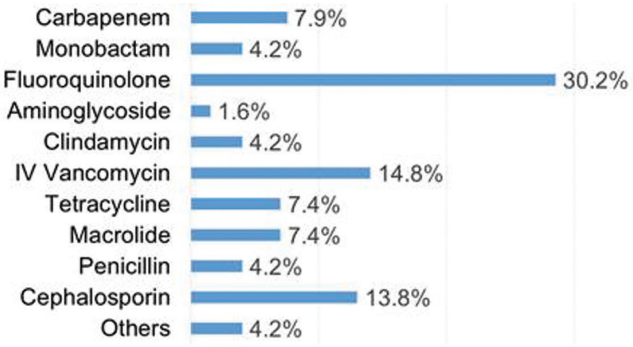
Table 1: Changes to Allergy Profile

Type of Change	*N* = 175
No changes	42 (24)
Addition of tolerance history	58 (33.1)
Modification of reaction details	32 (18.3)
Addition of tolerance history AND modification of reaction details	41 (23.4)
Deletion of allergy	2 (1.1)

Figure 1. Initial antimicrobial therapy.



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

1795. Safety Outcomes of the Use of β-Lactam Therapy in Patients With Documented β-Lactam Allergy

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Background. In patients with a true penicillin allergy, the reported cross-reactivity to cephalosporin and carbapenem antibiotics are approximately 3% and 1%, respectively. Although true β-lactam allergies are rare, providers are reluctant to challenge patients with other β-lactams, which significantly limits empiric treatment reigmens. This study aims to determine the safety outcomes of patients with a previously documented β-lactam allergy who were challenged with β-lactam therapy at a small community hospital in Brooklyn, New York.

Methods. A retrospective chart review of all β-lactam allergic patients at Kingsbrook Jewish Medical Center who received a β-lactam from January 2014 to July 2017. Patients were included if they were at least 18 years old with a documented β-lactam allergy upon admission and received at least one dose of a β-lactam antibiotic. Allergic reaction was determined by assessing both pharmacist and provider notes in the electronic health record. Orders for antihistamines, corticosteroids, and/or epinephrine in addition to the discontinuation of the β-lactam and provider documentation were considered an allergic reaction.

Results. A total of 108 patients were analyzed with 36 not meeting inclusion criteria. Of the 72 patients included, two patients (2.78%) experienced an allergic reaction to a β-lactam. Both patients recovered within 72 hours without the use of epinephrine. One of the allergic reactions was attributed to ceftriaxone, while the other was attributed to cefepime. The most commonly prescribed antibiotics were cefepime (34.7%), ceftriaxone (27.8%), and meropenem (15.3%). Eleven patients had a documented severe β-lactam allergy, one of which experienced a rash after receiving β-lactam therapy. None of the five patients with documented anaphylactic allergy experienced a reaction.

Conclusion. This study demonstrated that there is a low risk of utilizing β-lactams in patients with a reported β-lactam allergy. The two observed allergic reactions were due to a third- and fourth-generation cephalosporin, which was unexpected as previous literature suggests higher cross-reactivity to the earlier generation cephalosporin antibiotics.

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

1796. Inappropriate Aztreonam Usage Identified as an Opportunity to Reduce Pharmaceutical Expenditures

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Background. Targeting "low-hanging fruit" is a pillar of antimicrobial stewardship (AMS). B-lactam allergies (BLA) frequently restrict clinical decision-making and lead to utilization of alternative, less preferred antimicrobials making them an ideal AMS target. Prior studies have demonstrated that BLA are grossly over reported by patients. This study aimed to calculate the excess pharmaceutical expenditures incurred by utilization of aztreonam in patients who had previously (or subsequently) tolerated a β lactam (BL).

