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**Session:** 57. HAI: Surveillance + Reporting

**Thursday, October 5, 2017: 12:30 PM**

**Background.** The community spread of multi drug-resistant organisms (MDROs) presents a significant local public health threat. The Orange County Health Care Agency (OCHCA) is collaborating with the Centers for Disease Control and Prevention (CDC) on a countywide decolonization collaborative involving 38 healthcare facilities. To characterize our county’s MDRO epidemiology and assess the effectiveness of these efforts, the OCHCA instituted local mandatory reporting for Methicillin-resistant Staphylococcus aureus (MRSA), extended-spectrum β-lactamase producing Enterobacteriaceae (ESBL), and carbapenem-resistant Enterobacteriaceae (CRE).

**Methods.** In July 2016 a health officer order was signed requiring all laboratories serving any county hospital, long-term acute care hospital (LTAC), or skilled nursing facility (SNF), to report all ESBL- and CRE-positive laboratory results, and all inpatient MRSA-positive reports to OCHCA. For this analysis, we reviewed reports received from July 2016 to March 2017.

**Results.** 12 laboratories serving 24 of 32 hospitals, all 3 LTACs, and 65 of 72 SNFs have been routinely reporting electronically. To date, we validated MDRO data from 13 hospitals, all LTACs, and all SNFs by comparing with parallel reporting systems. Validated hospitals reported 98 MRSA- and 115 ESBL-positive blood culture events. SNFs reported 754 ESBL-culture positive events from all culture types.

**Table 1. MDROs Reported to OCHCA**

| Facility | Culture Type | CRE | ESBL | MRSA |
|----------|--------------|-----|------|------|
| Screening | 0 | 0 | 0 | 0 |
| Clinical | 50 | 115 | 170 | 72 |
| Urine | 7 | 11 | 97 | 8 |
| Blood | 27 | 27 | 27 | 27 |
| Total | 50 | 122 | 237 | 103 |
| LTAC (3) | 73 | 242 | 233 | 103 |
| Blood | 27 | 27 | 27 | 27 |
| Total | 118 | 225 | 232 | 103 |
| SNF (65) | 36 | 78 | 165 | 49 |
| Blood | 36 | 68 | 83 | 33 |
| Total | 36 | 754 | 165 | 49 |

**Conclusion.** MDROs are significant causes of invasive disease in Orange County. ESBL colonization or infection was commonly identified in SNF residents, highlighting the need for improved infection control and antibiotic use in these settings. Community-wide surveillance provided objective data to assess the magnitude of MDROs. Local public health surveillance for CRE, ESBL, and MRSA can be effectively instituted in a large community, but is resource-intensive and requires extensive facility outreach.

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473. Map the Gap: Using Regional Mapping to Determine the State of the Infectious Diseases Workforce with Regards to Health Care Associated Infections and Sepsis Mortality

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**Background.** Methicillin-resistant Staphylococcus aureus (MRSA), central line associated with blood stream infections (CLABSI), catheter associated urinary tract infections (CAUTI) and surgical site infections (SSI) are healthcare associated infections (HAI) which are a major burden on the health care system. These issues are closely linked with reinforcement and outcomes. It is postulated that the spread of these healthcare associated infections is linked closely with mortality from sepsis.

**Methods.** De identified data about the number of board certified Infectious Disease (ID) physicians by zip code was obtained from the Doximy physician database. We then conducted a descriptive analysis using mortality data from the National Center for Health Statistics’ (NCHS), Compressed Mortality File (CMF), which contains descriptive data on the age, race, sex, year and causes of all deaths in the US. We defined sepsis death as death attributed to an infection. In addition, the location of current ID fellowship was obtained from the National Residency Matching Program (NRMP) public data. These were mapped using Google fusion tables and the results compared with CDC databases: prevalence of MRSA, CLABSIs, CAUTIs and SSIs.

