Results. The mean age of subjects was 63 years old and 85% had no history of prior *C. difficile* infection. The most common intervention was de-escalation of antibiotics (46%). The post-implementation SIR was 0.55 and hospital-onset *C. difficile* rate was 13, both of which were significantly lower than predicted.

Conclusion. Targeting patients who have a history of or are newly diagnosed with *C. difficile* infection may decrease hospital-onset *C. difficile* rates.

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

55. Impact of Testing Methodology and Reporting on Time to Preferred Antibiotic Therapy in Extended Spectrum Beta-Lactamase producing Enterobacteriaceae (ESBL-E) Bloodstream Infections

Hanh Bui, PharmD[1]; Frank Tverdek, PharmD[2]; Stephanie Carnes, PhD[1]; Jeannie D. Chan, PharmD, MPH[3]; Andrew Bryan, MD, PhD[4]; Lori Bourassa, PHD MPH[4]; Rupali Jain, PharmD[5]; Brendon Matsuda-Fong, n/a[1]; [1]UW Medicine, Seattle, Washington; [2]Fred Hutchinson Cancer Research Center, Seattle, Washington; [3]UW Medicine, Harborview Medical Center, Seattle, WA; [4]University of Washington, Seattle, Washington; [5]University of Washington School of Medicine, Seattle, WA

Session: P-04. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background. Harborview Medical Center (HMC) identifies organisms and an ESBL genotype (CTX-M) via Verigene® Gram-Negative Blood Culture Nucleic Acid Test (BC-GN). University of Washington-Montlake (UWML) uses matrix-assisted laser desorption ionization time-of-flight mass spectrometry (MALDI-TOF MS) for organism identification directly from positive blood cultures and ceftriaxone results by Kirby Bauer disk diffusion (KB) are reported 18 hours later. No ESBL comment is reported at UWML. We aimed to determine whether the methodology in identification and reporting of ESBL-E from blood cultures between two hospitals has an impact on time to preferred therapy with a carbapenem antibiotic.

Methods. Retrospective observational study conducted at UWML and HMC in Seattle, WA between 1/10/2015 and 9/15/2020. Adult patients were eligible if they had ≥1 positive blood culture with an Enterobacteriaceae isolate resistant to ceftriaxone and were on antibiotic treatment. The primary outcome was the difference in time to preferred definitive therapy with a carbapenem antibiotic in patients an ESBL-E bloodstream infection (BSI) identified by Verigene® vs. MALDI-TOF MS/KB.

Results. A total of 199 patients were screened; 67 were included for UWML and 68 at HMC. The average time to initiation of a carbapenem antibiotic was 42 ±26.5 hours at UWML and 28 ±19.7 hours at HMC. A t-test detected a difference in time to preferred therapy between a Verigene® vs. MALDI-TOF MS/KB tested ESBL-E BSI [95% confidence interval (CI), 5.3-22.9]. The hazard ratio to carbapenem initiation for HMC is 1.73643 [95% CI, 1.1405-2.644].

Conclusion. A statistically significant difference in time to preferred definitive therapy among patients with an ESBL-E BSI processed by Verigene® was found compared to MALDI-TOF MS. The results suggest standardization in protocols between the UWML and HMC hospitals is warranted.

Disclosures. **Andrew Bryan, MD, PhD**, **Shionogi Inc.** (Grant/Research Support)

56. High Frequencies of Adverse Drug Events with Intravenous vs Oral High-Dose Trimethoprim-Sulfamethoxazole: An Opportunity for Antibiotic Stewardship

Lisa Vuong, PharmD[1]; Susan L. Davis, PharmD[2]; Susan L. Davis, PharmD[2]; Tyler Jedinak, PharmD[1]; Corey Medler, PharmD[1]; Kristen Zofchak, PharmD[3]; Michael P. Veve, Pharm.D.[2]; Rachel Kenney, PharmD[1]; [1]Henry Ford Hospital, Detroit, Michigan; [2]Wayne State University, Detroit, MI; [3]Johns Hopkins Medicine, Baltimore, Maryland

Trimethoprim-sulfamethoxazole: intravenous versus oral therapy

Session: P-04. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background. Trimethoprim-sulfamethoxazole (TMP-SMX) is a high-bioavailability antibiotic associated with potentially serious adverse drug events (ADE). The objective of this study was to evaluate the safety of intravenous (IV) and oral (PO) high-dose TMP-SMX.

