Distribution of Respiratory Viruses in Different Settings by Season
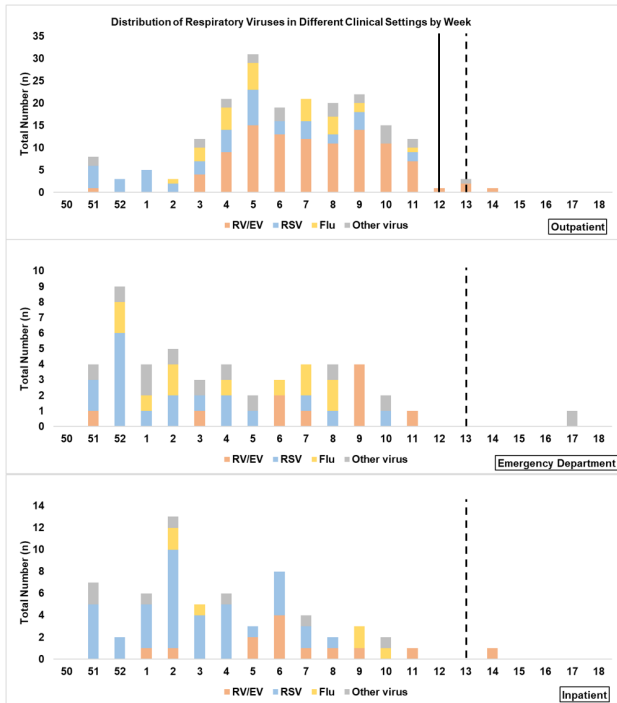

Distribution of Respiratory Viruses in Different Clinical Settings by Week

Solid line: March 16th, surveillance halted in 3 out of 4 outpatient clinics due to SARS-CoV-2 restrictions

Dashed line: March 23rd, stay-at-home implementation in Nashville, TN

Conclusion. Most medical encounters in infants are due to viral pathogens, with RSV, RV/EV, and flu being the most common. However, distributions differed by clinical setting, with RSV being the most frequently detected in the IP and ED settings, and second to RV/EV in the OP setting. Continued active viral ARI surveillance in various clinical settings is warranted. Preventative measures such as vaccines and infection control measures deserve study to reduce viral ARI burden.

914. Epidemiology of Patients with ESKAPE Pathogen Bloodstream Infection in the US Military Health System

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Session: P-43. HAI: Surveillance

Background. Bloodstream infections (BSI) are associated with both inpatient mortality and substantial morbidity in the United States. We sought to characterize the epidemiology of BSIs with ESKAPE pathogens on patients served by the United States Military Healthcare System (MHS), which actively prospectively captures clinical and microbiological data from US service members and their beneficiaries.

Methods. We performed a retrospective analysis of MHS patients with blood cultures positive for ESKAPE pathogens (*E. faecium*, *S. aureus*, *K. pneumoniae*, *A. baumannii*, *P. aeruginosa*, and *Enterobacter spp.*), as well as *Neisseria gonorrhoeae* and *Raoultella spp.* between January 2010 and December 2015. Microbiological data from the Navy and Marine Core Public Health Center was retrospectively collated with clinical and demographic data from the MHS Data Repository.

Results. We identified 7,404 patients who experienced 8,791 episodes of ESKAPE (including *N. gonorrhoeae* and *Raoultella spp.*) BSI. The patients were predominately

active duty (N=688) or retired (N=2,517) Armed Forces service members and their dependents (N=2,361). Further, 59.4% were male and 47.5% were >65 years old. A total of 5,594 (75.5%) of BSI episodes were associated with hospital admission, with an average length of stay of 14.9 days (SD of 27.5 days) and 47.4% (N=2,650) of those admissions were associated with an ICU stay averaging 8.6 days (SD of 18.0 days). The most common pathogens detected were *E. coli* (34.6%, N= 3,042) followed by *S. aureus* (28.0%,N=2,464), with 7.6% and 40.7% of isolates resistant to ceftriaxone and methicillin, respectively. We found a larger proportion of *E. coli* BSI in females (47.4% versus 26.2%) and *S. aureus* BSI in males (32% versus 21.9%). The frequency of *A. baumannii* BSI in younger patients, ages 18-30, was an average 4.5 fold higher than in older age groups (30-50, 50-65 and >65).

