

Multidrug-Resistant Organisms in Community Hospitals: Initial Trends from the DICON MDRO Biorepository

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Abstract (Revised)

Background

Although the majority of Americans receive their healthcare in community hospitals, almost nothing is known about Multidrug-resistant organisms (MDRO) in that setting.

Methods

The DICON MDRO Biorepository is an ongoing resource that prospectively collects clinically well-characterized samples from MDRO-infected patients hospitalized in community hospitals. For this cohort analysis, we analyzed the first 140 subjects enrolled. Data collected at enrollment included demographic information, previous medical history, social history, culture data, as well as a 90 day follow-up from the time of hospital discharge. Patients under the age of 18 and outpatients were excluded. Data points were collected at the bedside and through a detailed review of each subject's electronic medical record. Standard descriptive statistics were used.

Results

The average patient age was 61.8 (\pm 18.1); 74 (53%) were women. Seven patients were concurrently infected with more than one MDRO. The three most common MDROs were *C. difficile* (n=56, 38%), MRSA (n=54, 36%), and *E. coli* (n=18, 12%). Multidrug resistant aerobic bacteria caused similar numbers of soft tissue (n=25, 18%), bloodstream (n=28, 20%) and urinary tract infections (n=25, 18%). Co-morbidities such as diabetes (n=70, 50%), current and previous tobacco use (n=92, 66%), and BMI >30 (n=54, 39%) were common. 27 (19%) patients were categorized as having community-onset, community-associated infections; 33 (24%) were classified as hospital-acquired; and 79 (57%) were community-onset, healthcare-associated. 52 (37%) of patients required assistance with more than one ADL upon admission. 7 (5%) patients died and 16 (11%) required admission to the ICU due to infection. The average length of hospitalization was 19 days. For the 104 MDRO-infected patients with complete 90-day follow-up data, 49 (35%) were readmitted to the hospital; 30 (61%) re-admissions were infection related.

Conclusions

Similar to tertiary care centers, *C. difficile* and MRSA were the most common cause of MDRO infections in community hospitals. 60% of patients had a community-onset infection. Consequences of MDRO infections in community hospitals such as death and readmission were both severe and frequent.

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Background

- Infections due to multidrug-resistant organisms (MDRO) lead to patient suffering, increased costs and death
- MDROs are increasingly common in the community health setting
- Most data on MDROs is generated from large tertiary healthcare centers
- A more thorough understanding of MDROs in community hospital settings is important in reducing the burden of these infections.

Methods

- One community hospital in NC; Bed size: 217, 1 Intensive Care Unit
- Prospective cohort: enrolled 140 patients between July 1, 2013 and August 12, 2014
- Patients under the age of 18 and outpatients were excluded
- Clinically well-characterized samples from MDRO-infected patients
- Data collected at enrollment including demographic, medical history, social history, culture data
- 90-day follow-up data collected from the time of hospital discharge
- Prospective data collection; outcomes were assessed at the 90 day time period

Results

Table 1: Demographics and Comorbidities of the 140 enrolled patients

	N	%
AVERAGE AGE	61.8 (\pm 18.1)	---
RACE		
Caucasian	80	57%
African American	60	43%
AVERAGE APACHE II score	11	---
MCCABE SCORE (at admission)		
1 (nonfatal disease)	109	78%
2 (ultimately fatal disease)	24	17%
3 (rapidly fatal disease)	7	5%
CHARLSON COMORBIDITY SCORE (\geq5)	87	62%
ADMITTED FROM		
Home	112	80%
Other Hospital	15	11%
LTAC	10	7%
Home	3	2%
ADMITTED IN THE LAST 12 MONTHS	97	71%
OTHER VARIABLES AT ADMISSION		
IV present	15	11%
Urinary catheter present	17	12%
Immunosuppressive medications	24	17%
History of MDRO infection	52	38%
LOCATION OF ACQUISITION		
Community-acquired	27	19%
Healthcare-associated, community-onset	79	57%
Healthcare-associated, hospital-onset	33	24%
OTHER OUTCOMES		
Death during hospitalization	7	5%
Admitted to ICU due to infection	16	11%
Re-admitted within 90 days of discharge	49	35%
Re-admission infection related	30	61%
Return to ER within 90 days of discharge	49	35%
Infection related ER visit	31	63%
Avg duration of hospital stay (days)	19.4	---
Avg re-admission due to infection (days)	8.8	---

Figure 1: Number of each infection type of the 140 enrolled

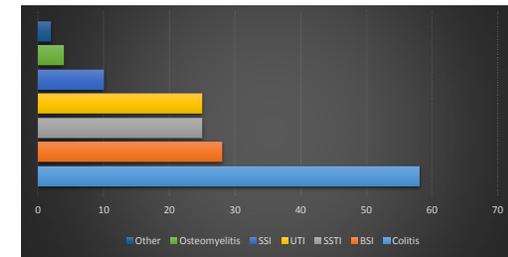
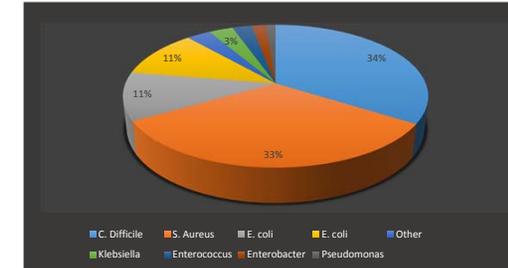


Figure 2: Percentage of all sample organism types collected between July 2013 and August 2014



Conclusions

- *C. difficile* and MRSA were the most common cause of MDRO infections
- 57% of patients had a community-onset, healthcare associated infection
- Death and re-admission are consequences of MDROs in community hospitals.