Table 1

Test	Reference Standard	Sensitivity (%) (95% CI)	Specificity (%) (95% CI)	PPV (%) (95% CI)	NPV (%) (95% CI)
Provider-selected antibiotic indication for CAP	Provider intention to treat pneumonia (HAP/VAP terminology excluded)	64.4 (59.9 – 68.9)	96.3 (94.6 – 98.1)	73.1 (68.9 – 77.2)	94.6 (92.5 – 96.7)
Provider-selected antibiotic indication for CAP	Provider intention to treat pneumonia (any terminology)	64.1 (59.6 – 68.6)	97.1 (95.5 – 98.7)	78.9 (75.0 – 82.7)	94.1 (91.9 – 96.3)
Presence of pneumonia ICD-10 code	Provider intention to treat pneumonia with HAP/VAP terminology excluded	61.0 (56.5 – 65.6)	95.3 (93.3 – 97.3)	66.7 (62.3.- 71.1)	94.0 (91.8 – 96.3)

CAP, community-acquired pneumonia; HAP, hospital-acquired pneumonia; VAP, ventilator-associated pneumonia; PPV, positive predictive value; NPV, negative predictive value

CAP, there are few reliable methods to identify such patients using the electronic health record (EHR). We conducted a retrospective study to assess the performance of provider-selected antibiotic indication in identifying patients being treated for CAP among a cohort of hospitalized adults. **Methods:** We randomly selected 440 patients from a cohort of patients who received at least 1 systemic antibiotic within 48 hours of admission between January 1, 2019, and December 31, 2021, at 3 acute-care hospitals. The reference standard for treatment of CAP was defined as intention to treat for pneumonia by inpatient provider(s) within 48 hours of admission, as assessed by chart review of provider notes. Treatment for pneumonia using any terminology except with "hospital-acquired pneumonia" (HAP) or "ventilator-associated pneumonia" (VAP) were counted. Provider-selected indication of CAP (in an antibiotic order) was compared against this reference standard; sensitivity, specificity, and positive and negative predictive values were calculated. Performance characteristics of *International Classification of Disease, Tenth Revision* (ICD-10) codes for pneumonia in identifying CAP patients were assessed against the same reference standard. A secondary analysis including terms HAP and VAP in the reference standard was performed. **Results:** Provider-selected antibiotic indication for CAP had a sensitivity of 64.4%, specificity of 96.3%, positive predictive value (PPV) of 73.1%, and negative predictive value (NPV) of 96.1%, giving comparable performance to ICD-10 codes (Table 1). Of those with 21 false-negative results, 13 (61.9%) had a healthcare-associated lower respiratory tract infection and 14 (66.7%) had sepsis indicated in at least 1 antibiotic order. **Conclusions:** Provider-selected antibiotic indication showed moderate sensitivity and high specificity for identifying CAP-treated cases. Importantly, use of this method can be deployed for real-time antibiotic stewardship interventions for CAP.
Disclosures: None

Antimicrobial Stewardship & Healthcare Epidemiology 2023;3(Suppl. S2):s28–s29
doi:10.1017/ash.2023.253

Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Antibiotic Stewardship
Sources of antibiotics for acute respiratory infection in children aged <5 years children in South Asia: A multicountry study
Md Abdullah Al Jubayer Biswas ICDDR,B; Mohammad Riashad MonjurSouth Eastern Sydney Local Health District; Md. Zakiul Hassan ICDDR,B and Nusrat Homaira UNSW

