Session: 37. Bacteremia, CLABSI, and Endovascular Infections
Thursday, October 3, 2019: 12:15 PM

Background. Bloodstream infections are a leading cause of mortality amongst hospitalized patients. Optimizing time to pathogen identification and receipt of appropriate antibiotic therapy significantly decreases mortality, morbidity, and length of hospitalization. Rapid diagnostic tests, such as Verigene, assist in the early identification of bacteria and resistance determinants from positive blood cultures; however, Verigene assays are limited to the detection of 13 gram-positive and 9 gram-negative bacteria.

Methods. The purpose of this study was to describe gram-negative and gram-positive aerobic bacteria identified from positive blood cultures with no Verigene target detected and to use the susceptibilities to create an antibiogram to assist in empiric antibiotic selection. A total of 2325 positive blood cultures resulted between January 2017 and October 2018 underwent Verigene testing.

Results. Of the 2325 isolates, 383 (16.5%), had no Verigene organism or resistance mechanism detected. Of these, there were 239 (62.4%) gram-positive isolates, 141 (36.8%) gram-negative isolates, and 3 yeast isolates with 96 unique organisms. Seventy-six (19.8%) of the organisms identified by standard culture, but not Verigene testing, are included on Verigene panel. We analyzed nine common antibiotics active against gram-negative organisms to determine percent susceptibilities against the isolated aerobic pathogens: amikacin (92.1%), cefepime (93.5%), ceftazidime (94.0%), ceftriaxone (79.7%), ciprofloxacin (88.5%), gentamicin (91.9%), levofloxacin (86.9%), piperacillin–tazobactam (83.8%), and tobramycin (85.5%). Additionally, four antibiotics active against gram-positive organisms were analyzed for gram-positive susceptibilities: cefotaxime (91.8%), ceftriaxone (98.1%), levofloxacin (82.5%), and vancomycin (91.8%).

Conclusion. The results of this study provide clinicians with antibiotic susceptibilities against organisms that were not identified through Verigene to better guide timely and appropriate antibiotic therapy against gram-negative and gram-positive aerobic bacteria.

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195. Descriptive Study of the Use of External Cooling Blankets in Hyperthermia

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Session: 37. Bacteremia, CLABSI, and Endovascular Infections
Thursday, October 3, 2019: 12:15 PM

Background. Fever is a beneficial physiologic response to infection and is protective in gram-negative bacteremia and invasive candidiasis. Cooling blankets (CBs) are used in fevers due to a perception of providing symptomatic relief. However, external cooling of septic patients has been shown to be an independent risk factor for adverse effects. Here, we present a retrospective analysis of CB use in our institution and the associations of infections with CB duration.

Methods. We reviewed electronic medical records of patients aged ≥18 years admitted to a tertiary care hospital between 2015–2017 and in whom a CB was used. Study variables included demographics and clinical characteristics such as infection and fever duration (time of CB start to first defervescence). Correlations between continuous variables were assessed using the Spearman's rank correlation test and differences in the distribution of continuous variables by groups were assessed using Mann–Whitney U and Kruskal–Wallis tests.

Results. This analysis included 548 patients who used a total of 575 CBs during their stay (27 patients used ≥1 CB). The median age was 61.9 years and 56.9% were male. The most frequent comorbidities were immunocompromised state (40.3%), diabetes mellitus (33.6%) and coronary artery disease (32.3%). Pneumonia was the most common infection within 5 days of CB start (31.9%). Only 174 CBs had a documented discontinuation during hospitalization; for the remaining CBs, such documentation was absent. The median CB duration for these patients was 33.8 hrs (IQR: 18.0–80.9) while median fever duration was only 21.8 hours (IQR: 6.6–52.2). CB duration was highly correlated with fever duration (rho=.773, p

Conclusion. Clinician documentation of CB use was poor, only 30.2% recorded a stop time. Documented CB duration exceeded fever duration by more than 1.5 times and led to shivering responses in over 2/3 of patients. These findings suggest that CB use is arbitrary, not in keeping with established protocol or rationale, and its adverse effects may outweigh potential benefits. Their role should be re-evaluated and appropriate institutional protocols formulated.

Disclosures. **All authors:** No reported disclosures.