Conclusion. We noted epidemiological differences in the burden of ESKAPE pathogen BSIs, in various populations including sex and age specific risk factors in a population served by the MHS. Further work is underway to evaluate risk factors for infection and outcomes with pathogens with in vitro resistance controlling for factors such as age, gender, co-morbid diseases and severity of illness.

915. Global 2018 Surveillance of Eravacycline Against Gram-positive Pathogens, Including Resistant Isolates

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Session: P-43. HAI: Surveillance

Background. Eravacycline (ERV) is a fully-synthetic, fluorocycline antibacterial approved by the FDA and EMA for the treatment of complicated intra-abdominal infections (cIAI) in patients ≥18 years of age. The purpose of this study was to further monitor the *in vitro* activity of ERV against Gram-positive pathogens, such as *Staphylococcus aureus* (including methicillin-resistant *S. aureus*, MRSA), *Enterococcus* spp. (including vancomycin-resistant *Enterococcus*, VRE) and *Streptococcus* spp.

Methods. Isolates were collected globally during 2018 from various body sites. Minimum inhibitory concentrations (MICs) were determined by CLSI broth microdilution. Antibiotic susceptibility was determined using the most recent CLSI breakpoints (30th ed CLSI M100 document), except for ERV and tigecycline (TGC) where FDA breakpoints from 2018 and 2005, respectively, were applied.

Results. Summary MIC data for ERV and select comparators are shown in the Table. ERV $MIC_{50/90}$ for *Enterococcus* spp were 0.06/0.12 μg/mL and were not affected by the presence of vancomycin resistant mechanisms. The MIC_{90} of ERV against VRE was 2-fold lower than TGC, at a value of 0.12 μg/mL. ERV MIC_{90} values for methicillin-susceptible *S. aureus* (MSSA) was 0.12 μg/mL and for MRSA was 0.25 μg/mL. Generally, for all pathogens, ERV MIC_{90} values were 2- to 4-fold lower than TGC.

Table

Organisms (N)	ERV $MIC_{50/90}$	TGC $MIC_{50/90}$	VAN $MIC_{50/90}$	DAP $MIC_{50/90}$
Enterococcus spp (985)	0.06/0.12	0.12/0.25	1/>16	2/2
E. faecalis (502)	0.06/0.12	0.12/0.25	1/2	1/2
E. faecium (483)	0.06/0.06	0.06/0.25	1/>16	2/4
VRE (189)	0.06/0.12	0.06/0.25	>16/>16	2/4
S. aureus (520)	0.06/0.12	0.25/0.25	1/1	0.25/0.5
MSSA (308)	0.06/0.12	0.25/0.25	1/1	0.25/0.5
MRSA (212)	0.06/0.25	0.25/0.5	1/1	0.5/0.5
Streptococcus anginosus group[a] (48)	0.015/0.03	0.03/0.06	0.5/1	0.25/0.5

Units in μg/mL; $MIC_{50/90}$ - minimum inhibitory concentration required to inhibit growth of 50/90% of isolates; [a]*S. anginosus, S. constellatus, S. intermedius*

Conclusion. ERV *in vitro* activity was demonstrated for clinically important Gram-positive pathogens, including resistant isolates. Overall, ERV demonstrated lower MIC_{90} values than comparators for all organisms. This 2018 global surveillance highlights ERV's utility against Gram-positive organisms and further underscores its role in cIAI, where these pathogens play a causative role.

916. National Estimates of the Proportion of Bacterial Pathogens Expressing Resistant Phenotypes in US Hospitals, 2012-2017

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Session: P-43. HAI: Surveillance

Background. In 2019, CDC updated national estimates of antibiotic resistance. In this abstract we provide national estimates of and trends in proportion of bacterial