

Feature	Wave 1	Wave 2	Delta	% Change	p (0.05)
Patients (n)	4,634	7,056	2,422	52.3%	
Visit Counts (N)	39,541	49,260	9,719	24.6%	
Hospital Visits	33,371	44,909	11,538	34.6%	
SNF Visits	3,763	2,839	(924)	-24.6%	<0.0001
Patient with > 20 Visits	405	345	(60)	-14.8%	<0.0001
Visits Per Patient	8.5	7.0	(2)	-18.2%	<0.0001
Age ≥ 60 (%)	65.5	65.4	(0)	-0.2%	
Mean Age	66.1	65.5	(1)	-1.0%	
Median Age	67.0	67.0	0	0.0%	
Female (%)	46.6	46.6	0	0.1%	

Table 1. Demographics For the Year in COVID19 at ID Care

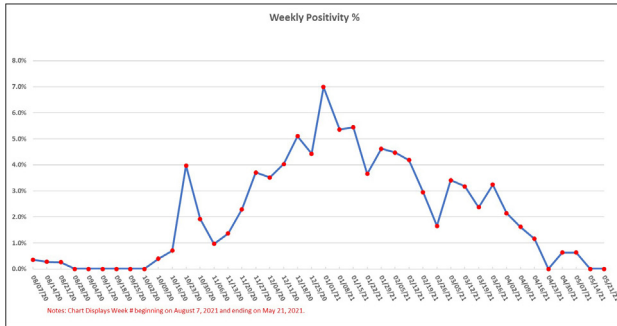


Figure 1. Test Positivity Rate for ID Care

Conclusion. The year of COVID19 occurred in 2 distinct waves. W1 was short and intense. The age and gender distributions were the same between the waves. Even though wave 2 was numerically greater, the cases in SNF were statistically less than the first wave likely from improved IP practice initiated in W1. The numbers of visits per patient, a surrogate for LOS, was statistically less in W2. The decline in test positivity paralleled deployment of vaccination. Despite an intensity of exposure of 158 patients/provider or 1198 visits/provider to SARS-CoV2 infected persons only 8% of the clinician staff were infected. ID clinical practice can use electronic databases to help describe regional outbreaks of transmissible disease giving additional perspective across the care continuum. A more usable standard tool would enhance this capacity.

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616. Predicting Misdiagnoses of Infectious Disease in Emergency Department Visits

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Session: P-27. Clinical Practice Issues

Background. Diagnostic error leads to delays of care and mistaken therapeutic decisions that can cascade in a downward spiral. Thus, it is important to make accurate diagnostic decisions early on in the clinical care process, such as in the emergency department (ED). Clinical data from the Electronic Health Record (EHR) could identify cases where an initial diagnosis appears unusual in context. This capability could be developed into a quality measure for feedback. To that end, we trained a multiclass machine learning classifier to predict infectious disease diagnoses following an ED visit.

Methods. To train and evaluate our classifier, we sampled ED visits between December 31, 2016, and December 31, 2019, from Veterans Affairs (VA) Corporate Data Warehouse (CDW). Data elements used for prediction included lab orders and results, medication orders, radiology procedures, and vital signs. A multiclass XGBoost classifier was trained to predict one of five infectious disease classes for each ED visit based on the clinical variables extracted from CDW. Our model was trained on an enriched sample of 916,562 ED visits and evaluated on a non-enriched blind testing set of 356,549 visits. We compared our model against an ensemble of univariate Logistic Regression models as a baseline. Our model was trained to predict for an ED visit one of five infectious disease classes or "No Infection". Labels were assigned to each ED visit based on ICD-9/10-CM diagnosis codes used elsewhere and other structured EHR data associated with a patient between 24 hours prior to an ED visit and 48 hours after.

Results. Classifier performance varied across each of the five disease classes (Table 1). The classifier achieved the highest F1 and AUC for UTI, the lowest F1 for Sepsis, and the lowest AUC for URI. We compared the average precision, recall and F1 scores of the multiclass XGBoost with the ensemble of Logistic Regression models (Table 2). XGBoost achieved higher scores in all three metrics.