196. Impact of BioFire FilmArray® Blood Culture Identification on the Management of Staphylococcus aureus Bacteremia

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Session: 37. Bacteremia, CLABSI, and Endovascular Infections
Thursday, October 3, 2019: 12:15 PM

Background. Staphylococcus aureus bacteremia (SAB) is associated with 30-day mortality rates that are as high as 20 to 40%. In order to reduce mortality and treatment failures, SAB management should include prompt infectious diseases (ID) consult, repeat blood cultures, source control, intravenous antibiotics for the entirety of treatment, and optimal treatment duration. The objective of this study was to determine the impact of BioFire FilmArray® Blood Culture Identification (BCID) on the implementation of these standard of care measures in the management of SAB across a large health system.

Methods. This study was an IRB approved, retrospective chart review evaluating the impact of rapid diagnostics on the management of SAB before and after implementation of BCID. The composite endpoint consisted of mortality at 30 days, persistent SAB (≥7 days), and recurrence of S. aureus infection within 30 days. Patients were included if they were ≥18 years old and at least one blood culture was positive with S. aureus. The pre-BCID period was between September 1, 2016 and March 31, 2017. The post-BCID period was between April 1, 2017 and July 31, 2018. Fisher's exact test, student's t-test, and descriptive statistics were used in the analysis.

Results. A total of 200 patients met eligibility (pre-BCID, n = 102; post-BCID, n = 98). The composite endpoint was met in 34% of patients in the pre-BCID group and 29% in the post-BCID group (P = 0.45). Mortality at 30 days (17% vs. 17%, P = 1.00), persistent SAB (16% vs. 13%, P = 0.69), and rates of recurrence within 30 days (4% vs. 1%, P = 0.37) were similar between groups. ID consult increased after BCID implementation (83% vs. 92%, P = 0.001). More patients in the post-BCID received appropriate durations of antibiotics (75% vs. 86%, P = 0.04) and had decreased time, in hours, to definitive therapy (7 ± 17 vs. 1 ± 5, $P \leq 0.05$).

Conclusion. The management of SAB after implementation of BCID did not show a decrease in the primary outcome but did show an improved time to appropriate therapy. A larger study is needed to determine whether improved time to appropriate therapy translates to an improvement in patient outcomes.

Figure 1: Clinical outcomes Pre-BCID and Post-BCID

	Pre-BCID (n=102)	Post-BCID (n=98)	p-value
Composite, n (%)	35 (34)	28 (29)	0.45
30 day mortality, n (%)	17 (17)	17 (17)	1.00
Persistent SAB, n (%)	16 (16)	13 (13)	0.69
Recurrence at 30 days, n (%)	4 (4)	1 (1)	0.37
ID consult, n (%)	84 (83)	90 (92)	0.001
Appropriate duration of antibiotics, n (%)	75 (75)	84 (86)	0.04
Transition to oral therapy, n (%)	20 (20)	12 (12)	0.18
Repeat blood cultures, n (%)	79 (77)	78 (80)	0.73
Time to ID consult (hours), mean ± SD	15 ± 42	14 ± 39	0.84
Time to definitive therapy (hours), mean ± SD	7 ± 17	1 ± 5	< 0.05
ECHO, n (%)	93 (91)	93 (95)	0.41
MRI, n (%)	25 (25)	26 (27)	0.75

ECHO = echocardiogram, MRI = magnetic resonance imaging

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197. Infective Endocarditis Over a Five-Year Period in an Academic Teaching Center: The Validity of ICD Codes vs. Manual Chart Review

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Session: 37. Bacteremia, CLABSI, and Endovascular Infections
Thursday, October 3, 2019: 12:15 PM

Background. Opioid dependence and overdose are at epidemic levels in the United States. Ohio has the third highest rate of opioid-related overdose deaths. Infectious complications of intravenous drug use (IDU) include increased acquisition of hepatitis C, HIV and infective endocarditis. In this study, we aimed to characterize cases of infective endocarditis admitted to our healthcare system over a five-year period. We additionally sought to determine the validity of using ICD codes to identify infective endocarditis cases and IDU.

Methods. Patients with ICD-9 or 10 discharge diagnosis codes for infective endocarditis were identified from our institution's electronic health record. ICD codes pertaining to substance abuse were used to classify patients according to IDU status. Readmissions during the same episode of infective endocarditis were excluded. We compared chart review to ICD code for the identification of infective endocarditis and IDU in a random sample of 296 of 1590 cases.

