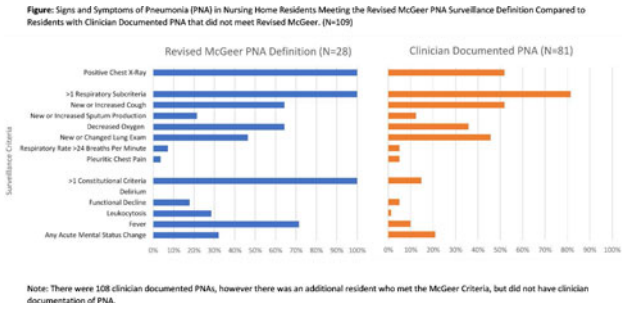

Fig. 2.

Funding: None
Disclosures: None
Doi:10.1017/ice.2020.865

Presentation Type:
Poster Presentation

Imunocromatografic Tests Improving Point-of-Care Management of Respiratory Virus Infection in Children

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Background: Respiratory syncytial virus (RSV) and influenza virus (flu) contribute substantially to the overall burden of severe respiratory tract infection in children. However, the molecular etiological diagnostic methods of viral infection are still insufficiently accessible in public hospitals. Rapid immunochromatographic tests can add important information at the point of care, including antiviral or antibiotic indication, viral , and effective precaution measures to prevent outbreaks. The aim of this study was to evaluate this impact for pediatric patients under 5 years of age in our hospital. **Methods:** We conducted a retrospective, observational study of clinical outcomes of children under 5 years requiring hospitalization from 2013 to 2018 for viral respiratory disease, and who had positive RSV and/or flu immunochromatographic rapid test results. **Results:** In total, we identified 221 cases: RSV, 193; flu, 6; codetections, 19. (Table 1). The mortality rate was 1.8% (2 cases), and 88% of our patients were <1 year of age. Variables significantly associated with orotracheal intubation, the most intensive intervention, were younger age in months, comorbidities, RSV and flu codetection, and bacterial pneumonia diagnosis during hospitalization. **Conclusions:** In the multivariate analysis, RSV and flu codetection was associated with the least favorable clinical prognoses. Rapid test diagnosis may provide important information at the point of care, and molecular panels are not yet widely accessible in public hospitals. Hence, we believe that immunochromatographic rapid tests represent a valuable and feasible diagnostic alternative facilitating timely evaluation and treatment implementation.

Table 1. Factors associated with orotracheal intubation (OTI) in children <5 years hospitalized for respiratory viral infection, obtained in a univariate and multiple logistic model, PUC-Campinas Hospital, Brazil 2013-2018

Variable	With OTI N (%)	OR gross (95% CI)	OR aj (95% CI)
Age in months		0.94 (0.88-0.99)	0.89 0.82-0.98
RT+ * Only RSV	64 (34.7)	0.12 (0.42- 0.32)	-
RT+ * Only Influenza A	6 (66.7)	3.05 (0.74-12.5)	-
RT+ * Flu+RSV	17 (89.)	15.0 (3.4- 66.9)	14.3 3.0-68.2
Comorbidity**	17 (58.6)	1.9 (0.9-4.5)	2.7 1.02-7.11
Prematurity (< 37 weeks)	16 (55.2)	1.3 (0.5-2.9)	-
Associated bacterial pneumonia	25 (75.8)	5.9 (2.5 -13.8)	4.78 (1.83-12.55)

*RT – Rapid Test,
**Comorbidity: congenital heart disease, Down syndrome, other GIT congenital malformations, renal failure, bronchopulmonary dysplasia

Funding: None
Disclosures: None
Doi:10.1017/ice.2020.866

Presentation Type:
Poster Presentation

In Vitro Activity of Cefiderocol Against Multidrug-Resistant Gram-Negative Clinical Isolates

