Figure 1. Quarterly risk-adjusted rates of A) lactate testing, B) anti-MRSA antibiotic administration, and C) anti-Pseudomonal beta-lactam antibiotic administration within 24 hours of hospital presentation for patients with suspected sepsis before and after SEP-1 implementation in Q4 2015.

Models included time (in quarters), an indicator of the post-SEP-1 implementation period (starting Q1 2016, to allow for evaluation of an immediate policy effect), and a two-way interaction term to assess whether SEP-1 implementation resulted in a change in trend. When data suggested no change in trend, models were also fit without this interaction term; this yielded a significant association for an immediate level change in lactate testing (OR 1.34 [95% CI 1.04-1.74]) but not antibiotic utilization. All analyses were adjusted for patient severity of illness and baseline characteristics including age, sex, race, initial vital signs (systolic blood pressure, temperature, respiratory rate, heart rate), and initial laboratory results (creatinine, platelet count, bilirubin, white blood cell count) if done within 24 hours.

Figure 2. Quarterly risk-adjusted outcomes of patients with suspected sepsis before and after SEP-1 implementation in Q4 2015: A) In-hospital death or discharge to hospice, and B) In-hospital death alone.

Conclusion. SEP-1 implementation was associated with an immediate increase in lactate testing rates, no significant change in already-rising rates of broad-spectrum antibiotic use, and no change in short-term mortality rates for patients with suspected sepsis in a large cohort of hospitals. Other approaches to decrease sepsis mortality may be warranted.

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136. Impact of an OPAT Pharmacist on Guideline Adherence and Clinical Outcomes
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Background. Outpatient parenteral antibiotic therapy (OPAT) provides select patients a cost-effective alternative to completing intravenous (IV) antibiotic therapy outside the hospital. The Infectious Diseases Society of America (IDSA) OPAT practice guidelines and handbook recommend weekly laboratory monitoring and timely follow-up for OPAT patients. An analysis at VA Palo Alto Healthcare System (VAPAHCS) conducted prior to pharmacist involvement demonstrated that IDSA recommendations were not routinely followed, leading to a clinical cure rate of 62.7%. This led to the implementation of an OPAT pharmacist in 2019. This analysis aims to determine the impact of a pharmacist-managed OPAT program at VAPAHCS.

Methods. This comparative, retrospective analysis included patients who received OPAT at VAPAHCS between October 1, 2019 and September 30, 2020 and those who received OPAT in a prior analysis. Primary outcomes included rates of adherence to IDSA recommendations on follow-up visits and weekly lab monitoring during OPAT. Secondary outcomes included rates of clinical cure, 90-day readmission, and adverse events or complications. Data was analyzed using Fisher's exact test and independent t-test.

Results. This analysis included 74 patients and 76 total OPAT episodes. Bacteremia was the most common diagnosis (n=35, 38.0%), and the most common organism was methicillin-susceptible Staphylococcus aureus (MSSA) (n=23, 29.9%). With respect to guideline adherence pre- and post-pharmacist-managed OPAT, 31.3% versus 93.4% of patients had follow-up within 7 to 14 days of discharge (p<0.001). Rates of weekly lab monitoring of CBC, BMP, and LFTs pre-pharmacist were 63.2%, 63.3%, and 49.5%, respectively, compared to post-pharmacist rates of 93.0%, 92.1%, and 83.6%, respectively. Clinical cure rates were 62.7% pre-pharmacist and 89.6% post-pharmacist (p<0.001). More adverse drug reactions were identified in the post-pharmacist period, of which 30% required pharmacist intervention.

Figure 1. Weekly Laboratory Monitoring of Antimicrobials (%)
Conclusion. Pharmacist involvement in OPAT significantly increased IDSA guideline adherence to lab monitoring and follow-up visits, and clinical cure rates. Identification of adverse drug reactions prompting pharmacist intervention further highlights the importance of follow-up in OPAT patients.

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137. Risk Factors of β-Lactams Associated Cytopenias during Outpatient Parenteral Antimicrobial Therapy: Results from a Large National Sample
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Background. Cytopenias are rare complications of prolonged β-lactam use; however, incidence and associated risk factors are not well described.

Methods. Patients aged 18-64 years in the 2010-2016 IBM MarketScan Commercial Database discharged from the hospital on cephalosporin, penicillin, or carbapenem outpatient Parenteral Antimicrobial Therapy (OPAT) were included. The primary endpoint was hospital admission coded for neutropenia, leukopenia, or thrombocytopenia within the first 6 weeks post index discharge and within 7 days of β-lactam discontinuation. Patients with history of malignancy and those who are on chemotherapy were excluded. Significant factors in univariate analysis were incorporated into a multivariable logistic regression model with sequential exclusion of variables with p > 0.1.

Results. A total of 35,102 patients received β-lactam OPAT; median age was 52 years and 53.6% were male. The primary outcome occurred in 150 (0.43%) patients at a median of 19 days (IQR 10-28 days after index discharge), which included 63 (0.18%) neutropenia, 85 (0.24%) thrombocytopenia, and 23 (0.07%) leukopenia admissions. Factors independently associated with readmission cytopenias included chronic liver disease (OR 4.61 [CI 2.93-7.25]), valvular heart disease (2.69 [1.71-4.24]), receipt of vancomycin (2.10 [1.42-3.12]), or antifungal therapy (4.42 [2.01-9.72]). Lower risk was associated with carbapenem therapy (0.49 [0.32-0.75]) and diabetes (0.48 [0.31-0.74]) (Table 1).

