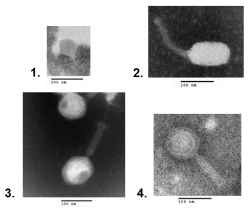
cell transplant (HCT) recipients. VRE colonization of the gastrointestinal tract could be associated with VRE bacteremia and worse outcomes in HCT recipients. The use of systemic antibiotics to eradicate VRE colonization is highly discouraged because of the lack of efficacy, the rapid onset of antibiotic resistance, and the disruption of the normal microbiota. Bacteriophages (phages) may constitute a good alternative to antibiotics to eliminate specific pathogens without disrupting the patient's normal microbiota.

Methods. Sewage samples were collected from the City of Houston for phages isolation. Samples were centrifuged, filtered and exposed to several targeted VRE host strains. After several amplification, the final filtrate was titrated and checked for the presence of VRE-specific phages. Isolated phages were observed under electron microscopy and were tested against multiple VRE strains isolated from different sources including patients' stool samples, patients' room environment, sewage samples, clinical isolates of daptomycin-resistant VRE strains or vancomycin-susceptible *Enterococcus faecium* (VSEF) and *Enterococcus faecalis* (VSEf) strains.

Results. Four VRE-specific phages were isolated from sewage samples (MDA1, MDA2, MDA3, and MDA4). All phages belong to the *Caudovirales* order. Phage MDA1 belongs to the *Podoviridae* family, phage MDA2 is a *Siphoviridae*, whereas MDA3 and MDA4 belong to the *Myoviridae* family (Figure 1A). All phages were lytic and were able to inhibit at least four VRE strains and only MDA1 had activity against VSEF and MDA4 against VSEf. The efficacy of these lytic phages complemented one another as the combination of these four phages inhibited all different VRE strains (Figure 1B).

Conclusion. Our results highlight the feasibility and the potential success of these phages in inhibiting VRE *in vitro*. These VRE-specific phage cocktails may be used in future studies to reduce VRE colonization and subsequent infections in HCT recipients.



A. **Phages MDA1, MDA2, MDA3, and MDA4 under the electron microscope** (numbered 1, 2, 3, and 4, respectively). Scales indicate 100 nm.

Activity of phages against VRE isolated from different sources. White boxes indicate the ability of the phage to lyse the VRE strain tested. Black boxes indicate that the phage has no effect on the tested bacterium.

Bacteria				Phages			
				MDA1	MDA2	MDA3	MDA4
Patient-strains	Stool	Dapto-resistant	VRE001				
			VRE002				
			VRE004				
			VRE008				
			VRE335				
			VRE85				
Environmental strains	Room	Sewage	VREsewage1				
			VREsewage2				
	Others		VRE1147				
			VRE1181				
			VSEF				
			VSEf				

B. Abbreviations: VRE, Vancomycin-resistant *Enterococcus faecium*; VSEF, Vancomycin-susceptible *Enterococcus faecium*; VSEf, *Enterococcus faecalis*; Dapto-resistant, Daptomycin-resistant.

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737. Novel Glycans Reduce Carbapenem-Resistant *Enterobacteriaceae* and Vancomycin-Resistant *Enterococci* Colonization in an *Ex Vivo* Assay by Supporting Growth and Diversity of Commensal Microbiota at the Expense of MultiDrug-Resistant Organisms (MDRO)

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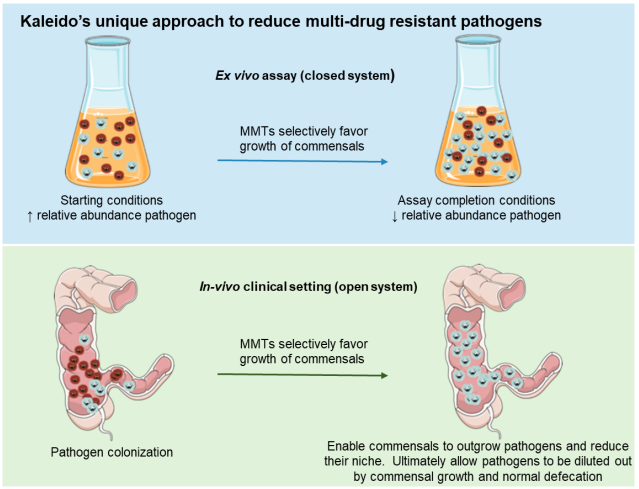
Session: 68. Novel Antimicrobials and Approaches Against Resistant Bugs
Thursday, October 3, 2019: 12:15 PM