Methods. Retrospective chart review was performed on inpatients >18 years old at our institution who received at least one dose of aztreonam during the 2017 calendar year. Data collected included: BLA, both prior and subsequent BL classes tolerated, number of doses and days of aztreonam administered. Patients were excluded from the analysis if they did not have a documented BLA or if they received aztreonam as targeted/de-escalation therapy. Cost of aztreonam therapy was then compared with the cost of alterative BL agents based on prior and subsequently tolerated classes of BLs. Comparator agents included: pipericillin/tazobactam (penicillin), cefepime (cephalosporin) and meropenem (carbapenem). Wholesale acquisition costs were used for each agent and comparator regimens were based on our health system-wide dosing guidelines adjusted for renal function.

Results. One hundered thirty-two patients met inclusion criteria. Of those patients, 88/132 (66.7%) had demonstrated tolerance of a BL agent. Specifically 69/132 (52.3%) previously and 19/132 (14.4%) subsequently tolerated a β-lactam. Across the study, $40,768.84 was spent on aztreonam for patients with prior/subsequent BL tolerance. Cost for alternative therapy was estimated at $13,143.25 total; with an estimated cost difference of $27,625.59. Estimated cost difference for prior tolerance was $21,987.87 and subsequent tolerance $5,637.72.

Conclusion. Aztreonam is an uncommon but costly antimicrobial. This study demonstrated that reduction in aztreonam utilization based on prior tolerance of β-lactam agents could lead to a meaningful reduction in pharmaceutical expenditures and serve as low-hanging fruit for an antimicrobial stewardship program.

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

1797. Combining Rapid Diagnostics With Pharmacy Resident-Led Antimicrobial Stewardship to Optimize Outcomes for Bacteremia With Methicillin-Resistant *S. aureus* (MRSA-B), Methicillin-Susceptible *S. aureus* (MSSA-B), and Coagulase-Negative *Staphylococcus* (CoNS) at Yale New Haven Hospital (YNHH)

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Background. Given the severity of *S. aureus* bacteremia, prompt initiation of appropriate antibiotics is key. YNHH implemented the Cepheid® Xpert MRSA/SA PCR in an effort to decrease the time needed to identify MRSA-B, MSSA-B, and CoNS. The impact of rapid diagnostics has been limited without stewardship or infectious disease involvement. Our unique notification algorithm utilized our on-call pharmacy residents to allow for 24/7 coverage. The primary objective was time to optimal antibiotic therapy (OAT) before and after implementation of the PCR and algorithm. Secondary outcomes included time to blood culture clearance (BCC), acceptance rate of pharmacist interventions, days of vancomycin therapy avoided, and 30-day mortality.

Methods. A retrospective cohort study was conducted in adult inpatients with blood cultures positive for Gram positive cocci in clusters. The pre-implementation, control group (CG) included patients from April 2017 to October 2017 and the post-implementation, intervention group (IG) was from October 2017 to April 2018. Patients <18 years and polymicrobial bacteremia were excluded. Data collected in addition to primary and secondary outcomes included baseline demographics, allergies and empiric antibiotics. OAT included vancomycin for MRSA-B or MSSA-B with severe β-lactam allergy; nafcillin or cefazolin for MSSA-B; and discontinuation of vancomycin for CoNS deemed a contaminant.

Results. Of the 544 patients reviewed, 434 met inclusion criteria: 182 in the CG and 252 in the IG with similar baseline characteristics. Mean time to OAT decreased from 10 hours in the CG to 5 hours in the IG ($P = 0.006$). Time to BCC in the CG and IG cohorts decreased from 100 to 43 hours ($P = 0.0001$). One day of vancomycin was avoided in patients with MSSA-B and 2 days with CoNS. 30-day mortality decreased from 18% ($n = 32$) in the CG vs. 6% ($n = 15$) in the IG ($P = 0.0001$). Finally, 95% ($n = 153/161$) of pharmacist interventions were accepted.

Conclusion. Utilizing the on-call pharmacy resident for notification of rapid diagnostic results for *S. aureus* bacteremia, we saw a significant decrease in time to OAT, BCC, and 30-day mortality. Our study demonstrates that in the setting of limited stewardship resources, additional members of the healthcare team can be used to optimize antibiotics in conjunction with rapid diagnostics.