Results. Of 296 charts reviewed, 133 (44.9%) were excluded because they did not meet criteria for definite infective endocarditis by modified Duke's criteria or because the episode was a readmission. A total of 163 (55.1%) cases met inclusion criteria, all of whom were seen in consultation by the inpatient Infectious Disease service. Of these, 52 (31.9%) had ICD 9 or 10 codes linked to substance abuse. Following manual

chart review, we established that in fact 86 of these 163 cases (52.8%) had evidence of substance abuse.

Conclusion. Misclassification due to use of ICD codes is a well-established challenge to epidemiological research. However, the extent of misclassification in this analysis was greater than expected. If prior research on IDU and infective endocarditis has relied on medical record data alone without verification through manual chart review, the observed epidemiological trends may not be accurate.

Disclosures. **All authors:** No reported disclosures.

198. Chart Validation of an Algorithm for Identifying Patients with Intravenous Drug Use-Associated Endocarditis Using Administrative Code Data

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Session: 37. Bacteremia, CLABSI, and Endovascular Infections
Thursday, October 3, 2019: 12:15 PM

Background. Studies using administrative data have described increasing rates of intravenous drug use (IVDU)-associated infective endocarditis (IE) in the United States. These studies used International Classification of Disease (ICD) diagnosis codes to identify hospitalized patients with IE and any illicit drug use (i.e., opioid, amphetamine, cocaine or sedative), but were hindered by absence of specific ICD codes for IVDU. We reviewed charts to determine the positive predictive value (PPV) of ICD codes for identifying patients with IE and IVDU.

Methods. We examined national Veterans Affairs (VA) administrative data from January 2010 to December 2017 to identify patients hospitalized for a first episode of potential IVDU-associated IE based on inpatient ICD 9 and 10 codes for both IE and any illicit drug use, the algorithm used to identify IVDU-IE in most prior studies. We randomly selected 100 of these patients nationally and reviewed hospital charts to confirm clinical documentation of: (1) IE, (2) any illicit drug use, and (3) current or past IVDU.

Results. We identified 340 patients with concurrent ICD codes for IE and drug use, increasing from 28 in 2010 to 51 in 2017 (82% increase). In chart review of 100 randomly selected patients, the PPV of ICD codes was 93% (95% CI 88–98%) for a documented clinical diagnosis of IE; 96% (95% CI 92–100%) for documented drug use by any route; and 63% (95% CI 53–73%) for documented IVDU. Among the 37% of patients without clinically documented IVDU, 30% (i.e.,11% of total patients) had clinical documentation stating that drug use was only by non-IV routes, 59% (22% of total) had documented drug use without mention of route of use, and 11% (4% of total) had clinical documentation that patients denied any drug use.

Conclusion. The incidence of first hospitalization for IE among patients with ICD codes for drug use increased by 82% from 2010 to 2017 in VA care. Concurrent ICD codes for illicit drug use had moderate PPV for identifying IVDU in setting of IE, largely due to identification of patients using drugs without documented intravenous use. There is a need to develop more accurate case-finding algorithms for identifying patients with IVDU-associated endocarditis, for both epidemiologic surveillance and quality improvement applications.

Disclosures. **All authors:** No reported disclosures.

199. Infections in VADers: A True Villain of the Force

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Session: 37. Bacteremia, CLABSI, and Endovascular Infections
Thursday, October 3, 2019: 12:15 PM

Background. Ventricular assist devices (VADs) are increasingly used for the management of end-stage heart failure, but infection is a complication that has not been thoroughly studied. The purpose of our study was to compare patients who had surgical debridement vs. medical therapy alone for VAD-related/specific infections.

Methods. We performed a retrospective chart review on patients at Duke University Hospital (DUH) from 2015 to 2017. Patients with VAD-related/specific infections were included, per 2011 ISHLT definitions. We reviewed electronic medical records for demographics, VAD implantation data, infectious episodes, surgical debridements and mortality. Descriptive statistics compared patients with and without debridement and compared with and without relapse.

Results. We found 94 infections in 72 patients. Descriptive statistics of the cohort and comparisons with and without debridement can be seen in Table 1. Sixty-one cases (65%) included debridement and 5 (5%) required pump exchange. Notably, patients with fever or bacteremia were more likely to undergo debridement. Of the patients that had a preoperative CT, sensitivity for deep infection (pump, pocket, or deep to the muscle) was 38%, yet specificity was 95%. For superficial infections (involving the driveline or superficial to the muscle), preoperative CT sensitivity was 95%; specificity 65%. Table 2 shows intraoperative culture data. When the preoperative driveline culture grew Staphylococcus species or *Pseudomonas aeruginosa* there was strong correlation with intraoperative organism (matched in >75% of cases). Table 3 compares treatments among patients with and without infective relapse. Relapse rate appeared the same if patients received 2, 4, or ≥6 weeks of intravenous antibiotics.

