1127. Utilization of Combination Anti-fungal Therapy in Hospitalized Children and Adult Patients

Tonya Scardina, PharmD; BCPs, BCIDP; 1 Zacharoula Oikonomopoulou, MD; 1
Shan Sun, PhD 2; Sameer Patel, MD, MPH 2; Ann & Robert H. Lurie Children’s Hospital of Chicago, Chicago, Illinois; 3 Ann & Robert H. Lurie Children’s Hospital of Chicago/Northwestern University Feinberg School of Medicine, Chicago, Illinois, Illinois

Session: 138. Antibiotic Stewardship (Pediatric): Assessment and Development
Friday, October 4, 2019: 12:15 PM

Background. Combination antifungal therapy (CAF) is often prescribed to treat invasive fungal infections, despite equivocal data showing benefit. We evaluated number of CAF for treatment of proven, probable and possible invasive fungal infection (IFI) in hospitalized children, associated adverse events (AE), and use of therapeutic drug monitoring (TDM).

Methods. Medical charts of patients ≤ 18 years old that received CAF for ≥ 27 days with normal liver function test between 1/1/13 through December 31/18 were reviewed. Patients could be included for multiple episodes of CAF. Data included primary site of IFI, host risk factors, demonstration of fungal elements in tissue/sterile sites, clinical and mycological criteria for IFI (defined by European Organization for Research and Treatment of Cancer/Invasive Fungal Infections Cooperative Group and National Institute of Allergy and Infectious Diseases Mycoses Study Group), CAF regimen, incidence of TDM, and AE.

Results. Overall, 73 episodes of IFI were reviewed [unique patients (n=60)]. The median age was 10 years. Majority (61.6%) of patients were diagnosed with a hematological malignancy (n = 20 acute lymphoblastic leukemia, n = 12 acute myeloid leukemia, n = 5 aplastic anemia). A number of proven, possible, probable IFI were 36, 27 and 20, respectively (Table 1). Most frequent organism isolated in proven IFI was Aspergillus fumigatus (episodes=85, n= 4). Most common primary site of IFI was pulmonary (episodes=32, n = 27). Median days of CAF was 6.8 (range: 3-170), sixty-six episodes included treatment with a triazole-containing regimen, incidence of TDM, and AE were reported in 14 episodes (n = 10) (infusion-related reactions and nephrotoxicity reported in 4 episodes each, electrolyte abnormalities and skin reaction reported in 2 episodes each, and liver dysfunction and hypersensitivity reported in 1 episode each).

Conclusion. Patients diagnosed with proven or probable IFI received a longer duration of CAF in comparison to possible IFI. Voriconazole was frequently prescribed in combination with either micafungin or liposomal amphotericin B for IFI. Antifungal stewardship opportunities exist to improve TDM and reduce the incidence of AE when prescribing CAF.

Disclosures. All authors: No reported disclosures

1128. Knowledge, Attitudes and Perceptions about Antibiotic Stewardship (AS) Programs among Neonatology Trainees

Ibuokunoluwa C. Akinboyo, MD; 1 Sagori Mukhopadhyay, MD, MMSc; 2 Dmitry Dukhovny, MD, MPH; 3 Rebecca R. Young, M.S., M.S.; 4 Karen Pospeso, M.S.; 5 Judith Guzman-Cottrill, D.O.; 6 Duke University, Durham, North Carolina; 7 Children’s Hospital of Philadelphia, Philadelphia, Pennsylvania; 8 Oregon Health and Science University, Portland, Oregon; 9 Duke University Medical Center, Durham, North Carolina; 10 Children’s Hospital of Philadelphia at Pennsyvania Hospital, Philadelphia, Pennsylvania; 11 Oregon Health and Science University, Portland, Oregon,

Session: 138. Antibiotic Stewardship (Pediatric): Assessment and Development
Friday, October 4, 2019: 12:15 PM

Background. Antibiotic stewardship (AS) is a fundamental aspect of medical training. Neonatal Intensive Care Units (NICU) often have unique stewardship needs as they are ideal settings for the emergence and spread of drug-resistant bacteria. Assessing neonatology fellowship trainee’s knowledge and perceptions will highlight deficits in AS education and inform future curriculum development.