Background. Infections with Carbapenem-resistant *Enterobacteriaceae* (CRE) and vancomycin-resistant *Enterococci* (VRE) can result in a 50% mortality rate in compromised hosts. A major risk factor for clinical infection is intestinal colonization with CRE or VRE. There are currently no FDA-approved compounds to decolonize these organisms from the gastrointestinal tract (gut). Commensal microbes offer protection from pathogen infection; however, in immunocompromised hosts or with antibiotic treatment, the protective properties of the microbial community are compromised, leaving the gut susceptible to pathogen colonization. Higher concentrations of pathogens within the gut correlate with an increased risk of infection with MDROs. Our hypothesis is that reducing colonization of the gut with MDROs would reduce the likelihood of a clinical infection.

Methods. Kaleido built a platform that emulates the gut environment and allows for high throughput screening of Kaleido's Microbiome Metabolic Therapies (MMT™) in human gut microbiomes *ex vivo*. Over 500 compounds were screened for their ability to reduce the levels of CRE and VRE in fecal microbial communities from both healthy subjects and critically ill patients receiving broad-spectrum antibiotics.

Results. Kaleido's lead MMTs selectively favor the growth of the commensal microbiota at the expense of pathogens, resulting in a decrease of CRE and VRE from 80% of the initial community to 5% in a single batch culture, as measured by 16S rRNA gene and shotgun metagenomic sequencing. Lead MMTs do not support growth of CRE and VRE strains in culture, nor of other pathogens frequently encountered in critically ill and immunocompromised patients, such as *Clostridium difficile* and common fungal pathogens.

Conclusion. These results suggest that intervention with MMTs may reduce CRE and VRE colonization and support further evaluation in patients colonized with CRE or VRE pathogens.



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

738. Potent *In Vitro* activity of Rezafungin (RZF) Against *Aspergillus* Clinical Isolates Recovered From Lung Transplant Patients Who Have Received ≥3 Months of Triazole Prophylaxis

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Session: 68. Novel Antimicrobials and Approaches Against Resistant Bugs
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Background. Emergence of azole resistance globally among *Aspergillus* species has major one health implications for humans and agriculture. At our center, isavuconazole (ISA), posaconazole (POS) and voriconazole (VOR) have been used as antifungal prophylaxis for at least 3 months or as pre-emptive therapy in solid-organ transplant (SOT) patients. We previously showed that azole breakthrough (BT) fungi were more likely to be non-*fumigatus Aspergillus* (non-*Af*) spp. In addition, azole BT isolates exhibited higher azole MICs than non-BT isolates, with 7% pan-azole resistance. RZF is an investigational echinocandin with long serum half-life, suitable for prolonged dosing intervals. We determined caspofungin (CAS) and RZF minimum effective concentrations (MECs) against *Aspergillus* isolates from our center.

Methods. *Aspergillus* recovered from 111 patients between December 2016 and April 2018 were tested. MICs (minimum inhibitory concentrations; azoles) and MECs (echinocandins) were measured. *Candida parapsilosis* ATCC 22019 and *Candida krusei* ATCC 6258 were used as QC controls.

Results. 71% (79) of isolates were from SOT patients. *Aspergillus* spp. were *A. fumigatus* (*Af*, 73), *A. flavus* (*Afl*, 12), *A. niger* (*An*, 9), *A. terreus* (*At*, 8), *A. calidoustus* (*Ac*, 7), and *A. lentulus* (*Al*), *A. glaucus, A. thermomutatus,* and *A. thermomutatus* (*At*; 1 each). 7% of *Aspergillus* isolates exhibited VOR, POS and ISA MICs ≥2, ≥8 and ≥1 µg/mL, respectively. RZF MEC_{50} and range of MEC by *Aspergillus* spp.are summarized in the Table. Overall, there was no difference in MECs between CAS and RZF ($P = 0.21$). 6% (7) and 7% (8) of the non-*Af* isolates exhibited CAS and RZF MECs >0.5 µg/mL, respectively. 5 isolates exhibited CAS and RZF MEC ≥16 µg/mL.

Conclusion. Despite concerns over azole resistance among *Aspergillus*, these agents remain frontline against invasive aspergillosis. The excellent activity of RZF and CAS shown here suggests that the drugs are potential therapeutic options for patients infected with azole BT *Aspergillus*, including azole-resistant isolates. The long-half-life and high tolerability of RZF make this agent an attractive consideration for antifungal prophylaxis. A clinical trial of RZF prophylaxis in stem cell transplant recipients is planned.