Conclusion. We present a large single-center cohort [DCWM1] examining VAD-related/-specific infections. While patients chosen for debridement may be sicker, these patients had a longer hospital stay and relapsed more often. Preoperative CT should be used with caution as it underestimates the extent of disease. However, preoperative driveline cultures correlated strongly with intraoperative cultures for most common pathogens. There was no association between initial intravenous therapy duration and infection relapse.

Table 1. demographic characteristics of total cohort and comparisons among patients who underwent debridement for treatment of infection and patients who did not undergo debridement for treatment of infection

Characteristic	Debridement (N=61) N (%)	No debridement (N=33) N (%)	p-value
Age (mean, std)	58.2 (12.1)	56.0 (15.7)	0.48*
Female	18 (29.5)	10 (30.3)	0.94†
BMI (IQR 25-75)	31 (27-40)	33 (26-41.5)	0.45‡
Etiology			0.13†
Ischemic	22 (36.1)	18 (54.6)	
Non-ischemic	39 (72.2)	15 (45.4)	
Device Type			0.02†
Heartware	9 (14.75)	1 (3.03)	
HM2	49 (80.33)	31 (93.94)	
HM3	3 (4.92)	1 (3.03)	
Diabetes	27 (44.3)	16 (48.5)	0.69†
Hypertension	55 (90.2)	30 (90.9)	0.91†
COPD	18 (29.5)	6 (18.2)	0.32†
Prior sternotomy	25 (41.0)	14 (42.4)	0.89†
Prior valve replacement	19 (31.2)	9 (27.3)	0.81†
Days from LVAD until infection (median, Q25-Q75)	528 (245-903)	551 (300-1,082)	0.25‡
VAD-specific infections			
Pump	3 (5.4%)		
Pocket	2 (3.6%)		
Driveline	48 (85.7%)		
VAD-related infections	9 (14.8%)	4 (12.1%)	0.08*
Fever at diagnosis	21 (34.4)	3 (9.1)	0.007†
Mortality (only out of 72 unique patients)	25 (50%)	11 (42.3%)	0.31†
Hospital LOS (days)	11 (8-17)	4 (1-14)	0.0007‡
Number of admits within 6 months	0 (0-1)	0 (1-0)	0.41‡
Relapse	41 (67.2%)	15 (26.8%)	0.04†

*unpaired T-test, † Fisher's exact test, ‡ Wilcoxon rank-sum test

Table 2. Organisms found intraoperatively and the number of organisms found preoperatively that are the same as the intraoperative cultures

Intraoperative Culture Organism		Preoperative Cultures that identify the same Organism as Intraoperative Cultures
MSSA	22 (36%)	17 (77.3%)
MRSA	6 (10%)	6 (100%)
CoNS	4 (7%)	3 (75%)
Pseudomonas aeruginosa	6 (10%)	5 (83%)
Non-Pseudomonal GNR's	5 (8%)	
Other (fungi, mycobacterium)	4 (7%)	
Polymicrobial	6 (10%)	
No Culture Done	2 (3%)	
Negative	6 (10%)	

*A total of 38 preoperative cultures identified the same organism as the intraoperative cultures

Table 3. Comparing treatment and cultures in patients who suffered an infection relapse

Treatment	Relapse (N=56)	No Relapse (N=38)	p-value
Debrided	41 (73.2%)	20 (52.6%)	0.04*
Debrided + Pre-hospital antibiotics	18 (43.9%)	6 (30.0%)	0.4*
Debrided + IV antibiotics			0.23*
2 weeks	1 (2.4%)	3 (15.0%)	
4 weeks	8 (19.5%)	3 (15.0%)	
≥6 weeks	32 (78.1%)	14 (70%)	
Oral long-term suppressive antibiotics	32 (57.1%)	9 (23.7%)	0.001*
Intraoperative Culture			0.19*
MSSA	15 (26.8%)	7 (18.4%)	
MRSA	5 (8.9%)	1 (2.6%)	
Coagulase negative staphylococcus species	3 (5.4%)	1 (2.6%)	
Pseudomonas	3 (5.4%)	3 (7.9%)	

*Fisher's exact Test

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200. Real-World Experience with Dalbavancin for Complicated Gram-Positive Infections: A Multicenter Evaluation

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