Methods. IRB-approved retrospective cohort of hospitalized patients from January 2016 to November 2020. Inclusion: ≥ 18 years old and > 72 hours of renally adjusted high-dose TMP-SMX defined as ≥ 5 mg/kg/day of TMP. Exclusion: prophylaxis. Endpoints during treatment: hyponatremia with sodium < 135 mmol/L, hyperkalemia with potassium > 5 mmol/L, serum creatinine increase of ≥ 0.3 mg/dL or 1.5-1.9 times from baseline, and fluid overload on physical exam. Descriptive and bivariate statistics were performed.

Results. Each group included 50 patients (Table 1). Intensive care unit patients comprised 82% IV TMP-SMX compared to 32% PO. Most common infection: respiratory tract 86% IV and 68.1% PO. Most common organisms were *Stenotrophomonas maltophilia* (52% IV and 18% PO) and *Pneumocystis jiroveci* (16.3% IV and 62% PO). Median (IQR) days of inpatient therapy: 6 (5-7.5) PO vs. 7.5 (6-11.3) IV. Median (IQR) days of total duration: 9 (6-21.5) PO vs. 12 (7.8-14) IV (p=0.93). IV group: 88% of patients received >1 liter of D5W daily. Median (IQR) liters of D5W daily was 1 (1-1.5). 56% had a diuretic added, and 38% had a diuretic dose increase. Majority of patients (78%) on IV were taking other oral medications. 100% patients experienced any adverse event with IV vs. 70% with PO (unAdjOR 2.43; 95% CI 1.89-3.13). Most common ADE in both groups: hyponatremia, hyperkalemia, and elevated creatinine. Hyponatremia: 92% with IV and 32% with PO (unAdjOR 24.44; 95% CI 7.50-79.68). Edema on physical exam, an ADE specific to IV TMP-SMX, was the third most common side effect in the IV group. Relative changes from baseline in sodium, potassium, and creatinine from those who experienced hyponatremia, hyperkalemia and elevated creatinine were listed in Table 2.

Table 1. Baseline and Clinical Characteristics

Characteristics	Oral, n = 50	Intravenous, n = 50	p-value
Age, years- median (IQR)	62 (45-71)	60.0 (48-69.5)	0.63
Male sex- n (%)	31 (62)	29 (58)	0.68
Length of stay, days- median (IQR)	11 (8.5-20.5)	29.5 (15.5-44)	<0.05
Past Medical History, n (%)			
Congestive Heart Failure	5 (10)	8 (16)	0.37
End Stage Renal Disease	3 (6)	8 (16)	0.2
Acute Kidney Injury on Admission	13 (26)	18 (36)	0.28
Diabetes Mellitus, type 1 or 2	17 (34)	16 (32)	0.83
Active Oncologic Disorder	10 (20)	6 (12)	0.28
Immunocompromised	31 (62)	9 (18)	<0.05
Concomitant Medications Known to Increase Potassium- n (%)	19 (38)	4 (8)	<0.05
Type of Therapy at TMP-SMX Initiation- n (%)			
Empiric	23 (46)	16 (32)	-
Definitive	27 (54)	34 (68)	-

Table 2. Adverse Effects

Adverse Drug Event	Oral, n = 50	Intravenous, n = 50	p-value
Any- n (%)	35 (70%)	50 (100%)	<0.05
Hyponatremia- n (%)	16 (32%)	46 (92%)	<0.05
Observed Sodium Decrease, mmol/L- median (IQR)	*8.5 (3.0-14)*	*5.0 (4.0-7.8)*	-
Hyperkalemia- n (%)	25 (50%)	19 (38%)	0.23
Observed Potassium Increase, mmol/L, median (IQR)	*1.2 (0.7-1.7)*	*1.7 (1.3-2.2)*	-
Elevated Creatinine- n (%)	21 (42%)	23 (46%)	0.69
Observed Creatinine Increase, mmol/L, median (IQR)	*0.8 (0.5-1.2)*	*1.0 (0.4-1.6)*	-
Neutropenia- n (%)	1 (2%)	4 (8%)	0.36
Thrombocytopenia- n (%)	3 (6%)	7 (14%)	0.32
Hypoglycemia- n (%)	10 (20%)	6 (12%)	0.28
Documented Skin Reaction- n (%)	0	3 (6%)	0.24
Edema on Physical Exam- n (%)	0	29 (58%)	<0.05
Pulmonary Edema on Imaging- n (%)	0	15 (30%)	<0.05

Conclusion. Patients on IV TMP-SMX therapy were more likely to experience an ADE compared to PO, likely driven by the high volume of free water. Most patients on IV TMP-SMX were on other PO medications, suggesting a missed stewardship opportunity for IV to PO conversion to reduce patient harm.

