criteria and completed the test per protocol. Administration of the test utilized a stewardship pharmacist-driven, nursing administered, protocol that has three phases: puncture, intradermal, and oral challenge (optional phase). The primary outcome assessed was change made to antimicrobial regimen directly related to PST. A secondary outcome assessed was cost savings associated with PST.

Results. Over 13 months, 116 patients were consulted for PST with 100 patients completing PST per protocol. Self-reported allergies consisted of IgE-mediated and unknown in 52% and 30% of patients respectively. Seventy-one of 98 patients who tested negative (73%) had changes directly made to their antimicrobial regimens related to PST after intervention from the stewardship pharmacist. Thirty-four patients who had received carbapenems were changed directly to a penicillin or cephalosporin. A previous evaluation at our institution showed an average total antimicrobial acquisition cost savings per patient to be $314.75, which would result in $22,347.25 in direct savings for all patients evaluated.

Conclusion. PST led to immediate antimicrobial de-escalation in the majority of patients who tested negative. Most of these patients were transitioned to optimal therapy or de-escalated from carbapenem therapy. A total direct cost savings for the institution over the course of 13 months exceeded $20,000. Our study confirmed the overall utility of PST as a cost effective antimicrobial stewardship tool, especially as a carbapenem-sparing strategy.

Disclosures. **B. Jones**, ALK: Consultant, Grant Investigator and Scientific Advisor, Consulting fee, Grant recipient and Speaker honorarium; **C. Bland**, ALK: Grant Investigator and Scientific Advisor, Grant recipient and Speaker honorarium

1572. Elimination of Aerosol Ribavirin Use in Immunocompromised Patients with Metapneumovirus and Parainfluenza Virus Infections

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Background. Administration of ribavirin by aerosol (AR) is often used in attempted treatment of respiratory virus infections in severely immunocompromised patients and was the standard of care at Stanford Health Care (SHC) in the management of metapneumovirus (MPV), parainfluenza virus (PIV), as well as respiratory syncytial virus infections, in hematopoietic stem cell (HCT) and lung transplant (LT) recipients.

Methods. A literature review by the transplant ID team in November 2014 failed to provide evidence of benefit of AR for treatment of MPV and PIV infections and, also taking into account its extraordinary cost, it was decided by the transplant ID group that AR should not be used for these infections. Meetings with HCT and LT MDs, however, failed to achieve their concurrence. All evidence was posted online for easy access. An independent expert panel of HCT and pulmonary MDs was asked to review the evidence and they concurred with the conclusion of ID. A meeting was held with all stakeholders together with the P&T committee at which all opinions were heard. All were invited to a subsequent P&T meeting at which it was decided to ban the use of AR for MPV and PIV infections, although oral ribavirin was allowed. The decision was confirmed by the SHC Medical Executive Committee and implemented Dec 2015 after removal of the option from the EHR orders and creation of an escalation pathway for appeals.

Results. AR DOT for MPV and PIV infections decreased from 119 (23 patients) in the previous 12 months to 2 (2 patients) in the subsequent 12 months. The drug acquisition cost was reduced from $2,777,222 to $46,676 – a recurring annual saving of $2,730,546. Additional savings accrued from reduced hospital days, freeing of airborne isolation rooms, reduced housekeeping costs, and reduced exposure of women of childbearing age to the potential teratogenic effects of ribavirin. There were no observable adverse effects from the restriction of AR use.

Conclusion. Careful examination of clinical practice together with relentless efforts in changing prescriber behavior can result in elimination of ineffective therapy with large associated cost savings and without adverse clinical effects.

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

1573. Antipseudomonal Drug Exposure Associated with MDR Organisms in the Liver and Lung Transplant Population

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Background. Multi-drug resistant (MDR) Gram-negative bacteria (GNB) are an emerging complication in transplant recipients. This study describes the prevalence of and risk factors for MDR-GNB infection/colonization in the liver and lung transplant population.

Methods. Cross-sectional study with nested case-case–control included adult liver or lung transplant candidates/recipients from 1/10-7/16. Patients with a positive GNB culture were classified as MDR- or Susceptible (S)-cases; MDR was defined as *in vitro* resistance to ≥ 3 antibiotic classes. Patients without a positive GNB culture were controls. Primary variable of interest: antibiotic days of therapy (DOT) during time at risk. Patient and isolate characteristics were collected and compared.