Aspergillus spp.	Caspofungin (CAS)			Rezafungin (RZF)		
	MEC_{50} (µg/mL)	MEC range (µg/mL)	MEC>0.5 µg/mL (n)	MEC_{50}	MEC range	MEC>0.5 µg/mL (n)
Ac (N=7)	0.125	0.03->16	1	0.03	0.0125->32	3
Af (N=73)	0.125	0.03->16	4	0.125	0.015->32	2
Afl (N=12)	0.125	0.015->16	1	0.06	0.015->16	1
An (N=9)	0.125	0.015-0.25	0	0.125	0.125-0.5	0
At (N=8)	0.125	0.06->16	2	0.06	0.015->16	1
Others (N=3)	0.015	0.015-0.125	0	0.015	0.015-0.125	0

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

739. Prediction of Cefiderocol Pharmacokinetics and Probability of Target Attainment in Pediatric Subjects for Proposing Dose Regimens

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Background. Cefiderocol is a siderophore cephalosporin discovered by Shionogi & Co., Ltd., which exhibits potent efficacy against Gram-negative carbapenem-resistant bacteria. Pediatric clinical studies are planned. Cefiderocol is mainly renally eliminated. A 2-g infusion of cefiderocol over 3 hours, every 8 hours (q8h) is the recommended dose regimen in adults. In this study, dose regimens for pediatric subjects (birth to <18 years old) are proposed based on predictions of pharmacokinetics (PK) in pediatrics using data from adults to provide adequate exposure.

Methods. The PK model developed based on data in adults was modified for predicting PK in pediatrics. Total clearance and volume of distribution at steady state in pediatrics were scaled using allometric relationships developed for parenteral β-lactam antibiotics. The maturation factor of renal function was also incorporated into the model to predict PK in neonates and infants whose glomeruli are immature. The dose was selected to provide area under the concentration curve (AUC) comparable to adults. Monte-Carlo simulations were performed to calculate probability of target attainment (PTA) for 75% of fraction of time during which the free plasma concentrations exceed the minimum inhibitory concentration (MIC) over the dosing interval ($fT_{>MIC}$) for age groups at the proposed doses against an MIC range from 0.25 to 16 μg/mL.

Results. The dose regimens for pediatrics were proposed based on age and body weight as shown in the table below. The dose of 60 mg/kg (maximum 2 g) q8h was selected as a standard dose. The dose for pediatrics aged <3 months was adjusted based on age. AUC predicted in pediatrics from birth to <18 years old for the proposed dose was comparable to that observed in adults. The proposed dose provided >90% PTA for 75% $fT_{>MIC}$ against MICs up to 4 μg/mL.

Conclusion. The proposed dose regimens provide comparable (to adults) exposure in pediatric patients for target carbapenem-nonsusceptible pathogens, 98% of which are susceptible to cefiderocol at a MIC of ≤4 μg/mL.

Table. Proposed Doses of Cefiderocol for Pediatric Subjects

Chronological age	Gestational age <32 weeks	≥32 weeks
<2 months	30 mg/kg	40 mg/kg
2 to <3 months	40 mg/kg	60 mg/kg
	Body weight <34 kg	≥34 kg
3 months to <18 years	60 mg/kg	2 g
Dosing: 3-hr infusion (1-hr infusion for <3 months), q8h		

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

740. A Comparison of Process Outcomes Among Patients Receiving Outpatient Parenteral Antibiotic Therapy in Different Settings: A Quality Improvement Project

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Session: 69. What's New in Clinical Practice?
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Background. Outpatient parenteral antibiotic therapy (OPAT) is an effective way to provide long-term antibiotic therapy and simultaneously decrease hospital length of stay, minimize costs and improve patient satisfaction. However, OPAT is not always an efficient process and there are systemic challenges to providing adequate care and ensuring close follow-up. The aims of this project are to define the OPAT process at three New Orleans hospitals staffed by the Tulane Infectious Diseases Section and to determine process outcomes among patients receiving OPAT in different settings.

Methods. We utilized the knowledge of medicine residents, infectious diseases (ID) fellows and social workers to create a process map defining the current OPAT system [Figure 1]. We performed a retrospective chart review identifying patients who were discharged with OPAT from August 1, 2018 to November 30, 2018. The patients received OPAT in a variety of settings: long-term acute care facilities (LTACs), infusion centers, home, hemodialysis centers and prison. We measured the following process outcomes: if the patient arrived to an ID appointment, if safety laboratory results were available for review and if the patient completed the pre-specified antibiotic course. These outcomes were compared amongst the OPAT delivery settings.