Disclosures. **Susan L. Davis, PharmD**, Nothing to disclose **Michael P. Veve, Pharm.D.**, **Cumberland** (Grant/Research Support)**Paratek Pharmaceuticals** (Research Grant or Support) **Rachel Kenney, PharmD**, **Medtronic, Inc.** (Other Financial or Material Support, spouse is an employee and shareholder)

57. Financial Impact of a Regional Antimicrobial Stewardship Cost Saving Initiative in a Large Integrated Healthcare System

Van Nguyen, PharmD[1]; Colton Taylor, PharmD[2]; Alyssa Christensen, PharmD, BCIDP[2]; Brent Footer, PharmD, BCPS[3]; [1]Abbott Northwestern Hospital, Minneapolis, Minnesota; [2]Providence Saint Vincent Medical Center, Portland, Oregon; [3]Providence Portland Medical Center, Portland, Oregon

Session: P-04. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background. A regional antibiotic stewardship program (ASP) within a large integrated healthcare system covering two, non-academic, tertiary care medical centers and an additional six community hospitals implemented multiple interventions to optimize antimicrobial therapy and reduce unnecessary hospital costs, such as transition to extended-infusion (EI) piperacillin/tazobactam (TZP), formulary restriction of antimicrobials, and antimicrobial stewardship clinical review. The purpose of this study was to evaluate the cost savings associated with these regional ASP initiatives.

Methods. This was a multicenter, retrospective, observational review of regional stewardship interventions across eight inpatient medical centers in Oregon. Data was collected from January 2019 to December of 2020. Cost savings associated with reduced TZP administrations was based on the duration of therapy for each encounter in adults who received TZP for >24 hours in 2020. The regional antimicrobial restriction policy was implemented in February 2020. Cost savings attributed to antimicrobial formulary restrictions and reduction in overall days of therapy/1000 patient days (DOT) were based on EPIC costs.

Results. The reduction in number of administrations with implementation of EI TZP resulted in $226,420 saved in 2020. $182,837 was saved due to decreased usage of restricted antimicrobial agents. An additional $433,341 was saved for overall antimicrobial costs due to 19,775 days reduction in overall DOT/1000 patient days.

Conclusion. A community-based regional ASP has resulted in substantial financial impact and identified areas for future cost savings within the region.

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

58. Impact of Order-set Modifications and Provider Education on Broad-Spectrum Antibiotic Use in Patients Admitted with Community Acquired Pneumonia

Jessica L. Colmerauer, PharmD[1]; Kristin Linder, Pharm.D.[2]; Casey J. Dempsey, PharmD BCIDP[2]; Joseph L. Kuti, PharmD[3]; David P. Nicolau, PharmD[4]; Anastasia Bilinskaya, PharmD[2]; [1]Virtua Health, Cherry Hill, New Jersey [2]Hartford HealthCare, Hartford, Connecticut; [3]Center for

Anti-Infective Research and Development, Hartford Hospital, Hartford, Connecticut; [4]Hartford Hospital, Hartford, Connecticut

Session: P-04. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background. Following updates to IDSA guidelines in 2019, Hartford HealthCare implemented changes to the community acquired pneumonia (CAP) order-set in August 2020 to reflect criteria for prescribing of broad-spectrum antimicrobial therapy. The objective of the study was to evaluate changes in broad-spectrum antibiotic days of therapy (DOT) following these order-set updates with accompanying provider education.

Methods. This was a multi-center, quasi-experimental, retrospective study of patients with CAP from 9/1/19 to 10/31/19 (pre-intervention) and 9/1/20 to 10/31/20 (post-intervention). Patients were identified using ICD-10 codes indicating lower respiratory tract infection and excluded if had a positive SARS-COV-2 PCR during admission. Data collected included demographics, labs and vitals, radiographic, microbiological, and antibiotic data. The primary outcome was change in broad-spectrum antibiotic DOT, specifically anti-pseudomonal β-lactams and anti-MRSA antibiotics. Secondary outcomes included guideline-concordance of initial antibiotics, utilization of an order-set to prescribe antibiotics, and length of stay (LOS).

