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Background. Methicillin-resistant *Staphylococcus aureus* (MRSA), when implicated in respiratory tract infections, can be associated with significant morbidity and mortality. The prevalence of severe MRSA pneumonia may be as high as 10%; however, recent evidence suggests that MRSA is much less prevalent as a cause of community-acquired pneumonia (CAP) among community-dwelling patients and may be as low as 0.1%. Nonspecific features of pneumonia in non-ICU patients (viral co-infection, multi-lobar infiltrates) often lead clinicians to cautiously initiate empiric anti-MRSA therapy. Recommendations of when to safely de-escalate empiric treatment prior to known respiratory cultures are not established. To decrease anti-MRSA therapy in non-ICU pneumonia patients with a low probability of MRSA pneumonia, we employed a nasal screening paired with antimicrobial stewardship intervention.

Methods. A retrospective, single-center, pre-post interventional study was conducted at Northwestern Memorial Hospital (NMH), in Chicago, IL, to assess the duration of empiric vancomycin for suspected MRSA pneumonia in non-ICU patients before (January 2019) and after (March 2019) the implementation of a rapid MRSA nasal PCR test. During the post-implementation period, an NMH Antimicrobial Stewardship (AS) member identified and assessed the daily (M-F) use of empiric vancomycin for pneumonia in non-ICU patients. When vancomycin use criteria were not met, the AS pharmacist requested the team order a BD MRSA Nasal PCR test (NPV: 97.2%) to classify patients as either possible MRSA pneumonia or unlikely MRSA pneumonia. Results of a negative MRSA Nasal PCR with an ongoing clinical disposition not suggestive of MRSA pneumonia prompted the AS pharmacist to recommend de-escalation of vancomycin.

Results. See table.

Conclusion. The use of a rapid MRSA nasal PCR test with active antimicrobial stewardship intervention significantly reduced the duration of empiric vancomycin in hospitalized non-ICU patients with suspected MRSA pneumonia.

	Pre-intervention (January 2019)	Post-intervention (March 2019)	Difference mean days	*P*-value
N	36	34		
Duration of empiric vancomycin mean [SD], days	3.4 [3.4]	1.8 [1.0]	-1.6 (95% CI: -2.8 to -0.40)	0.0098

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

2011. Reaction of Clinicians to Positive Respiratory Viral Panels in Non-critically Ill Patients Without Bacterial Infection

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Background. Respiratory viral panels (RVPs) can detect multiple viral pathogens and give clinicians diagnostic confidence to discontinue antibiotics. However, relatively little is known about how these tests influence antibiotic prescribing in hospital settings.

Methods. This was a 26-month retrospective chart review of patients with positive RVPs. Hospitalized adults receiving antibiotics at the time of the RVP were included. Exclusion criteria were: ICU care, solid-organ transplantation (SOT), positive RVP for influenza, positive bacterial cultures, and antibiotic administration for bacterial infection (e.g., cellulitis). A multivariate linear regression model was created to investigate associations with longer antibiotic use after a positive RVP.

Results. 1,346 patients were screened and 242 met inclusion criteria. Primary reasons for exclusion were SOT, ICU, and influenza diagnosis. Patients were a median age of 60.5 years [IQR 51,70] and 35.5% were men. The median length of stay (LOS) was 4 days [IQR 3,6]. 233 patients (6.3%) had chest radiology performed, of which 71 (30.4%) had possible pneumonia noted. 50 (20.7%) were immunocompromised (IC). 199 (82.2%) had a history of pulmonary disease, most commonly COPD. Rhinovirus was isolated in 156 patients (64.5%), followed by metapneumovirus (35, 14.9%) and RSV (32, 13.3%). Antibiotics were given for a median total of 3 days [IQR 3,6]; they were discontinued within 24 hours of the RVP result in 107 patients (44.2%).

Conclusion. In this population of patients with viral infection and no discernable bacterial infection, 44.2% of patients had antibiotics discontinued within 24 hours of RVP results. On multivariate linear regression analysis, younger age, longer LOS, and IC status were associated with longer antibiotic duration after a positive RVP. A comparison with patients with negative RVP results could reveal if the test prompted discontinuation.