Table 1. Classification performance

	Precision	Recall	F1	AUC	Count
Pneumonia	58.8	43.1	49.7	93.5	14,716
UTI	63.6	61.0	62.3	93.1	29,831
Sepsis	63.3	15.6	25.0	93.4	10,522
SSTI	37.8	24.0	29.4	83.1	11,038
URI	41.3	35.5	38.2	84.7	16,509
No Infection	89.0	91.1	90.1	85.1	286,474
Macro Average	59.1	46.3	50.2	--	356,549

XGBoost testing set performance in each disease class, visits with no labels, and macro average. The infectious disease classes with the highest score in each metric are shown in bold.

Table 2. Baseline comparison

	Precision	Recall	F1
XGBoost	59.1	46.3	50.2
Logistic Regression	57.8	41.6	46.3

Macro average scores for XGBoost and baseline classifiers.

Conclusion. We trained a model to predict infectious disease diagnoses in the Emergency Department setting. Future work will further explore this technique and combine our supervised classifier with additional signs of medical error such as increased mortality or anomalous treatment patterns in order to study medical misdiagnosis.

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617. Long Acting Lipoglycopeptide Use in Veterans for Serious Gram-Positive Infections in the COVID Era

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Background. Dalbavancin and Oritavancin are semisynthetic lipoglycopeptides (LGP) that are FDA-approved for treatment of skin and soft tissue infections, but emerging data supports LGP use for other serious gram positive (GP) infections. We describe our experience with LGP during the COVID-19 pandemic.

Methods. We initiated a quality improvement project to assess the use of LGP for label and off-label indications at the Atlanta Veterans Affairs Health Care System. We define serious GP infections as infective endocarditis, osteomyelitis, joint infections, or bacteremia. Patients with serious GP infections that received LGP were selected at the treating physician's discretion. We reviewed medical records of all patients receiving at least one dose of long-acting LGP from March 1, 2020 - May 31, 2021. We described patient demographics, clinical information, and outcomes (90-day readmission).

Results. Nineteen patients with GP infections received LGP (table). Overall, the most common infection was cellulitis 7 (35%); 14 patients received LGPs for serious GP infections. All patients received at least one other non-LGP antibiotic for at least 2 days, majority vancomycin (60%) and cefazolin (30%). Overall, the median hospital stay among patients who received LGP was 8.5 days (range: 2-45 days), for those with serious GP infections the median hospital stay was 15 days (range: 4-45). 90% of patients who received LGP were discharged home. Number of LGP doses ranged from 1 to 6 doses total, based on type of infection. Sixteen veterans (80%) followed up in outpatient clinic following discharge within 2 weeks, two patients were discharged to home hospice due to complications of underlying malignancies and two patients were lost to follow up. No adverse drug events were reported, and none with serious GP infections required rehospitalization at 90 days.

Table Baseline Patient Characteristics, N= 20	
Characteristic	n (%)
Age, years, median [range]	64.2 [32-81]
Male sex	19 (95%)
Charlson Comorbidity Index, median [range]	7 [0-19]
Type of Infection	
Cellulitis	7 (35%)
Osteomyelitis	6 (30%)
Bacteremia	4 (15%)
Endocarditis	2 (10%)
Urinary tract infection	1 (5%)
Septic arthritis	1 (5%)
Organism	
Methicillin resistant <i>S. aureus</i>	8 (40%)
Methicillin susceptible <i>S. aureus</i>	7 (35%)
Polymicrobial	4 (20%)
Coagulase negative staphylococci	1 (5%)
No culture	5 (25%)

Conclusion. Our experience suggests that long-acting LGP may be valuable tools to treat serious gram-positive infections by optimizing the duration of hospitalization and preventing unnecessary admissions to acute care and nursing facilities for daily antibiotic infusions. These aspects of LGP use are especially important during the COVID-19 pandemic where nosocomial transmission has been documented.