Results. We included 150 patients: 110 (73%) liver, 40 (27%) lung. Median (IQR) patient age and Charlson comorbidity index were 59 years (52–63) and 5 points (3–6). Isolated organisms: 31 (34%) *E. coli*, 28 (31%) *K. pneumoniae*, 33 (36%) others. Resistance to cefepime, piperacillin/tazobactam, and ertapenem: 38%, 27%, and 14%. 61 (41%) MDR-GNB, 21 (14%) S-GNB, 68 (45%) controls. Median (IQR) cumulative antibiotic DOT was: MDR-case – 24.5 days (6–46.5), S-case – 5 days (2–24, P = 0.017 vs. MDR), controls – 0 days (0–10, $P < 0.001$ vs. MDR). Median (IQR) antipseudomonal (AP) DOT was: MDR-case – 7 days (1–16), S-case – 1 day (0–8, $P = 0.055$ vs. MDR), controls – 0 days (0–1, $P < 0.001$ vs. MDR); AP exposure was independently associated with MDR-GNB infection/colonization after correcting for severity of disease pre-transplant (adjOR: 2.9, 95% CI: 1.6–5.3) (Table 1).

Conclusion. MDR-GNB represent a significant burden to the liver and lung transplant population. A detailed antibiotic history, including AP DOT, may help with risk assessment to guide empiric therapy selection.

Table 1. Variables associated with MDR-GNB infection/colonization during time at risk (AdjOR, 95% CI)

	MDR-cases vs. S-cases, (n = 82)	MDR-cases vs. controls, (n = 129)	MDR-cases vs. combined comparator, (n = 150)
High MELD (> 30) or LAS (>50)	1.1 (0.6–1.9)	1.3 (0.7–2.3)	1.5 (0.8–2.6)
AP drug exposure	1.1 (0.6–2.0)	3.5 (1.9–6.3)	2.9 (1.6–5.3)
Prior hospitalization	–	0.9 (0.7–1.0)	–

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1574. An Antimicrobial Stewardship Initiative within a for-profit hospital: Impact of Criteria for Appropriate Use on Utilization

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Background. Antimicrobial Stewardship Programs (ASP) have shown improved patient outcomes, reduced adverse events, improved antibiotic susceptibilities, and optimized resource utilization. With the re-introduction of a formal ASP at our for-profit, non-teaching, community hospital in early 2016 in response to both legislative and corporate requirements, we sought to evaluate the impact of one of our ASP initiatives, Criteria for Appropriate Use, on utilization of three specific antimicrobial agents: Daptomycin (DAP), Tigecycline (TIG) and Ertapenem (ERT). The results of this investigation will help characterize various shifts in prescribing practices facilitated by an ASP initiative as well as quantify resultant trends in utilization.

Methods. This single-center, retrospective cohort study included patients who received DAP, TIG, or ERT in matched time periods: July – Sept 2015 (pre-ASP) and July – Sept 2016 (post-ASP). Patients were analyzed based on demographics, antibiotic use, days of therapy (DOT), indication (criteria for use), prescriber, infection type, and antibiotic course. Cost data and adjusted patient-days (APD) were extracted from hospital records.

Results. 644 cases were included. There were 555 pre-ASP cases per 31,884 APD: 128 (DAP), 368 (ERT), and 59 (TIG). In the post-ASP group, there were 89 cases per 30,960 APD: 40 (DAP), 39 (ERT), and 10 (TIG). Significant decreases were realized in the post-ASP period in: restricted antibiotic utilization (17.4 vs.. 2.9 cases/1000 APD, $P < 0.0001$), duration (58.2 vs. 14.3 DOT/1000 APD, $P < 0.0001$), off-criteria use (3.6 vs. 0.65 cases/1000 APD, $P < 0.0001$), and cost ($12.92 vs. $2.88/APD, $P < 0.0001$).

Conclusion. The results of this study show that introduction of ASP, specifically Criteria for Appropriate Use implementation, was associated with not only significant decreases in utilization rates and antimicrobial cost, but significant shifts in prescriber behavior.

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

1575. Enhancing Antibiotic Stewardship Team (AST) Efforts in Decreasing Inappropriate Vancomycin Usage in Neutropenic Fever (NF) Patients through Unit Based Pharmacist Intervention

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Background. The Infectious Diseases Society of America and the National Comprehensive Cancer Network guidelines recommend adding vancomycin to the

empiric treatment of NF in patients meeting specific criteria. After 48 hours, the guidelines recommend discontinuing vancomycin if resistant Gram-positive organisms are not identified. An analysis of vancomycin use for NF at our institution revealed 35% of patients had vancomycin discontinued appropriately at 48 hours. Based on these results, a vancomycin stewardship team defined criteria for continuation of vancomycin past 48 hours and increased surveillance of vancomycin usage through AST oversight. The objective of this study is to assess the incidence of vancomycin discontinuation at 48 hours with the new criteria of use and the addition of pharmacist led stewardship.