Table. Factors evaluated for antibiotic duration after RVP result

		Univariate analysis		Multivariate analysis	
		Duration of antibiotics after RVP reported (days), median [IQR]	Wilcoxon Rank Sum p-value	Estimate	p-value
Gender	Male	1 [0, 3]	0.134	-0.058	0.633
	Female	1 [0, 2]			
IC	IC	1 [0, 2.5]	0.210	0.230	0.038
	Not IC	1 [0, 3]			
Any pulmonary condition	Yes	1 [0, 3]	0.221	0.254	0.209
	No	1 [0, 3]			
Asthma	Yes	1 [0, 2.25]	0.168	0.030	0.834
	No	1 [0, 3]			
COPD	Yes	1 [0, 2.25]	0.785	-0.034	0.813
	No	1 [0, 3]			
Heart failure	Yes	0 [0, 2.5]	0.096	0.197	0.175
	No	1 [0, 3]			
Positive CXR	Yes	1 [0, 3]	0.211	-0.134	0.295
	No	1 [0, 3]			
Age	NA	NA	NA	-0.017	0.038
LOS	NA	NA	NA	0.355	<0.001

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

2012. Trends in Microbiological Culture Collection Across Veterans Affairs Medical Centers and Community Living Centers, 2010 to 2017

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Background. Microbiological cultures are critical in the diagnosis of infection, identification of pathogenic organisms, and tailoring antibiotic use. However, unnecessary collection of cultures, particularly from the urine, may lead to overuse of antibiotics. There have been no national studies to evaluate trends in the collection of cultures in acute and long-term care settings. Here we describe changes in the collection of cultures nationally across Veterans Affairs medical centers (VAMCs) and Community Living Centers (CLCs).

Methods. All positive and negative cultures collected from 2010 to 2017 among Veterans admitted to VAMCs or CLCs were included. Cultures were categorized by specimen source (urine, blood, skin and soft tissue, or lung). *Joinpoint* software was used for regression analyses of trends over time and to estimate annual average percent changes with 95% confidence intervals (CI).

Results. A total of 5,089,640 cultures from 158 VAMCS and 342,850 cultures from 146 CLCs were identified. The number of cultures collected for all culture types in VAMCs and CLCs decreased significantly. The number of cultures collected per admission decreased significantly by 5.5% annually among VAMCs (95% CI −7.0 to −4.0%) and by 8.4% annually among CLCs (95% CI −10.1 to −6.6%). The proportion of positive cultures decreased 1.6% annually among VAMCs (95% CI −2.3 to −0.9%) and remained stable among CLCs (-0.4% annually, 95% CI, −1.1 to 0.4%). The most common culture source among VAMCs was blood (36.2%), followed by urine (31.8%), and among CLCs was urine (56.9%), followed by blood (16.0%). Urine cultures decreased by 4.5% annually among VAMCs (95% CI −5.4 to −3.6%) and 7.0% annually among CLCs (95% CI −7.6 to −6.4%).

Conclusion. Our study demonstrates a significant reduction in the number of cultures collected over time. Positive cultures decreased significantly in VAMCs, possibly indicating fewer culture-positive infections.In both VAMCs and CLCs, decreases in cultures taken may represent an important reduction in the collection of unnecessary cultures nationally driven by increased awareness about over-testing and over-treatment of presumed infection, particularly urinary tract infections.

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

2013. Blood Culture Contamination in the Emergency Department: A Risk Factor Analysis

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Background. Blood cultures (BCx) guide treatment for hospitalized patients, yet contaminated BCx lead to clinical uncertainty, impacting care. The Clinical and

Laboratory Standards Institute (CLSI) recommends contamination rates should be <3%, yet our Emergency Department (ED) rate is consistently above this benchmark. Reasons for this are unclear, thus it is imperative to investigate potential risk factors for BCx contamination.

Methods. We performed a retrospective case–control risk factor analysis of patients with BCx collected in our ED between 2014 and 2018. Contaminated BCx were identified by the microbiology laboratory per American Society of Microbiology recommendations. Demographics, comorbidities, and clinical characteristics were evaluated in patients with false-positive/contaminated BCx (cases) and patients with negative BCx (controls). Potential risk factors identified in univariate analysis were included in a logistic regression model. Unadjusted and adjusted analyses were performed using SAS 9.4.

Results. 25,668 BCx from 13,782 patients were included in analysis. 20,907 BCx from 11,266 (82%) patients were negative, 2,856 BCx from 1,504 (11%) patients were true positives, and 1,905 BCx from 1,012 (7%) patients were contaminated. Yearly ED contamination rates ranged from 5.0–9.3%. Collector contamination rates varied, though 38 (19%), 75 (35%), and 7 (3%) of 209 collectors had a contamination rate <3%, ≥ 10%, and ≥ 20%, respectively. Significant patient-specific risk factors identified in univariate analysis are listed in the attached table along with adjusted analysis.