Methods. Prospective electronic survey study, distributed by Accreditation Council for Graduate Medical Education (ACGME) program directors to neonatology fellows in the United States over 4 months (January to April 2018). The objective was to assess neonatology fellows’ knowledge, attitudes and perceptions about AS to inform sustainable NICU-specific AS programs.

Results. Of 99 programs and 700 fellows, 159 respondents (23%) from 40 neonatology training programs (40%) responded to the survey and 139 (87%) provided complete responses. Respondents were equally spread across all 3 years of training. Seventy-two percent confirmed an institutional AS program existed, yet, only 33% were able to identify the components of AS programs and 66% either did not or were unsure if they had received AS training during fellowship. Furthermore, only 51% identified the appropriate empiric antibiotic for neonatal meningitis and 12% identified optimal mexitilline-susceptible Staphylococcus aureus (MSSA) treatment while answering clinical case study questions. Notably, fellowship training year was not significantly related to the proportion of incorrect responses (P = 0.40).

Small group sessions were identified as the best teaching format (35%). This was followed by audit and feedback of individual prescribing behavior and didactic lectures which had an equal proportion of respondents (22%). Seventy-eight percent of respondents preferred a trial-led AS program targeting necrotizing enterocolitis, antifungal prophylaxis and appropriate surgical prophylaxis.

Conclusion. Antibiotic stewardship is a critical part of physician training. While most institutions have a stewardship program, a dedicated curriculum incorporating small group sessions and didactics may be beneficial for educating neonatology trainees.

Disclosures. All authors: No reported disclosures

1129. Assessment of Nurses’ Views on Antimicrobial Stewardship at a Pediatric Hospital

Diana Yu, PharmD, MS; 1 Anne Bateman, BSN, RN, CPN; 2 Dawn Noth, MD, MPH; 3 Oregon Health and Science University/Doernbecher Children’s Hospital, Portland, Oregon

Session: 138. Antibiotic Stewardship (Pediatric): Assessment and Development
Friday, October 4, 2019: 12:15 PM

Background. Regulatory agencies strongly encourage the development of hospital-based antimicrobial stewardship (AS) programs (ASP) to support appropriate anti-microbial prescribing. One component of an ASP is a multidisciplinary team. While there is an ASP, a physician centered vetted antibiotic de/escalation and a pharmacist, including nurses in an ASP has been highlighted due to the nurses’ vital role in patient care. There are little data on nurses’ knowledge, attitudes, and practices in AS. The aim of this project was to determine ideas, concerns, and gaps in knowledge of bedside nurses at a local hospital level.

Methods. This project was conducted at an academic pediatric hospital in an urban setting. A survey was designed to obtain nurses’ attitudes and views of AS and to address their frequency and confidence of various AS activities, including triage/ isolation, allergy history, obtaining of appropriate diagnostic studies, interpret antimicrobial pharmacology results, intravenous-to-oral switches, inpatient courses of antibiotics, patient/family education, and identification of antimicrobial-associated adverse events. Respondents were asked to identify barriers to AS participation and to propose educational topics of interest. The survey was sent out to nurses, with 3 weekly reminders.

Results. 155 of 513 respondents initiated the survey (response rate 30.2%); however, 112 participants completed the entire survey (completion rate 72.3%). Of the respondents, 67% believed that nurses should provide AS but only 32% themselves provided AS; furthermore, 26% of the respondents felt that nurses were equipped to provide AS. The most frequent AS activity reported was patient/family education while the least reported activity was the interpretation of microbiology reports. A correlation was identified between frequency and confidence of performing various AS-related tasks (R² = 0.95). Barriers identified by respondents included antimicrobial knowledge, other timely priorities, and inclusion of nurses on bedside rounds.