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

1798. Phenotypic and Genotypic Impact of Antibiotic Stewardship Intervention on Daptomycin-Nonsusceptible *Enterococcus faecium* (DNSE) Clinical Isolates

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Background. Since its introduction in 2009, use of daptomycin for treatment of enterococcal infections has resulted in the emergence of DNSE. Between 2009 and 2013, daptomycin nonsusceptibility among *E. faecium* was closely associated with emergence of a unique and dominant clone ST736 in our institution. In 2014, we instituted targeted measures to optimize the use of daptomycin. In this study, we describe the significant phenotypic and genotypic impact of reduced daptomycin use on clinical enterococcal isolates.

Methods. Enterococcal clinical isolates were recovered from January 2014 through December 2017. Daptomycin susceptibility was determined by MicroScan WalkAway™ System and confirmed by *E*-test. Selected DNSE and vancomycin-resistant *E. faecium* (VREfm) clinical isolates were analyzed by next-generation sequencing (NGS) using the Illumina systems to provide multilocus sequencing type (MLST). Daptomycin utilization data were extracted from pharmacy records.

Results. Targeted antibiotic stewardship initiatives consisted of preapproval, daily review for optimization of dose and duration, rapid de-escalation, consideration for appropriate alternative antibiotics for select disease syndromes and stopping of inappropriate daptomycin therapy. Over 4 years, this lead to a 39% reduction in overall use of daptomycin. Besides direct cost saving, this reduced use was associated with significant reduction in daptomycin nonsusceptibility from 12% to 4%, lowering of MIC_{90} from 8 to 4 µg/mL, and a clonal shift from dominant ST736 to ST117.

	Daptomycin Usage Days of Therapy /1,000 Days (Monthly Average)	Phenotypic Changes			Genotypic Changes
		MIC_{50} (µg/mL)	MIC_{90} (µg/mL)	% DNSE	Dominant Genotype Among VREfm
2014	742	4	8	12	**ST736 (38%)** ST18 (21%) ST412 (12%) ST117 (11%)
2015	633	4	6	10	
2016	576	4	4	7	
2017	455	4	4	4	ST736 (5%) ST18 (4%) ST412 (11%) ST117 (41%)

Conclusion. A targeted antibiotic stewardship initiative to address rising rate of daptomycin nonsusceptibility among *E. faecium*, resulted in significant phenotypic and genotypic changes among clinical isolates. This study also shows successful integration of NGS in a clinical microbiology lab to validate phenotypic changes of daptomycin nonsusceptibility and to help design future infection control and antibiotic stewardship endeavors.

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1799. Impact of Real-Time Electronic Notifications to Pharmacists of Rapid Diagnostic Blood Culture Results

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Background. Rapid diagnostic tests that utilize multiplex PCR technology provide faster time to pathogen identification, but maximizing the impact on outcomes is dependent upon who is available to respond to test results. In June 2017, pharmacists began receiving in-basket notifications of positive results from the institution's FilmArray BCID assay. The objective of this study was to determine the impact on antibiotic utilization associated with this method of communicating results.

Methods. This was a retrospective, observational, before-and-after study at an academic medical center with an established stewardship program. Inclusion criteria: Adult patients age ≥18 admitted to an ICU or oncology unit with ≥1 positive blood culture containing a gram-positive organism identified by FilmArray BCID. Patients with polymicrobial infection, concomitant infection caused by a different organism, antibiotics started before admission, or death prior to organism identification were excluded. Data were collected during a 4-month period before (PRE) and a 4-month period after (POST) implementation of in-basket notifications. Stewardship metrics and other outcome measures were compared between the two groups. Pharmacists received no targeted stewardship training on how to respond to results.