Conclusion. Admissions with cytopenias during β-lactam OPAT were rare and carbapenem use was associated with lower risk compared to other classes of β-lactams. Combination of β-lactam with vancomycin was associated with an increased risk of cytopenias, and those patients might benefit from closer monitoring.

Table 1. Factors Associated with Cytopenias during Beta-Lactams Outpatient Parenteral Antimicrobial Therapy (OPAT)

| Variable | With Cytopenias (N=150) | Without Cytopenias (N=34,652) | P-value (Univariable) | Multivariable Odds Ratio (95% CI) |
|----------|-------------------------|-------------------------------|----------------------|---------------------------------|
| Age (yrs) | 18-40                   | 43 (28.5)                     | 7,824 (22.4)         | 0.095                           |
| Sex (M/F) | Male                    | 53 (35.21)                    | 7,905 (22.6)         |                                |
| CCI < -3  | 55 (38.95)              | 11,795 (33.95)                | 0.25                 |                                |
| CCI > 0   | 12 (8.4)                | 2,418 (7.3)                   | 0.95                 |                                |
| Diabetes  | 63 (0.18%)              | 85 (0.24%)                    | 0.075                |                                |
| Neutropenia| 23 (0.07%)              | 23 (0.07%)                    | 0.32                 |                                |
| Leukopenia | 63 (0.18%)              | 63 (0.18%)                    | 0.075                |                                |

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138. Tele-COVID Rounds and Tele-Stewardship Surveillance Reduces Antibiotic Use in COVID-19 Patients Admitted to 17 Small Community Hospitals
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Background. Early bacterial co-infection is rare in hospitalized COVID-19 patients, yet antibiotics are commonly prescribed. Antibiotic stewardship (AS) intervention is needed, especially in small community hospitals (SCHs), which often lack access to AS expertise.

Methods. We implemented daily remote multidisciplinary tele-COVID rounds (synchronous case review between SCH providers and ID clinicians) and tele-stewardship surveillance (ID pharmacist review of COVID patients on antibiotics) on 6/24/2020 in 17 SCHs. We retrospectively included adult symptomatic COVID-19 admissions between 3/2020 and 4/2021. The primary outcome was early use of antibiotics for pneumonia (started within 48 hours of admission); mean monthly days of therapy per 1,000 patient days (DOT) were compared pre- (3/2020-6/2020) and post-intervention (7/2020-4/2021). Secondary outcomes were early use of antibiotics for any indication, estimated days of antibiotics avoided (comparing pre- and post-intervention DOT), and in-hospital mortality. Analyses were conducted using a two-tailed paired t-test (antibiotic use) or Fisher’s exact test (mortality).

Results. Of the 1,976 patients included (124 pre- vs. 1,852 post-intervention), 55.4% were male and 85.5% were white. Patients in the pre-intervention group were more likely to require hospital transfer [21.8% vs. 8.8% (p<0.001)] and ICU admission [18.5% vs. 9.7% (p=0.003)]. We observed a significant decrease in mean use of early antibiotics for pneumonia [656.9 vs. 240.1 DOT (p< 0.001)], including among non-ICU patient groups [603.6 vs. 240.2 DOT (p<0.001)]. Early antibiotic use for any indication also decreased [686.2 vs. 359.3 DOT (p<0.001)]. An estimated 3,697 days of unnecessary antibiotics for pneumonia were avoided in the 10-months post-intervention (137 days per month [95% CI 304 – 435]). Unadjusted in-hospital mortality was not different pre- vs post-intervention (0.8% vs. 2.0%, p=0.511), but was higher among those prescribed early antibiotics (4.4% vs 0.5%, p<0.001).

Conclusion. A significant, sustained reduction in antibiotic use among COVID-19 patients at 17 SCHs was observed after implementation of tele-COVID rounds and tele-stewardship surveillance without an observed difference in mortality.

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139. Social Support Decreases No-Show Rates Among Patients with Injection-Drug Use-Related Infections and Opioid Use Disorder
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Background. Opioid overdose is the leading cause of injury-related death in the United States. Kentucky ranks in the top 5 states for overdose death and has one of the highest rates of acute hepatitis C (HCV). Fifty-four of Kentucky's counties are among the 220 U.S. counties identified as high risk for rapid dissemination of HIV and HCV. Poverty, legal issues, and transportation are barriers to effective treatment of opioid use disorder (OUD) and related infections. The WRAP project (Wrap-around Recovery for Addiction and infectious Diseases project) is an ongoing multi-disciplinary program to expand access to OUD treatment at University of Kentucky HealthCare. This program provides social support including transportation assistance, case management, and counseling. Missed visits have been associated with multiple adverse outcomes.

Methods. We compared missed infectious diseases clinic visits (n=620) of patients enrolled in WRAP to those of patients who were referred and eligible, but not enrolled using chi-square tests for odds ratios.