Results. A total of 331 and 352 patients were included in the pre- and post-intervention groups, respectively. The overall duration of broad-spectrum therapy was a median of 2 days (IQR 0-8 days) in the pre-intervention period and 0 days (IQR 0-4 days) in the post-intervention period ($p< 0.001$). Patients in whom the order-set was used in the post-intervention period were more likely to have guideline-concordant regimens ([36/40] 90% vs. [190/312] 60.9%; $p = 0.003$). There were no differences in order set usage (10% vs. 11.3%, $p = 0.642$) between the pre- and post-intervention groups, respectively. Hospital LOS was lower in the post-intervention cohort (4.8 days [2.9-7.2 days] vs. 5.3 days [IQR 3.5-8.5 days], $p = .002$).

Conclusion. Despite low utilization of the order-set, education surrounding order-set changes appeared to improve antibiotic prescribing and hospital LOS in our population. Further opportunities to improve order-set use and thus further increase guideline-concordant therapy are still available.

Disclosures. **Joseph L. Kuti, PharmD**, **Allergan** (Speaker's Bureau)**BioMérieux** (Consultant, Research Grant or Support, Speaker's Bureau)**Contrafect** (Scientific Research Study Investigator)**GSK** (Consultant)**Merck** (Research Grant or Support)**Paratek** (Speaker's Bureau)**Roche Diagnostics** (Research Grant or Support)**Shionogi** (Research Grant or Support)**Summit** (Scientific Research Study Investigator) **David P. Nicolau, PharmD**, **Abbvie, Cepheid, Merck, Paratek, Pfizer, Wockhardt, Shionogi, Tetraphase** (Other Financial or Material Support, I have been a consultant, speakers bureau member, or have received research funding from the above listed companies.)

59. Impact of Pharmacist-Led De-Escalation of MRSA Therapy Using MRSA Nasal PCR

Marc Salvatus, PharmD[1]; Hemi Jung, PharmD, BCPS[2]; Romic Eskandarian, PharmD[2]; Su Lee, PharmD, BCPS, BCIDP[1]; [1]West Coast University School of Pharmacy, Sunland, California; [2]Adventist Health Glendale, Glendale, California

Session: P-04. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background. Experts suggest that a highly sensitive MRSA nasal PCR can be used to rule out MRSA pneumonia with a negative predictive value greater than 95%. At Adventist Health Glendale (AHGL), the MRSA nasal PCR had a 97% negative predictive value. Pharmacist-led de-escalation of MRSA therapy using MRSA nasal PCR may reduce unnecessary MRSA coverage, patient adverse events, and medication costs. The purpose of this study was to assess the impact on duration of antimicrobial therapy of pharmacist-driven de-escalation of MRSA-targeted antibiotics in pneumonia using MRSA nasal PCR.

Methods. This was a prospective quasi-experimental study (Oct 2018 – Mar 2019 vs. Oct 2019 – Mar 2020) at AHGL, a 515-bed acute care community hospital in Los Angeles, CA, which included adults on MRSA pneumonia agents (either IV vancomycin or IV/PO linezolid). Upon receiving CPOE orders of these MRSA-targeted therapies for pneumonia, the pharmacist ordered a MRSA nasal PCR per protocol for eligible patients, followed up with the results of the MRSA nasal PCR, and recommended to discontinue MRSA therapy if the MRSA nasal PCR was negative. This study received an exemption determination from AHGL IRB.

Results. The total number of patients in the pre-protocol group was 97, and 155 in the post-protocol group. There was a statistically significant decrease in the median duration of MRSA pneumonia agents from the pre-protocol group compared to the post-protocol group (3 days vs. 2 days, P-value = 0.0004). Additionally, there was a statistically significant decrease in the median hospital length of stay from the pre-protocol group compared to the post-protocol group (9 days vs. 7 days, P-value = 0.02).

Conclusion. Implementation of a protocol involving pharmacist-led de-escalation of MRSA-targeted antibiotics for pneumonia utilizing MRSA nasal PCR led to significant decreases in both duration of therapy of MRSA-targeted antibiotics and length of hospital stay.

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

60. Penicillin Allergy Delabeling Program in the Post-acute Care Setting

Joseph Galipean, Pharm.D., BCIDP[1]; Jerry Jacob, MD, MS[2]; [1]Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania; [2]University of Pennsylvania, Philadelphia, Pennsylvania

Session: P-04. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background. A significant proportion of inpatients labeled with penicillin allergies do not have a true IgE-mediated hypersensitivity, which may unnecessarily limit options for treatment of infection and lead to suboptimal antibiotic selection. Post-acute care settings may provide a unique opportunity to capture patients at risk for adverse outcomes related to penicillin allergy labels. The objective of the study was to assess the feasibility and impact of a penicillin delabeling program in an inpatient rehab setting.