Results. Ninety-two patients met study criteria (49 PRE and 43 POST). Patients were age 62 ± 16, male (55%), and 77 (84%) were located in an ICU. Median Charlson Comorbidity Index was 4 and Pitt Bacteremia Score was 1. Sixty-seven patients were considered to have noncontaminant bloodstream infection. Median results for these patients are listed in the table. Patients with contaminants (n = 25) had 3.5 and 7 antibiotic-free days in the PRE and POST groups, respectively (P = 0.34).

Conclusion. In-basket notifications did not significantly improve antibiotic utilization or clinical outcomes. Active interventions and antimicrobial stewardship initiatives are needed in combination with rapid diagnostic tests.

	PRE (n = 35)	POST (n = 32)	P-value
Time to active therapy (hours)	0.85	3.2	0.33
Time to optimal abx (hours)	47.4	44.4	0.43
Time to de-escalation (hours)	48.4	46.8	0.24
Defined daily doses	10.4	10.4	0.81
Days of therapy	13	11	0.70
In-hospital mortality, n (%)	9 (26)	8 (25)	0.98
Length of stay from positive culture (days)	9.6	7.9	0.94

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

1800. Clinical Impact of Real-Time Predictive Model to Facilitate Antibiotic Prescribing in Gram-Negative Bacteremia

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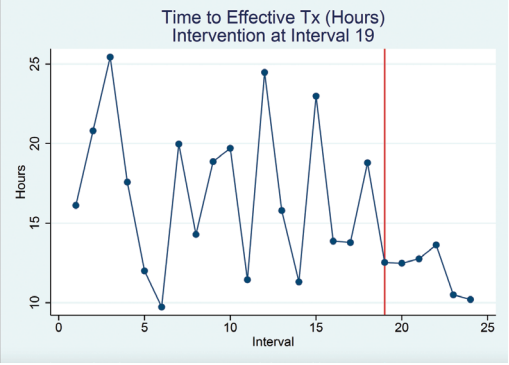
Background. Delay in effective antibiotic administration in severe infections such as bacteremia is associated with worse clinical outcomes. We implemented previously validated software that uses real-time predictive modeling to determine patient-specific antibiograms (PS-ABG). The software allowed prescribers to run the model on their individual patients. It also automatically evaluated positive blood cultures, alerting the antibiotic stewardship team if there was <90% chance of the organism being susceptible to current antibiotic therapy.

Methods. We performed a quasi-experimental study to evaluate clinical outcomes in patients with Gram-negative rod (GNR) bacteremia 18 months before (PRE) and 6 months after (POST) implementation of the software. Primary outcome was median time to effective antibiotic. Secondary outcomes included in-hospital mortality, utilization of antibiotics used for multidrug-resistant GNRs (MDR-GNR), median time to effective antibiotic in organisms resistant to at least one first-line antibiotic for sepsis, and length of stay.

Results. The change per month in the primary outcome did not differ between the PRE and POST periods (P = 0.48) (figure). Time to effective antibiotics in GNR bloodstream infections that were resistant to at least one first-line antibiotic for sepsis (cefepime, piperacillin–tazobactam, or levofloxacin) was lower following the intervention (15.8 hours vs. 13.7 hours, P = 0.11), and mortality decreased following the intervention (14.6% vs. 10.0%, P = 0.11) although these differences were not statistically significant. There was no difference in other secondary outcomes between PRE and POST groups: length of stay (7.7 vs. 7.5 days, P = 0.74) and days of therapy of MDR-GNR agents per 30 days of hospitalization (3.5 vs. 2.5, P = 0.09).

Conclusion. There was no difference in median time to effective antibiotic in all patients with GNR bacteremia. There was lower in-hospital mortality in the POST group and shorter time to effective antibiotic therapy in GNR bacteremia resistant to at least one first-line antibiotic for sepsis, although these differences were not statistically significant. Additional study in larger cohorts over longer periods is warranted to determine whether PS-ABGs improve clinical outcomes in patients with more resistant GNR bacteremia.



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