Conclusion. In our analysis, we identified that older age, African American race, higher BMI, COPD, paralysis, and presenting in septic shock independently increases risk of having a contaminated BCx. Difficulty obtaining venipuncture in patients with these risk factors, often requiring multiple collection attempts, likely leads to decreased sterile technique. It is imperative to have a process assuring sterile technique in these high-risk individuals to minimize consequences associated with having a false-positive BCx result in these high-risk patients. Additionally, variable collector contamination rates seen in this study highlight the necessity for frequent technique in-service training.

	Case (Contaminant) N=1,012	Control (True Negative) N=11,266	Unadjusted Analysis P value	Unadjusted Analysis OR (95% CI)	Adjusted Analysis OR (95% CI)
Age, yr mean (± SD)	58.5 (18.3)	56.3 (18.1)	<0.001	1.01 (1.003 - 10.10)	1.01 (1.005 - 1.012)*
Race - African American, n (%)	439 (44.0)	109 (37.0)	<0.001	1.25 (1.096 - 1.015)	1.32 (1.152 - 1.508)*
BMI, kg/m²mean (± SD)	29.2 (9.8)	28.1 (8.7)	<0.001	1.01 (1.003 - 1.015)	1.01 (1.002 - 1.015)*
CHF, n (%)	236 (23.3)	2260 (20.1)	0.014	1.21 (1.040 - 1.412)	1.04 (0.879 - 1.219)
COPD, n (%)	478 (47.2)	4721 (41.9)	0.001	1.24 (1.091 - 1.412)	1.16 (1.018 - 1.329)*
Paralysis, n (%)	70 (6.9)	49 (4.4)	<0.001	1.62 (1.253 - 2.104)	1.64 (1.261 - 2.143)*
DM, n (%)	312 (30.8)	3121 (27.7)	0.034	1.16 (1.012 - 1.338)	1.03 (0.890 - 1.195)
Septic Shock, n (%)	201 (20.0)	1841 (16.3)	0.015	1.27 (1.079 - 1.492)	1.26 (1.065 - 1.485)*

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

2014. Assessment of Cost, Morbidity, and Mortality Associated with Blood Culture Contamination

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Background. Blood cultures are the primary diagnostic tool for bloodstream infections, but accuracy of results is dependent on collection technique. Decreasing blood culture contaminations is a priority for antimicrobial stewardship programs as false positives can expose patients to adverse effects of unnecessary antibiotics. In this study, we present an analysis comparing clinical outcomes and cost associated with false-positive and true negative blood cultures at our institution.

Methods. We conducted a single-center, retrospective, case–control study in patients admitted following blood culture collection in the emergency department from 2014 to 2018. Demographic and clinical characteristics were evaluated in patients with false-positive blood cultures (cases) and negative blood cultures (controls). Contaminants were identified per American Society of Microbiology recommendations. Clinical outcomes were compared between cases and controls, and adjusted analyses were performed with logistic regression, linear regression, and generalized linear models controlling for age, race, body mass index, and sepsis. Statistical analysis was performed using SAS 9.4.

Results. A total of 1,102 cases and 11,266 controls were included in analysis. All clinical outcome measures were significantly higher in patients with contaminated blood cultures (see table). Select clinical outcomes remained significant when controlling for potential confounders.

Conclusion. To the best of our knowledge, this is the largest study evaluating the clinical and financial impact of blood culture contamination with inclusion of >1,000 cases during a 5-year period. Our study shows that blood culture contamination is associated with increased length of stay, unnecessary exposure to antibiotics and procedures, development of antibiotic-associated adverse events, and higher hospital charges as reported in smaller studies. However, this study is the first to the best of our knowledge reporting increased mortality associated with blood culture contamination. Implementation of innovative strategies to reduce contamination should be pursued. Antimicrobial stewardship programs should prioritize identification of contaminants and rapid de-escalation of inappropriate antibiotics in these patients to improve patient care.