Disclosures. All Authors: No reported disclosures

618. Characteristics and Outcomes of an Outpatient Infectious Diseases E-consult Program at a County Safety-Net Healthcare System

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Session: P-27. Clinical Practice Issues

Background. Safety-net healthcare systems often have significant demands for specialty care due to large patient volumes. Infectious Disease (ID) e-consults have the capability to relieve some of this burden by presenting providers with an alternative to face-to-face ID referrals that also lessens financial, travel, and time constraints on patients. Such a system offers the prospect of increasing access to ID care for patients in limited resource settings.

Methods. We performed a retrospective review describing characteristics and outcomes of all outpatient ID e-consults at Parkland Health and Hospital System in Dallas, Texas from March 2018 – February 2021.

Results. In the study period, 725 e-consults were completed. All e-consults were answered within 72 hours per hospital policy. The most common e-consult topics were 135 (19%) tuberculosis (TB), 116 (16%) syphilis, 97 (13%) respiratory and 79 (11%) musculoskeletal (Figure 1). Nearly two-thirds of the e-consults 456 (63%) came from primary care providers (PCPs). The remainder came from specialists with the most common referring specialties being GI 55 (8%), Hematology/Oncology 36 (5%), Rheumatology 28 (4%) Neurology 27 (4%), and Dermatology 22 (3%) (Figure 2). The majority of e-consults 569 (78%) were resolved without a face-to-face visit.

Figure 1. Number of E-consults over Time, by Topic

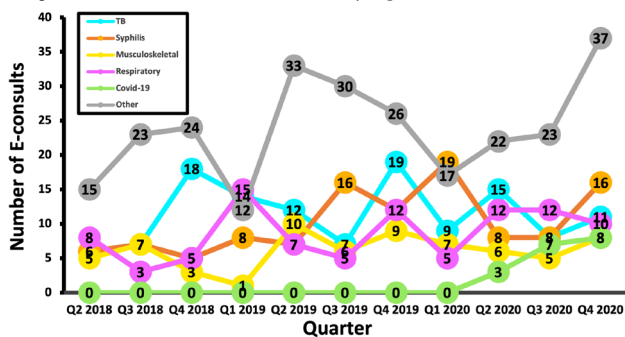
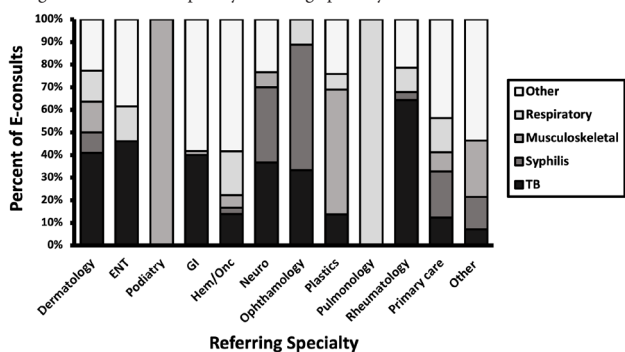


Figure 2. E-consult Topics by Referring Specialty



Conclusion. Implementation of an outpatient ID e-consult program at a large safety-net healthcare system was an effective means of providing timely input on common ID topics, such as latent TB and interpretation of syphilis serologies, without formal clinic visits. E-consults were able to service a range of providers including PCPs and a variety of specialties, and most e-consults were completed without a clinic visit.

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619. Current State of Infectious Diseases Pharmacist OPAT/COpAT Practice in the United States

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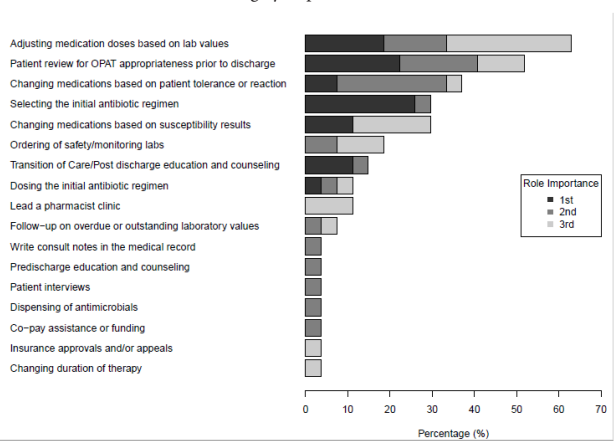
Session: P-27. Clinical Practice Issues