Conclusion. Although few respondents felt prepared to provide antimicrobial stewardship, the majority (74%) were interested in learning more about how nurses could be involved. We are currently developing a nurse-centric educational curriculum based on the feedback from the survey.

Disclosures. All authors: No reported disclosures

1130. Vancomycin Use in Pediatric Severe Sepsis at a Freestanding Children’s Hospital

Shamim M. Islam, MD, DTM&B; 1 Stacie M. Yi, PharmD Candidate; 2 Anna Miller, D.O. 3 Gurjeet Sandhu, PharmD Candidate; 4 Anuja Hausinger, MD, MS; 5 Children’s Hospital of Buffalo, Buffalo, New York; 6 University at Buffalo School of Pharmacy and Pharmaceutical Sciences, Buffalo, New York; 7 University at Buffalo, Buffalo, New York

Session: 138. Antibiotic Stewardship (Pediatric): Assessment and Development
Friday, October 4, 2019: 12:15 PM

Background. Surviving Sepsis Campaign guidelines recommend antibiotics be administered within 1 hour of severe sepsis (SS) onset, but do not suggest which agents to use. Vancomycin (VAN) is often chosen as empiric therapy for severe sepsis (SS) in children without evidence of the prevalence or risk factors for infections requiring VAN. As VAN is associated with significant nephrotoxicity, this study was performed to measure the risk-benefit ratio of empiric VAN use in pediatric sepsis.

Methods. This was a retrospective study of children with SS between 1/1/2015 to 6/30/2018 at the Women and Children’s Hospital of Buffalo, as captured by billing data and sent to state Department of Health for mandated reporting. SS cases were assessed for risk factors for Gram-positive infections, including presence of a central venous line (CCL) or other invasive device; history of MRSA infection or nasal colonisation within the last 2 years; skilled nursing facility (SNF) residence; and prolonged hospitalization

Disclosures. All authors: No reported disclosures
of >1 month. Invasive infections for which vancomycin is an optimal agent, specifically culture-proven methicillin-resistant Staphylococcus aureus (MRSA), coagulase-negative Staphylococcus (CoNS), and ampicillin-resistant Enterococcus infections, were defined as vancomycin requiring (VAN-req). Acute kidney injury (AKI) was defined as having a serum Creatinine of twice normal per age-related reference values.

Results. Of 304 identified SS cases, 8.9% had VAN-req infections. VAN was empirically given to 58.2% of cases (177); 86.4% ultimately did not have VAN-req infe-
tions. 9.2% of all SS cases had AKI at SS onset; this included 15.8% of patients (28) receiving VAN, of which only 1 (3.6%) had a VAN-req infection. History of a past MRSA infection, prolonged hospitalization, SNEF residence, and CVL presence were found to be independent risk factors for a VAN-req infection (Table 1). VAN-req infec-
tions in patients lacking these four risk factors was 3.1% (4/130).

Conclusion. VAN was given empirically in the majority of pediatric SS cases, but cul-
ture-proven infections requiring the drug were infrequent, especially in patients without specific risk factors. The use of empiric VAN for SS should be guided by well-defined criteria, as the drug’s potential risks are likely to outweigh any benefit in most patients.