Background: In South Asia, a region of almost 2 billion people across 8 countries, acute respiratory infections (ARIs) are associated with significant morbidity and mortality in children aged <5 years. Although ~80% of ARIs are due to viral etiology and are often self-limiting, they remain the single largest reason for antibiotic use in children aged <5 years in South Asia. We investigated the sources and dispensing pattern of antibiotics for ARIs in children aged <5 years in South Asia. **Methods:** We analyzed nationally representative, population-based, publicly available household survey data from 6 South Asian countries' Demographic and Health Surveys (DHS): Afghanistan, Bangladesh, India, Maldives, Nepal, and Pakistan. The outcome of interest was the source of antibiotics for children aged <5 years who reportedly had symptoms compatible with ARI (cough, fever, and runny nose) and had received antibiotics for the ARI episode in the 2 weeks preceding the survey. We used a generalized estimating equation with an exchangeable correlation structure to account for country-specific cluster-level correlation to estimate the odds of sources of antibiotics usage. Models were adjusted for age, sex, type of place of residence, wealth index, and parents' education. To analyze the data, we used the sample weight supplied by the DHS to ensure that our results appropriately reflect the target population in each of the countries studied. **Results:** In total, across the 6 South Asian countries, 24,104 children aged <5 years had symptoms of ARI, 7,587 (31%; 95% CI, 30–33) from received antibiotics. A higher proportion of antibiotic usage for ARIs episodes occurred in Afghanistan (66%), followed by Maldives (53%), Pakistan (45%), and Nepal (43%). Regarding the source of antibiotics, a higher proportion of antibiotics was obtained from the private medical sector in India, followed by unqualified sources in Bangladesh, and the public sector in Afghanistan. Our adjusted multivariable analysis revealed that, in comparison to the public sector, participants were 2.6 times (aOR, 2.6; 95% CI, 1.6–4.3) more likely to receive antibiotics from private medical sector drug sources in Nepal and 1.3 times more likely (aOR, 1.3; 95% CI, 1.1–1.5) in Afghanistan. **Conclusions:** In South Asian countries, the private medical sector was the most common primary source of antibiotics for children with ARIs. Targeted efforts to create awareness around antibiotic dispensing and guidelines to improve practices may curtail the use of antibiotics for ARIs in children aged <5 years in South Asia.
Disclosures: None

Antimicrobial Stewardship & Healthcare Epidemiology 2023;3(Suppl. S2):s29
doi:10.1017/ash.2023.254

Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Antibiotic Stewardship
Fluconazole resistance in non-*albicans Candida* species in the United States, 2012-2021
Emily Jenkins; Meghan Lyman; Brendan Jackson; Shawn Lockhart; Hannah Wolford; Sujan Reddy and James Baggs

Background: *Candida* spp can cause a variety of infections known as candidiasis, ranging from severe invasive infections to superficial mucosal infections of the mouth and vagina. Fluconazole, a triazole antifungal, is commonly prescribed to treat candidiasis but increasing fluconazole resistance is a growing concern for several *Candida* spp. Although *C. albicans* has historically been the most common cause of candidiasis, other species

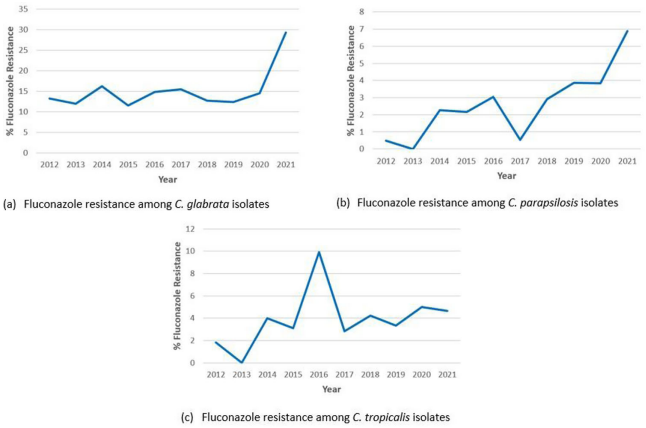

Figure 1. Fluconazole resistance among various *Candida* species isolates, 2012-2021

are increasingly common and antifungal resistance is more prevalent in these non-*albicans* species, including *C. glabrata*, *C. parapsilosis*, and *C. tropicalis*, which were the focus of this analysis. **Methods:** We used the PINC AI healthcare data (PHD) database to examine fluconazole resistance for inpatient isolates between 2012 and 2021 from 187 US acute-care hospitals with at least 1 *Candida* spp culture with a fluconazole susceptibility result over the entire period. We calculated annual percentage fluconazole resistance for *C. glabrata*, *C. tropicalis*, and *C. parapsilosis* isolates using the clinical laboratory interpretation for resistance. **Results:** We identified 4,264 *C. glabrata*, 2,482 *C. parapsilosis*, and 2,283 *C. tropicalis* isolates between 2012 and 2021 with susceptibility results. The percentage of *C. glabrata* isolates resistant to fluconazole doubled between 2020 and 2021 (14.6% vs 29.3%) (Fig. 1a). The percentage of *C. parapsilosis* isolates resistant to fluconazole steadily increased since 2017 (Fig. 1b), with an 82% increase in 2021 compared with 2020 (3.8% in 2020 vs 6.9% in 2021). Fluconazole resistance among *C. tropicalis* isolates varied over the years, with a 0.3% decrease in 2021 from 2020 (Fig. 1c). Of hospitals reporting at least 1 result each year 2020–2021, 44% observed an increase in the proportion of *C. glabrata* isolates resistant to fluconazole in 2021 compared to 2020. **Conclusions:** Our analysis highlights a concerning increase in fluconazole resistance among *C. glabrata* and *C. parapsilosis* isolates in 2021 compared with previous years. Further investigation of the observed increases in fluconazole resistance among these *Candida* spp could provide further insight on potential drivers of resistance or limitations in reported results from large databases. More analyses are needed to understand rates, sites of *Candida* infections, and risk factors (eg, antifungal exposure) associated with resistance.