Results. Our retrospective analysis identified 62 patients discharged with OPAT, although 2 patients were excluded due to lack of availability of records. Only 42% completed the pre-specified antibiotic course, 54% arrived to ID follow-up, and 38% had laboratory results available. We compared the completion of antibiotic course amongst the different OPAT settings (Figure 2). The highest rates of incompletion were amongst LTAC patients ($n = 19$, 73%) and prisoners ($n = 3$, 75%). Given that the highest number of patients who did not complete antibiotics were discharged to LTACs, we plan further investigation and intervention to target this population.

Conclusion. Patient outcomes among OPAT patients discharged from three New Orleans hospitals are poor, as evidenced by 58% failing to complete their pre-specified antibiotic course. The highest number of patients who failed were LTAC patients. We propose a further investigation into this population in order to improve the efficacy of the OPAT system.

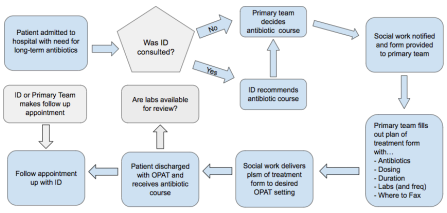
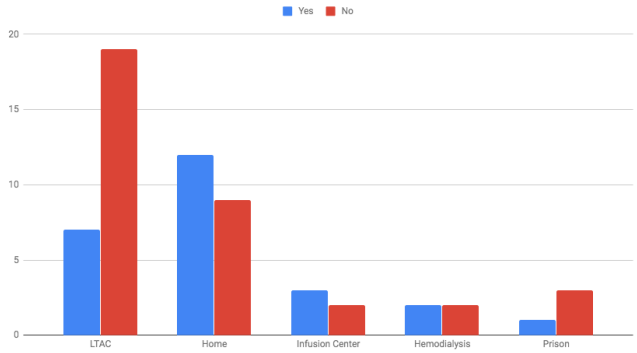


Figure 1: Process Map Representing the Current OPAT System

Figure 2: Number of Patients in Each OPAT Setting Whom Completed Antibiotic Course



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

741. TravMil Surveillance of Travel-Related Illness in a Prospective Cohort of US Military Beneficiaries, 2010–2018

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Background. Increasing international travel places larger populations at risk for infections outside of their usual exposure. Deployed military personnel have unique risks for such infections. Our cohort's rates of travelers' diarrhea and influenza-like illness have been defined, but the rate of travelers with symptoms apart from a clinical syndrome has not. We present a survey of intra-travel symptoms of all travelers and confirmed diagnoses of ill-returned travelers in a cohort of military and civilian travelers.

Methods. TravMil is a prospective, multicenter observational study enrolling US military beneficiaries traveling outside the continental United States from 2010–2018; beneficiaries could also enroll after travel if they presented for a possible travel-related illness. Demographic information, intra-travel symptoms, and confirmed diagnoses were recorded.

Results. 2671 travelers embarked on 3050 trips: 63.1% male; median age 38 years (IQR 27, 57); median trip duration 20 days (IQR 13, 46). Common purposes of travel: military deployment (45.9%), vacation (23.7%), and visiting friends/relatives (10.9%). Ninety-seven travelers (3.2%) enrolled post-travel. Top regions of travel: Africa (31.5%), South and Central America/Caribbean (25.5%), and Southeast and North Asia/Oceania (19.4%). During travel, 56.6% experienced gastrointestinal (GI) symptoms, 11.9% respiratory symptoms, and 3.0% fever; of those, 10.3% sought medical care. Eighty returned travelers sought medical care (21 prospective enrollees vs. 59 post-travel enrollees): 5 vs. 17 malaria cases, 3 vs. 16 arbovirus infections, and 6 vs. 14 GI syndromes. All malaria cases in prospective enrollees were in military subjects. Post-travel enrollees accounted for 1 acute human immunodeficiency virus and 3 rickettsial infections.

Conclusion. A majority of our travelers experienced symptoms during travel. Post-travel diagnoses, although uncommon, emphasize needed improvements in the application of known risk mitigation strategies. Our findings can help clinicians optimize their pretravel counseling by focusing education on self-treatment of common travel-related symptoms, prevention of GI, arthropod-borne, and respiratory illness, and emphasizing symptoms that should prompt medical care.

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

742. The Development, Implementation, and Feasibility of Multidisciplinary Treatment Planning Conference for Individuals with Unstable Substance Use Disorders and Active Infections Requiring Prolonged Antimicrobial Therapy: The OPTIONS-DC Model

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