Background. Outpatient parenteral antimicrobial therapy (OPAT) is the process of administering intravenous (IV) antimicrobials outside the acute inpatient setting. Oral antimicrobials for complex infections are referred to as complex outpatient antimicrobial therapy (COpAT). OPAT/COpAT programs are expanding, as are the opportunities for clinical Infectious Diseases (ID) pharmacists (RPHs) involvement. The current state of clinical (non-dispensing) role and the functions being performed by RPHs in OPAT/COpAT is unknown.

Methods. To define the current state of OPAT/COpAT pharmacy practice across the United States (US), specifically the clinical functions performed by RPHs, design of RPH involved OPAT/COpAT clinics, and compare training of RPHs who practice in OPAT/COpAT to ID RPHs who do not, a survey of a possible 31 questions was emailed to the American College of Clinical Pharmacists (ACCP) Infectious Diseases Practice and Research Network (PRN) email list. Results were focused on US-based respondents.

Results. Eighty-seven RPHs responded with 27 practicing in OPAT/COpAT. Training background did not differ between groups. Programs with an OPAT/COpAT RPH were more likely to have a formal OPAT team compared to those without an OPAT/COpAT RPH (p < 0.001). OPAT/COpAT RPHs were early in their careers, with roughly half practicing < 5 years in ID, and 66.7% practicing < 5 years in OPAT/COpAT. Most OPAT/COpAT RPHs (66.7%) practiced at an academic medical center with a median full time equivalent (FTE) of 1 RPH. Most (63%) utilized a collaborative practice agreement and 81.5% shared job functions with other ID RPH roles, most commonly antimicrobial stewardship. Few (28%) OPAT/COpAT programs involved a dispensing component. The average daily census was 42 patients followed by an OPAT/COpAT RPH. There was wide variability in the types of tasks ID RPH performed in OPAT/COpAT, the three most important tasks are listed in Figure 1.

OPAT Pharmacists Task Ranking by Importance



There was wide variability in the types of tasks ID pharmacist performed in OPAT/COpAT. The most OPAT/COpAT pharmacists responded that adjusting medications based on lab values was in their top 3 most important clinical tasks. When ranking the top three most important tasks, selecting the initial OPAT/COpAT regimen was ranked first most often, followed by review of review of OPAT appropriateness for discharge, then adjusting medications based on lab values.

Conclusion. This is the largest known survey of OPAT/COpAT RPHs. RPH involvement in OPAT/COpAT in the US is an emerging trend with wide variability in program structure. Tasks performed by OPAT/COpAT RPHs varied significantly; however, OPAT/COpAT RPH respondents' functions are largely clinical in nature.

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620. Identifying the Role for a Pharmacist on an Outpatient Parenteral Antimicrobial Therapy (OPAT) Team in an Academic Teaching Hospital

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Session: P-27. Clinical Practice Issues

Background. Outpatient parenteral antimicrobial therapy (OPAT) is currently an emerging practice to continue effective treatment after hospital discharge for patients requiring parenteral (IV) treatment. Pharmacists can collaborate with outpatient services like home infusion services to allow for safe administration and monitoring of IV antibiotics. The role of pharmacists in an OPAT team has been shown to improve patient outcomes such as optimizing antimicrobial therapy and reducing hospital length of stay and readmissions. We sought to define the utility of an OPAT pharmacist at an academic teaching hospital that currently does not have an OPAT service.

Methods. Patients receiving IV therapy via home infusion from 1/4/21 to 3/4/21 were screened for inclusion and excluded if antimicrobials were not prescribed. Infection characteristics and antimicrobial therapy were recorded. Interventions on