Methods. We conducted a prospective observational study. Inpatients with penicillin allergies were identified weekly by manual review of electronic medical records. A clinical pharmacist reviewed each patient's chart and identified patients for inclusion. Patients were excluded if they had a history of IgE-mediated hypersensitivity to penicillin within last 5 years, a history of a non-IgE mediated hypersensitivity, were severely immunocompromised, or were prescribed a contraindicated medication.

Results. A total of 72 charts were reviewed over nine months, and 37 (51.4%) had their penicillin allergy updated to reflect prior beta-lactam tolerance. Of the 72 patient that were evaluated, 28 (38.9%) were eligible for potential penicillin allergy delabeling, and 44 (61.1%) were ineligible. 59 (81.9%) of the patients had a moderate-high risk allergy, 12 (16.6%) had a low risk allergy, and 1 (1.4%) had an intolerance. Of the 28 eligible patients, 11 (39.3%) had their allergy removed, 13 (46.4%) deferred testing, and 4 (14.2%) could not be tested due to staffing. Of the 28 patients that had their allergy delabeled, 7 (21.4%) had their allergy removed by MAR review, 2 (7.2%) had a skin test with a negative result, and 2 (7.2%) had a direct oral challenge with a negative result.

Conclusion. A penicillin allergy delabeling program using a collaborative physician-pharmacist team model efficiently removed reported allergies in post-acute care patients. The post-acute care setting is an opportune environment to conduct a penicillin allergy delabeling program for patients not currently needing acute medical treatment.

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

61. A Multidisciplinary Quality Improvement Initiative to Promote Penicillin Allergy Delabeling

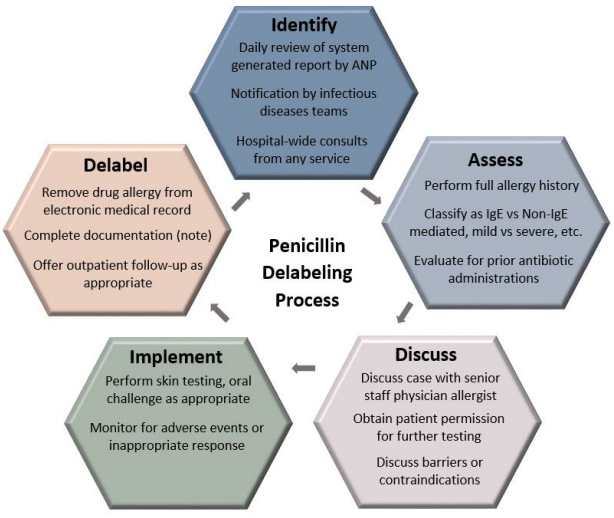
Lea Monday, PharmD, MD[1]; Jaclyn Michniak, Nurse Practitioner[1]; Edward Zoratti, MD[1]; Allison J. Weinmann, MD[1]; [1]Henry Ford Health System, Detroit, Michigan

Session: P-04. Antimicrobial Stewardship: Outcomes Assessment (clinical and economic)

Background. Penicillin (PCN) allergies are reported in up to 10% patients and are associated with adverse clinical and antimicrobial stewardship outcomes. Here we describe a multidisciplinary quality improvement (QI) initiative to facilitate PCN delabeling at a large urban hospital.

Methods. Starting in August 2020, the departments of Allergy and Infectious Diseases (ID) began a joint QI effort to employ a part time allergist nurse practitioner (ANP) for PCN allergy assessment and delabeling. The ANP used a daily system generated list to identify and assess adult patients with PCN allergy and contact teams to request a consult. An ID fellow also assisted with identifying patients and contacting care teams. The ANP then offered skin/oral PCN challenge or direct label removal based on history after discussion with an allergist physician. Baseline, clinical, and allergy characteristics were compared between patients delabeled and not delabeled using Chi-square and Mann-Whitney U test. Primary endpoints were antibiotic utilization outcomes from index admission post ANP assessment to 30-days post discharge. Secondary endpoints included readmission, length of stay (LOS), mortality, and sustained removal of the PCN allergy at 30-days.

Figure 1. Penicillin Delabeling Process Performed by Allergist Nurse Practitioner



Abbreviations: ANP, Allergist Nurse Practitioner; IgE, Immunoglobulin E