Disclosures: None

Antimicrobial Stewardship & Healthcare Epidemiology 2023;3(Suppl. S2):s29–s30

doi:10.1017/ash.2023.255

Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Antibiotic Stewardship
Development of a multiyear pediatric antibiogram in Georgia identifies antibiotic resistance trends

Matt Linam; Madeleine Goldstein; Robert Jerris and Mark Gonzalez

Background: Antibiograms are used to monitor antibiotic resistance trends and help guide empiric antibiotic treatment. Community pediatricians may not have access to or be comfortable using children's hospital antibiograms. Creating and disseminating a statewide pediatric antibiogram can help inform antibiotic stewardship efforts.
Objective: To develop a pediatric-specific antibiogram for the state of Georgia. **Methods:** Annual pediatric antibiograms for the 5 children's hospitals in Georgia from 2014 through 2021 were collected. All sites complied with the Clinical and Laboratory Standards Institute guidelines for antibiomicrobic breakpoints and antibiogram development. Antibiogram data were combined, and the most common bacteria were selected to incorporate into the statewide antibiogram: *Staphylococcus aureus*, *Streptococcus pneumoniae*, *Enterococcus faecalis*, *Escherichia coli*, *Klebsiella pneumoniae*, *Enterobacter cloacae* complex, and *Pseudomonas aeruginosa*. Antibiogram data were reported as percentage susceptible and total number of isolates. Interhospital susceptibility differences were compared for methicillin-susceptible *S. aureus* (MSSA), methicillin-resistant *S. aureus* (MRSA), *E. coli*, and *K. pneumoniae* from 2018 through 2021. $P < .05$ was considered significant. The combined antibiogram data from 2014 through 2021 were used to show antibiotic susceptibility trends over time. **Results:** The 2021 antibiogram is shown in the Table. For MSSA and MRSA, clindamycin susceptibility was 80% and 85%, respectively. *K. pneumoniae* susceptibility to amoxicillin-clavulanate was 91%. For *E. coli*, using urine-specific breakpoints, susceptibility to cefazolin was 89%. A few statistically significant differences in antibiotic susceptibility were detected between hospitals, but most were unlikely to be clinically relevant (all susceptibilities ≥90% or < 80%). A notable exception was trimethoprim-sulfamethoxazole susceptibility for *K. pneumoniae*, which ranged from 74% to 98% in 2020 and from 74% to 86% in 2021. From 2014 to 2021, the percentage of MRSA

Table. Combined Pediatric Antibiotic Susceptibility Data for the Cumulative Year 2021 for the State of Georgia

% susceptible (total number of isolates)	ampicillin	amox/clav	oxacillin	ceftriaxone (non-meningitis)	ceftriaxone (meningitis)	clindamycin	TMP/SMX	vancomycin	linezolid	levofloxacin	nitrofurantoin (urine)
Gram positive organisms											
Methicillin-susceptible *S. aureus*	-	-	100 (1159)	-	-	80 (1152)	99 (1154)	100 (1156)	-	-	-
Methicillin-resistant *S. aureus*	-	-	0 (592)	-	-	85 (588)	97 (592)	99 (592)	-	-	-
Enterococcus faecalis	100 (209)	-	-	-	-	-	-	99 (206)	100 (206)	-	100 (209)
Streptococcus pneumoniae	-	91 (116)	-	98 (129)	85 (122)	9 (128)	-	100 (122)	-	99 (123)	-

