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.

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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

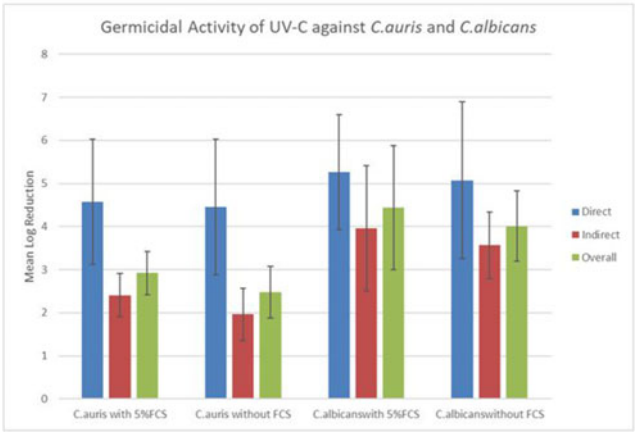

Fig. 1.

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

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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

are commonly used inappropriately. Azithromycin is a broad-spectrum antimicrobial commonly used inappropriately in clinical practice for nonspecific upper respiratory infections (URIs). In 2017, a medication use evaluation at Grady Health System (GHS) revealed that 81.4% of outpatient azithromycin prescriptions were inappropriate. In an attempt to optimize outpatient azithromycin prescribing at GHS, a tool was designed to direct the prescriber toward evidence-based therapy; it was implemented in the electronic medical record (EMR) in January 2019. **Objective:** We evaluated the effect of this tool on the rate of inappropriate azithromycin prescribing, with the goal of identifying where interventions to improve prescribing are most needed and to measure progress. **Methods:** This retrospective chart review of adult patients prescribed oral azithromycin was conducted in 9 primary care clinics at GHS between February 1, 2019, and April 30, 2019, to compare data with that already collected over a 6-month period in 2017 before implementation of the antibiotic prescribing guidance tool. The primary outcome of this study was the change in the rate of inappropriate azithromycin prescribing before and after guidance tool implementation. Appropriateness was based on GHS internal guidelines and national guidelines. Inappropriate prescriptions were classified as inappropriate indication, unnecessary prescription, excessive or insufficient treatment duration, and/or incorrect drug. **Results:** Of the 560 azithromycin prescriptions identified during the study period, 263 prescriptions were included in the analysis. Overall, 181 (68.8%) of azithromycin prescriptions were considered inappropriate, representing a 12.4% reduction in the primary composite outcome of inappropriate azithromycin prescriptions. Bronchitis and unspecified upper respiratory tract infections (URI) were the most common indications where azithromycin was considered inappropriate. Attending physicians prescribed more inappropriate azithromycin prescriptions (78.1%) than resident physicians (37.0%) or midlevel providers (37.0%). Also, 76% of azithromycin prescriptions from nonacademic clinics were considered inappropriate, compared with 46% from academic clinics. **Conclusions:** Implementation of a provider guidance tool in the EMR lead to a reduction in the percentage of inappropriate outpatient azithromycin prescriptions. Future targeted interventions and stewardship initiatives are needed to achieve the stewardship program's goal of reducing inappropriate outpatient azithromycin prescriptions by 20% by 1 year after implementation.

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Incidence and Risk Factors of Surgical Site Infection Following Pediatric Neurosurgery

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Background: Neurosurgeries are at high risk of surgical site infections (SSI), a complication associated with increased morbidity, mortality, and cost. Our aim was to measure SSI incidence and risk factors following pediatric neurosurgery at CHU Sainte-Justine, the provincial center for pediatric craniofacial surgery in Québec, Canada. **Methods:** Retrospective cohort study of all patients with elective neurosurgery performed at CHUSJ between October 2014 and October 2018. Medical records were reviewed to compare demographics, clinical presentations, and outcomes of patients. SSIs occurring within 30 days of a procedure without implant and up to 90 days with implant, were identified. SSI incidence was measured in patient years, and risk factors were assessed using univariate logistic regressions. **Results:** In total, 379 patients were included with an overall SSI incidence of 3.96 patient years. We found a higher SSI incidence in 2014–2015 compared to 2016–2018 (1.82 vs 4.83 patient years). The median age was 3.90 years, and cases seemed younger than controls (1.45 vs 4.15 years). No difference between groups was found for sex, body mass index, prematurity, and length of hospitalization. The proportion of deep SSIs was greater than superficial SSIs (53.3% vs 46.7%). Cases were more likely to present with a more severe ASA score, previous history of neurosurgery, neurological conditions, and pulmonary conditions than controls: OR, 3.90 (95% CI, 1.36–11.49); OR, 2.59 (95% CI, 0.88–7.40); OR, 2.77 (95% CI, 0.98–8.41), and OR, 3.21 (95% CI, 0.86–9.94), respectively. Among patients with history of neurosurgery, a higher proportion of cases experienced a cerebrospinal fluid leak (28.6% vs 2.2%). Most patients (85.8%) received preoperative prophylactic antibiotic. Of those, 49.3% were considered appropriate based on antibiotic and timing of administration. When antibiotic dosage was also considered, the number of patients who received an appropriate antibiotic therapy decreased radically. **Conclusions:** Patients with comorbidities, especially neurological and pulmonary conditions, are at higher risk of SSI after neurosurgery. We are currently working on a detailed analysis to explain the increase in SSI incidence after 2016. Finally, prophylactic antibiotic therapy needs to be improved and its impact on SSI rates needs to be monitored.

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Incidence of Mucosal Barrier Injury Bloodstream Infections Reported to the National Healthcare Safety Network

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Background: The NHSN collects data on mucosal barrier injury, laboratory-confirmed, bloodstream infections (MBI-LCBIs) as part of bloodstream infection (BSI) surveillance. Specialty care areas (SCAs), which include oncology patient care locations, tend to report the most MBI-LCBI events compared to other location types. During the update of the NSHN aggregate data and risk models in 2015, MBI-LCBI events were excluded from central-line–associated BSI (CLABSI) model calculations; separate models were generated for MBI-LCBIs, resulting in MBI-specific standardized infection ratios (SIRs). This is the first analysis to describe risk-adjusted incidence of MBI-LCBIs at the national level. **Methods:** Data were analyzed for MBI-LCBIs attributed to oncology locations conducting BSI surveillance from January 2015 through December 2018. We generated annual national MBI-LCBI SIRs using risk models developed from 2015 data and compared the annual SIRs to the baseline (2015) using a mid-P exact test. To