposure to HAI risk. Although the targeted sampling approach is simpler and more efficient approach to begin the external validation process, targeted sampling has an important limitation in that representative information is not generated. NHSN staff plan to propose random sampling methods in future guidance that would generate quantifiable representative information and improve accuracy measures regarding NHSN data quality. NHSN staff will continue to update and expand the validation toolkits, taking into account lessons learned from state health department HAI data validation activities and input from data validators. An increasing number of states, in partnership with healthcare facilities, have used the toolkits to design, execute, and complete HAI data validation activities. This session will be used to discuss the usefulness, implementation challenges, and potential for improvements to HAI data validation methodology in current guidance with the intent of informing the structure, content and layout of the proposed 2017 validation guidance.

Submission Complete?	Yes
Committee	Infectious Disease
Topic	Healthcare-associated Infections
Keywords	Healthcare Associated Infections (HAI); Epidemiologic Methods; Data Collection
Consider for Different Presentation?	No

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