	ampicillin	cefazolin	ceftriaxone	ceftazidime	cefepime	pip/tazo	meropenem	gentamicin	tobramycin	amikacin	TMP/SMX	ciprofloxacin	levofloxacin	cefazolin (urine)	nitrofurantoin (urine)
Gram negative organisms															
Escherichia coli	49 (2545)	74 (2338)	94 (2545)	-	95 (2335)	98 (2545)	99 (2105)	92 (2545)	-	99 (2108)	72 (2536)	93 (408)	-	89 (2213)	99 (2604)
Klebsiella pneumoniae	-	87 (410)	92 (410)	-	96 (382)	95 (410)	100 (333)	96 (356)	95 (410)	100 (329)	83 (405)	89 (74)	-	-	34 (405)
Enterobacter cloacae complex	-	-	-	-	88 (125)	-	100 (109)	98 (138)	97 (138)	100 (101)	88 (130)	92 (25)	-	-	-
Pseudomonas aeruginosa	-	-	-	93 (433)	91 (433)	96 (433)	95 (371)	83 (433)	96 (433)	96 (355)	-	98 (84)	93 (110)	-	-

S. aureus is *Staphylococcus aureus*. Amox/clav is amoxicillin/clavulanate. Pip/tazo is piperacillin/tazobactam. TMP/SMX is trimethoprim/sulfamethoxazole.
For a given bacterium, the differences in the total number of isolates is the result of differences in antibiotics included in susceptibility testing for the different hospitals

decreased from 49% to 34%. Over the 8 years, susceptibility to ceftriaxone for *E. coli* ranged from 93% to 95% and from 90% to 95% for *K. pneumoniae*. Susceptibility to meropenem for *E. coli* and *K. pneumoniae* ranged from 99% to 100%. **Conclusions:** Antibiotic susceptibility for pediatric bacterial isolates in Georgia remained stable over time and supported the narrow-spectrum empiric antibiotic treatment recommended in national evidence-based guidelines for skin and soft-tissue infections, community-acquired pneumonia, and uncomplicated urinary tract infections. MRSA rates decreased over time and multidrug-resistant gram-negative bacilli were uncommon and remained stable.

Disclosures: None

Antimicrobial Stewardship & Healthcare Epidemiology 2023;3(Suppl. S2):s30

doi:10.1017/ash.2023.256

Presentation Type:
Poster Presentation - Poster Presentation
Subject Category: Antibiotic Stewardship
Initial blood culture collection practices and the associated factors upon continued empiric piperacillin-tazobactam usage

Satoshi Kitaura; Koh Okamoto; Ryo Yamaguchi; Takehito Yamamoto; Toshiyuki Kishida; Daisuke Inoue; Hirotaka Miyashita; Masayuki Ueda; Hideki Hashimoto; Sohei Harada; Shu Okugawa; Takeya Tsutsumi and Kyoji Moriya

Background: Approaches to the prescription behavior of broad-spectrum antibiotics, including preauthorization and prospective audit and feedback (PAF), are a focus of antimicrobial stewardship (ASP). However, preprescription behavior, such as blood-culture collection before empiric prescription, is understudied and merits more attention given its influence on the usage of broad-spectrum antibiotics. At the University of Tokyo Hospital, carbapenems are subject to PAF, which has resulted in a compensatory increase in piperacillin-tazobactam use. To evaluate the inherent preprescription behavior associated with a broad-spectrum antibiotic, we investigated the initial blood-culture collection practices upon hospitalization in patients who were continued on empiric piperacillin-tazobactam. **Methods:** A retrospective observational study was conducted at the University of Tokyo Hospital, a tertiary-care hospital in Tokyo, Japan. Patients who were administered piperacillin-tazobactam on the day of hospitalization between April 2016 and December 2017 were included. Patients aged <=18 years and/or patients who discontinued piperacillin-tazobactam within two days were excluded. Only 1 admission per patient was kept for analysis. The medical records of 250 randomly selected patients were reviewed to obtain data on demographics, blood-culture collection, severity, specialties, and risk factors for multidrug-resistant organisms. A multivariable logistic regression analysis was used to identify factors associated with blood-culture collection. **Results:** In total, 960 discrete patients fulfilled the study criteria. Of the randomly selected 250 patients, blood cultures were collected from 162 patients (64.8%), and microbial growth was observed in 30 cases (18.5%). Enterobacterales