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Background: New antimicrobials are being developed as a response to the global threat of multidrug-resistant and panresistant bacterial pathogens. Cefiderocol (FDC; Shionogi & Co) is a novel parenteral siderophore cephalosporin with activity against gram-negative rods. Here, we report on the *in vitro* activity of FDC against multidrug-resistant gram-negative isolates collected by the CDC, including isolates available through the CDC and FDA Antibiotic Resistance Isolate Bank (AR Isolate Bank). **Methods:** The challenge set of gram-negative isolates (n = 339), most of which were obtained from the AR isolate bank (n = 258), comprised 188 Enterobacteriaceae (ENT), 72 *Pseudomonas aeruginosa* (PSA), and 79 *Acinetobacter baumannii* (ACB). Minimum inhibitory concentrations (MICs) for FDC in iron-depleted cation-adjusted Mueller-Hinton broth were determined using frozen reference broth microdilution panels (IHMA, Schaumburg, IL) according to CLSI guidelines. Isolates displaying nonsusceptibility to FDC (MIC >4 μg/mL) underwent additional testing with β-lactamase inhibitors (FDC with 4 μg/mL avibactam, FDC with 100 μg/ml dipicolinic acid (DPA), and FDC with both 100 μg/mL dipicolinic acid (DPA) and 4 μg/mL avibactam). **Results:** Cefiderocol MICs ranged from ≤0.03 to >64 μg/mL, and 313 (92.3%) isolates displayed susceptibility to FDC (MIC ≤4 μg/mL). The proportions of susceptible ENT, PSA, and ACB were 93.1%, 94.4%, and 88.6%, respectively. Among isolates harboring Ambler class A, class B, or class D carbapenemases, the proportions of susceptible isolates were 96.5%, 79.5%, and 94.0%, respectively. Overall, 26 (7.7%) isolates were categorized as FDC nonsusceptible (MIC ≥ 8 μg/mL); 65% of these were NDM producers. We selected 23 isolates for testing with β-lactamase inhibitors. The combination FDC-avibactam reduced the MIC to susceptible for all isolates harboring an Ambler class A or D carbapenemase, except for 1 OXA-71–producing ACB and 1 KPC-producing *Citrobacter farmeri*. The combination FDC-DPA reduced the MIC to susceptible for 9 of 13 (69.2%)

https://doi.org/10.1017/ice.2020.867 Published online by Cambridge University Press

NDM-producing and 4 of 4 (100%) OXA-23–producing ACB. By combining FDC with both DPA and avibactam, the MIC was reduced to susceptible (91%) for all but 1 KPC-producing and 1 NDM-producing Enterobacteriaceae isolate. **Conclusions:** Cefiderocol (FDC) demonstrated potent activity against a diverse collection of multidrug-resistant, gram-negative isolates, including producers of Ambler class A, B, and D carbapenemases. Among the 26 FDC nonsusceptible isolates, 65% were NDM positive. Our data indicate that FDC combined with β-lactamase inhibitors may restore susceptibility in FDC nonsusceptible isolates. Additional studies are needed to understand the underlying mechanism(s) of FDC resistance and to further explore the use of β-lactamase inhibitors in combination with FDC.