**Results.** A total 147 fellowship programs and 7129 board certified physicians were identified in ID. Mortality from sepsis was highest in states: Arkansas, Louisiana, Mississippi, Tennessee, Kentucky, West Virginia and Florida, which correlated with the highest prevalence of MRSA, CLABSIs, CAUTIs and SSIs. ID fellowships and board certified physicians on the other hand tend to be concentrated on the East coast and the metropolitan cities of the West. Studies have also shown in the past that physicians tend to practice in geographical locations where they completed their training.

**Conclusion.** The use of this novel social network mapping approach to assess the Infectious Diseases physician workforce has the potential of providing real-time data regarding their geographical spread. HAI’s and mortality from sepsis tend to be higher in locations with fewer ID fellowships and board certified physicians. This problem could be addressed by rebalancing interventions and focusing on efforts to match the workforce with the prevalence of HAI and locations with higher sepsis mortality.

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474. 2015 NHSN CAUTI Definition Change and Its Impact on CLABSI Rates at an Academic Medical Center

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**Background.** The National Healthcare Safety Network (NHSN) revised their catheter-associated urinary tract infection (CAUTI) definition in January 2015 to exclude funguria. This definition change led to an increase in diagnosis of catheter-related fungemia in other health systems, due to the exclusion of CAUTI as an attributable source. We evaluated the effect of the NHSN CAUTI definition change on central line-associated blood stream infection (CLABSI) rates at our hospital.

**Methods.** This is a retrospective study that was conducted at an 1,154-bed academic medical center. We looked at the trend of our house-wide and intensive care unit (ICU) CLABSI and CAUTI incidence rates (IR) from January 2013 to December 2016. Our institutional vascular access policy was updated in 2016 to revise insertion and maintenance practices and introduce new guidelines for drawing blood cultures in setting of central lines.

**Results.** With the 2015 CAUTI definition, our house-wide CAUTI IR decreased by > 75% from 2014 to 2015 (3.42 to 0.92 per 1,000 catheter days (CD), P < 0.05). Similarly, our CLABSI IR increased slightly in 2015 (1.34 to 2.1 per 1,000 CD, P < 0.05). Conversely, there was an initial increase in our house-wide CLABSI IR from 2014 to 2015 (1.34 to 2.1 per 1,000 CD, P < 0.05), followed by a significant decline to 1.31 per 1,000 CD in 2016 (P < 0.05). Similarly, our ICU CLABSI IR increased slightly in 2015 (1.91 to 1.83 per 1,000 CD, P > 0.1) followed by a significant decline in 2016 (1.83 to 1.91 per 1,000 CD, P < 0.05, Table 1). This initial increase in our ICU CLABSI IR in 2015 was mainly driven by gram–positive organisms. Despite exclusion of yeast as pathogens from the 2015 CAUTI definition, our rates of catheter-related fungemia remained relatively stable (Figure 1).

**Conclusion.** The 2015 NHSN CAUTI definition resulted in a significant decline in our CAUTI rates. We did not see a sustained increase in our CLABSI rates as reported by other health systems. In fact, our CLABSI rates and catheter–related fungemia rates decreased in 2016. This could be related to implementation of new vascular access guidelines and CLABSI prevention efforts.

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**Figure 1: Trend of organisms causing CLABSI from 2013 to 2016**

| Year | House-wide CAUTI IR | House-wide CLABSI IR | ICU CAUTI IR | ICU CLABSI IR |
|------|---------------------|----------------------|-------------|--------------|
| 2012 | 4.95                | 1.54                 | 3.75        | 2.02         |
| 2014 | 3.42                | 1.34                 | 2.54        | 1.59         |
| 2015 | 0.92                | 2.1                  | 0.78        | 1.83         |
| 2016 | 0.80                | 1.31                 | 1.06        | 0.91         |

**Table 1. Incidence rates (IR) per 1000 catheter days using applicable NHSN definition**

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