Table: Clinical Outcomes Comparing Contaminated vs. Negative Blood Cultures

Clinical Outcome Measures	Cases (Contaminants) N=1,012	Controls (True Negatives) N=11,266	Unadjusted Analysis p value	Adjusted Analysis p value
Length of Stay (d), Mean (±SD)	7.9 (9.3)	6.6 (7.3)	<0.0001	<0.0001
Length of Abx Therapy (d), Mean (±SD)	6.2 (7.2)	5.2 (5.9)	<0.0001	<0.0001
Vanc ordered (n,%)	823 (81.3)	7,314 (64.9)	<0.0001	ND
Vanc length of therapy (d), Mean (±SD)	3.5 (4.0)	2.5 (3.6)	<0.0001	<0.0001
Acute Kidney Injury (n,%)	374 (36.7)	2,962 (26.3)	<0.0001	<0.0001
ID Consult (n,%)	162 (16.0)	1,457 (12.9)	0.0056	ND
Transthoracic echocardiogram (n,%)	277 (27.4)	2,163 (19.2)	<0.0001	<0.0001
Transesophageal echocardiogram (n,%)	14 (1.4)	87 (0.8)	0.0392	ND
In hospital Mortality (n,%)	81 (8.0)	521 (4.6)	<0.0001	<0.0001
In hospital Hospice (n,%)	83 (8.2)	624 (5.5)	0.0005	ND
Hospital Charge ($), Mean (±SD)	36,008 (51,284)	28,875 (48,591)	<0.0001	<0.0001

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

2015. Minimal Impact of Blood Culture Contaminants on Patient Care Decisions May Limit Cost-Effectiveness of Interventions to Reduce Contamination Rates

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Background. High blood culture (BC) contamination rates have been associated with increased healthcare cost, antimicrobial use, and extended length of stay. Interventions using blood culture diversion devices (BCDD) reduce contamination rates, but often increase equipment costs compared with traditional collection techniques. Cost savings will only be achieved, therefore, if contaminated BCs do in fact lead to expensive care decision. The purpose of this study was to define the actual impact of contaminated BCs on patient care as a means of determining the cost-effectiveness of implementing BCDD at our institution.

Methods. A retrospective review of all contaminated BCs collected in our Emergency Department (ED) from July 2018 to December 2018 was completed. Data including antimicrobial therapy, admission status, laboratory orders, and co-morbidities for patients with contaminated cultures, as defined by the College of American Pathologist (CAP), were recorded. Laboratory costs included rapid molecular assays performed for patients admitted from the ED, as well as technologist effort and media costs for BC work-up.

Results. During this study period, out of a total of 4,176 blood draws, there were 118 BCs (2.8%) that met the CAP definition of contamination. Of all contaminated cultures, only 12.7% (*n* = 15) of patients were treated because of a positive BC, while 68.6% were given antibiotics due to other comorbidities; A total of 22 patients (18.6%) did not receive any antibiotics during the encounter. The most common therapy for treated contaminants was vancomycin (14/15, 93.34%) for an average of 5.2 days. No patients with contaminated BCs were admitted to the hospital because of a positive result; 92.3% of patients with contaminated BCs were admitted, however, for a different diagnosis. Based on average treatment and laboratory costs, the total costs per contaminant were estimated at $170 USD.

Conclusion. Contamination of BCs collected in the ED does not routinely lead to antimicrobial therapy or hospital admissions at our institution. This minimal impact of BC contaminants on patient care decisions and healthcare costs limits the cost-effectiveness of interventions such as BCDD at our institution. These findings may be specific to our institution based on our clinical practice and unique patient population.

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

2016. Antibiotic Misuse of Rural Residents and Pilot Project of Antibiotic Take-Back Program

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Background. Self-medication with antibiotics (SMA) is a major form of antibiotic misuse behaviors contributing to increasing antimicrobial resistance (AMR). The main source of SMA usually comes from in-home leftover antibiotics which usually disposed as household waste without classification. Therefore, an antibiotic take-back program (ATBP) is urgently needed.

Methods. A pilot ATBP was launched in Liantang Village, Zhejiang Province from January to March, 2019. A total of 50 households were randomly selected for the baseline survey. A questionnaire was used to investigate their knowledge and antibiotic use behaviors. Health education leaflets and posters were distributed to each household. A village Wechat group was set up for health communication. Residents were encouraged to hand over those unused or expired antibiotics at home to the village clinic to redeem a commodity. The pilot ATBP was implemented for 30 days. The type, name, and amount of antibiotics were collected as after intervention data.

Results. All of 50 households finished the questionnaire. Although 27 (52.9%) agreed that keeping antibiotics at home would potentially increase risk of SMA, there were still 32 (64.0%) residents reported that they kept antibiotics at home and 25 (49%) residents indicated that their leftover antibiotics usually disposed as household waste. After the 30-day intervention, 10 (20.0%) households handed their in-home antibiotics or medicine to the village clinic. In total, 32 boxes of medicine including 17 (53.1%)