Methods. This study included NF patients who were treated with an antipseudomonal β-lactam and vancomycin from January to April 2017. Criteria for vancomycin continuation beyond 48 hours included culture-documented Gram-positive infection, positive Methicillin Resistant *S.aureus* (MRSA) nasal swab with evidence of pneumonia, or hemodynamic instability due to septic shock. Patients who received aztreonam, or a single dose of vancomycin were excluded. Patient characteristics, previous MRSA infection, MRSA nasal swab collection and results, culture results, fever status, duration of vancomycin, rationale for continuation of vancomycin past 48 hours, re-initiation of vancomycin, and AST recommendations were collected.

Results. Sixty-nine patients with 73 admissions were initiated on vancomycin for NF during the study period. Vancomycin was appropriately discontinued in 63% (46/73) compared with 35% (19/54) previously. An additional 8% (6/73) was discontinued between 48 and 72 hours, and 20% (15/73) was continued past 72 hours inappropriately. The most common reasons for continuation was lack of neutrophil recovery (5) and cellulitis (4). AST recommended discontinuation on 5 patients, all of which were accepted.

Conclusion. Establishing criteria for vancomycin use along with pharmacist led antibiotic surveillance, AST, and provider education improved the use of vancomycin with the discontinuation rate increasing from 35% to 63%.($P = 0.002$)

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

1576. Unintended Consequences of Pre-transplant VRE Screening on Antimicrobial Stewardship Among Allogeneic Hematopoietic Cell Transplant Recipients

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Background. Pre-transplant screening for VRE is commonly performed among patients prior to hematopoietic cell transplantation (HCT) although its role in prevention of horizontal transmission is controversial. The impact of pre-transplant VRE colonization on antimicrobial stewardship and use of VRE therapy is unknown. The purpose of this investigation is to determine whether pre-transplant VRE colonization affects the use of VRE therapy among patients during the first 100 days post-transplant.

Methods. We analyzed patients >18 years old within the first 100 days post- allogeneic HCT at a cancer center from September 1, 2007 to August 31, 2016 from a prospectively collected database. We performed retrospective chart review among patients who did and did not develop VRE bacteremia to obtain antimicrobial utilization data for agents with in vitro activity against VRE based on colonization status. Patients colonized post-HCT and those with positive surveillance blood cultures were excluded from analysis. Continuous variables were assessed using t-tests or Mann–Whitney U tests for normal or non-normal data respectively.

Results. Of 1402 allogeneic HCT patients, 203 (14%) were colonized pre-transplant. Among 22 (1.6%) patients who developed VRE bacteremia, 19 (86%) were colonized pre-transplant. Eight (42%) colonized patients received empiric VRE therapy within 24 hours of blood culture collection compared with 0 (0%) of non-colonized patients ($P = 0.23$). Among the 1371 patients who did not develop VRE bacteremia, 66 (5%) received VRE therapy. 32/179 (18%) of the colonized group received VRE therapy compared with 34/1192 (3%) non-colonized (P <.001). The median duration of VRE therapy was 3 days in the colonized group and 2 among non-colonized ($P = 0.86$). Indications for VRE therapy among colonized patients without bacteremia were empiric therapy (63%), therapy for VRE isolated from non-blood sites (19%), alternative therapy for non-VRE Gram-positive infection (13%), and unknown (6%).

Conclusion. In our population, VRE-colonized patients received significantly more VRE therapy than non-colonized patients in the absence of VRE bacteremia. Among patients who developed bacteremia, less than half received timely initiation of empiric therapy.

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1577. Evaluation of a Risk Stratification Guideline for the Treatment of Neutropenic Fever in Oncology Patients

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Background. Neutropenic fever (NF) is a serious complication of chemotherapy. Approximately 23% of NF cases are related to bacteremia, with higher mortality attributed to infections caused by *Pseudomonas aeruginosa.* Therefore, empiric anti-pseudomonal (AP) coverage is critical for patients with NF. However, no recommendations exist as to which AP agent is preferred. Traditionally at Froedtert Hospital, meropenem was prescribed as empiric therapy for NF despite a low incidence of multidrug resistant (MDR) pathogens. In June 2016, Froedtert Hospital implemented guidelines for the treatment of NF to guide initial AP antibiotic selection based on risk factors for MDR gram-negative infections. Risk stratification reserves broadest spectrum antimicrobials (eg, meropenem) for patients at highest risk of MDR organisms.