Funding: None
Disclosures: None
Doi:10.1017/ice.2020.867

Presentation Type:
Poster Presentation

Inactivation of *Candida auris* and *Candida albicans* by Ultraviolet-C

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Background: *Candida auris* is an emerging fungal pathogen that is often resistant to major classes of antifungal drugs. It is considered a serious global health threat because it has caused severe infections with frequent mortality in over a dozen countries. *C. auris* can survive on healthcare environmental surfaces for at least 7 days, and it causes outbreaks in healthcare facilities. *C. auris* has an environmental route of transmission. Thus, infection prevention strategies, such as surface disinfection and room decontamination technologies (eg, ultraviolet [UV-C] light), will be essential to controlling transmission. Unfortunately, data are limited regarding the activity of UV-C to inactivate this pathogen. In this study, a UV-C device was evaluated for its antimicrobial activity against *C. auris* and *C. albicans*. **Methods**: We tested the antifungal activity of a single UV-C device using the vegetative bacteria cycle, which delivers a reflected dose of 12,000 μW/cm^2. This testing was performed using Formica sheets (7.6 × 7.6 cm; 3 × 3 inches). The carriers were inoculated with *C. auris* or *C. albicans* and placed horizontal on the surface or vertical (ie, perpendicular) to the vertical UV-C lamp and at a distance from 1.2 m (~4 ft) to 2.4 m (~8 ft). **Results**: Direct UV-C, with or without FCS (log_{10} reduction 4.57 and 4.45, respectively), exhibited a higher log_{10} reduction than indirect UV-C for *C. auris* (log10 reduction 2.41 and 1.96, respectively), which was statistically significant (Fig. 1 and Table 1). For *C. albicans*, although direct UV-C had a higher log_{10} reduction (log_{10} reduction with and without FCS, 5.26 and 5.07, respectively) compared to indirect exposure (log_{10} reduction with and without FCS, 3.96 and 3.56, respectively), this difference was not statistically significant. The vertical UV had statistically higher log_{10} reductions than horizontal UV against *C. auris* and *C. albicans* with FCS and without FCS. For example, for *C. auris* with FCS the log_{10} reduction for vertical surfaces was 4.92 (95% CI 3.79, 6.04) and for horizontal surfaces the log_{10} reduction was 2.87 (95% CI, 2.36–3.38). **Conclusions:** *C. auris* can be inactivated on environmental surfaces by UV-C as long as factors that affect inactivation are optimized (eg, exposure time). These data and other published UV-C data should be used in developing cycle parameters that prevent contaminated surfaces from being a source of acquisition by staff or patients of this globally emerging pathogen.

Figure. Inactivation of *Candida auris* and *Candida albicans* by UV-C

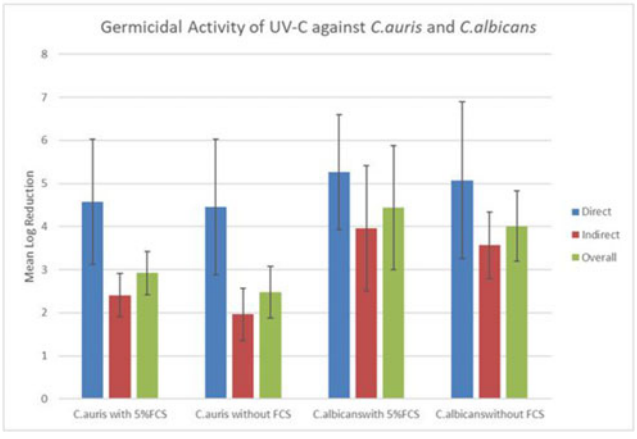

Fig. 1.

Table. Mean log_{10} reductions of surfaces contaminated with *Candida auris* and *Candida albicans* with variations in test methods

Site (line-of-site; orientation; distance)	*C. auris* w/fetal calf serum (FCS)	*C. auris* w/out FCS	*C. albicans* w/FCS	*C. albicans* w/out FCS
Toilet seat (D, H, 7'8")	4.99	4.75	5.69	4.84
Bathroom wall (I, H, 3'7")	2.84	2.42	4.23	3.88
Cart (D, H, 5'2")	4.60	3.93	5.36	5.04
Bedside Table (I, H, 3'7")	2.46	1.96	4.04	3.69
Bed Mattress (D, H, 4'0")	4.71	4.63	5.47	5.00
Headboard (D, V, 5"11")	5.10	5.05	5.69	5.68
Bedside Table (D, H, 8'2")	3.72	3.39	5.29	4.35
Chair (D, V, 7'11")	4.61	4.47	5.36	5.17
Overbed Table (I, H, 7'10")	2.18	1.75	3.76	3.32
Chair (D, H, 5'6")	4.58	4.58	4.95	4.52
Direct	4.57	4.45	5.26	5.07
Indirect	2.41	1.96	3.96	3.56
Horizontal	2.87	2.42	4.39	3.96
Vertical	4.92	4.78	5.65	5.48
Overall	2.93	2.48	4.44	4.01

Funding: None
Disclosures: None
Doi:10.1017/ice.2020.868

Presentation Type:
Poster Presentation

Inappropriate Azithromycin Use in Nine Primary-Care Clinics Before and After Implementation of Provider Guidance in the EMR

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Background: According to the CDC Core Elements of Outpatient Stewardship, the first step in optimizing outpatient antibiotic use the identification of high-priority conditions in which antibiotics

https://doi.org/10.1017/ice.2020.867 Published online by Cambridge University Press