Methods. A retrospective chart review was completed to evaluate NF treatment pre-guideline (Jan 1-June 30, 2015) and post-guideline implementation (June 23- Dec 31, 2016). All patients ≥18 years old, admitted to Froedtert Hospital that met NF definition criteria were included.

Results. A total of 79 patients in the pre-guideline implementation group (pre-group) and 91 patients in the post-guideline implementation group (post-group) were included. In the pre-group, only 26 (32.8%) patients would have met criteria to receive meropenem, however 71 (89.8%) received it. In comparison, in the post-group, 29 (41.8%) patients qualified to receive meropenem based on risk-stratification and 8 patients (8.8%) received it, due to primary teams opting for non-carbapenem APs despite meeting criteria for meropenem. In the post-group, there were 4 cases of infections with a MDR organism requiring meropenem. All 4 patients met guideline criteria to receive meropenem (2 patients received meropenem, 2 did not due to guideline noncompliance). Therefore, the incidence of appropriate empiric AP therapy recommended by the NF guideline was 100%. 30-day all-cause mortality was 17.7% in the pre-group and 15.5% in the post-group.

Conclusion. Appropriate use of a NF risk stratification tool resulted in a significant reduction in unnecessary AP carbapenem use without compromising antimicrobial coverage of isolated organisms or patient outcomes.

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1578. Outpatient Antimicrobial Stewardship Intervention Targeting Cytomegalovirus (CMV) Viremia in Solid Organ Transplant (SOT) Recipients

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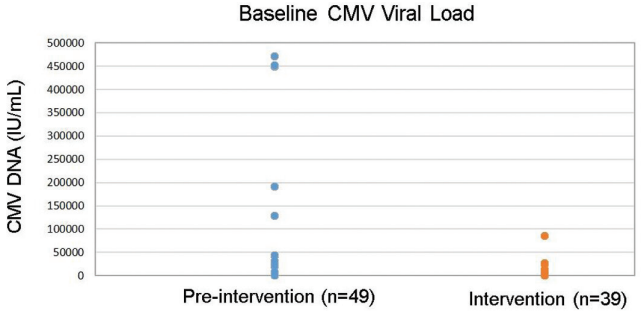
Background. There is a demand for stewardship implementation and research in ambulatory and SOT populations. Few studies focus on outpatient stewardship interventions, and none has focused on timely recognition of CMV in outpatient SOT recipients. This study sought to determine the effect of real-time CMV result notification paired with pharmacist intervention on virologic and clinical outcomes in outpatient SOT recipients.

Methods. Quasi-experimental study comprised of two 6-month phases. In the pre-intervention phase, pharmacists were not involved in management of outpatient CMV viremia. In the intervention phase, pharmacists received real-time email notification of positive blood CMV results for review and intervention as necessary. The primary endpoint was rate of viremia eradication at 21 days from therapy initiation. Secondary endpoints: time to antiviral initiation and viremia eradication, rate of CMV invasive disease and hospital admission, and adverse drug events.

Results. 88 of 213 screened patients were included in the primary analysis ($n = 49$ and 39 in the pre-intervention and intervention groups, respectively). Baseline characteristics were similar, including transplant type (34% vs. 41% liver, 24% vs. 28% kidney, 14% vs. 17% lung, 14% vs. 10% heart), CMV serostatus (53% vs. 64% D+/R-), and maintenance immunosuppression. A total of 73 recommendations were made with 89% acceptance. Baseline CMV viral load >10,000 IU/mL occurred in 12 (24%) vs. 6 (15%) patients ($P = 0.29$). Of treated patients, 42 (85%) vs. 32 (82%) achieved CMV eradication at 21 days ($P = 0.64$), 10 (20%) vs. 5 (12%) required admission for CMV management ($P = 0.35$), 7 (14%) vs. 3 (7%) developed CMV invasive disease ($P = 0.50$), and 29 (60%) vs. 25 (66%) received antiviral within 5 days ($P = 0.61$). There were no statistically significant differences in time to antiviral initiation (45 vs. 41 hours; $P = 0.64$) or viremia eradication (19 vs. 18 days; $P = 0.44$).

Conclusion. CMV eradication at 21 days was not significantly different between groups; however, fewer patients in the intervention experienced elevated baseline viral load, CMV invasive disease, and hospital admission. These secondary endpoints suggest possible benefit from the intervention and warrant further characterization and study.



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