Table 1: Risk Factor Analysis for Vancomycin-requiring (VAN-req) Infections

| Risk Factor                           | No VAN-req Infection (n=277) | VAN-req Infection (n=27) | OR for VAN-req Infection | p-value |
|---------------------------------------|-----------------------------|--------------------------|-------------------------|---------|
| + MRSA Screen                         | 4.5% (9)                    | 0                        | 5.139 (1.65-15.97)      | 0.002   |
| + MRSA History                        | 4.4% (12)                   | 3.9% (1)                 | 2.721 (1.37-5.43)       | 0.026   |
| Recent hospitalization                | 19.1% (51)                  | 14.8% (4)                | 1.521 (0.96-2.40)       | 0.075   |
| Residence in SNEF/Medical Home        | 3.2% (9)                    | 11.3% (2)                | 0.312 (0.10-0.98)       | 0.047   |
| Prolonged Hospitalization             | 7.2% (20)                   | 25.9% (7)                | 0.264 (1.74-12.36)      | 0.001   |
| Presence of any Invasive Device**     | 59.3% (142)                 | 80.8% (21)               | 0.397 (0.21-0.78)       | 0.007   |
| Central Venous Line (CVL)             | 48.4% (134)                 | 74.1% (20)               | 3.333 (1.30-8.56)       | 0.049   |
| Permanent CVL                         | 4.4% (11)                   | 7.4% (2)                 | 2.221 (0.92-5.38)       | 0.092   |
| Ventriculoperitoneal (VP) Shunt       | 4.3% (13)                   | 6.5% (1)                 | 1.876 (0.76-4.60)       | 0.164   |

Disclosures. All authors: No reported disclosures.

1131. Prevalence and Characteristics of Non-β-Lactam Allergy Labeling at a Children’s Hospital
Amanda Miceli, BS in Chemistry1; Shan Sun, PhD2; Tonya Scardina, PharmD3; RCPs; BCIDP4; Ajay Bhasin, MD2; Larry Kociolek, MD, MSC1; Sameer Patel, MD, MPH1; Middlesex University, Park Ridge, Illinois; 1Ann & Robert H. Lurie Children’s Hospital of Chicago, Chicago, Illinois; 2Ann & Robert H. Lurie Children’s Hospital of Chicago/Northwestern University Feinberg School of Medicine, Chicago, Illinois
Session: 138. Antibiotic Stewardship (Pediatric): Assessment and Development Friday, October 4, 2019: 12:15 PM

Background. Limited data are available on non-β-lactam (NBL) antibiotic allergy labeling in children. Understanding the incidence and patterns of NBL labeling is important as NBL hypersensitivity testing lacks standardization and false labeling may constrain therapeutic options and compromise antimicrobial stewardship.

Methods. We conducted a retrospective review of patients at our tertiary care pediatric facility and associated clinics who had first reported allergy to NBL antibiotics from January 1, 2015 to December 31, 2015. Demographic data, NBL subclass, severity, description of reaction, and ICD-9/10 diagnostic codes were recorded. In addi-
tion, subsequent antibiotic during the following 3 years (2016–2018) was determined.

Results. Of 304 identified SS cases, 8.9% had VAN-req infections. VAN was empirically given to 58.2% of cases (177); 86.4% ultimately did not have VAN-req infections. 9.2% of all SS cases had AKI at SS onset; this included 15.8% of patients (28) receiving VAN, of which only 1 (3.6%) had a VAN-req infection. History of a past MRSA infection, prolonged hospitalization, SNEF residence, and CVL presence were found to be independent risk factors for a VAN-req infection (Table 1). VAN-req infec-
tions in patients lacking these four risk factors was 3.1% (4/130).

Conclusion. VAN was given empirically in the majority of pediatric SS cases, but cul-
ture-proven infections requiring the drug were infrequent, especially in patients without specific risk factors. The use of empiric VAN for SS should be guided by well-defined criteria, as the drug’s potential risks are likely to outweigh any benefit in most patients.

Table 1: Risk Factor Analysis for Vancomycin-requiring (VAN-req) Infections

| Risk Factor                           | No VAN-req Infection (n=277) | VAN-req Infection (n=27) | OR for VAN-req Infection | p-value |
|---------------------------------------|-----------------------------|--------------------------|-------------------------|---------|
| + MRSA Screen                         | 4.5% (9)                    | 0                        | 5.139 (1.65-15.97)      | 0.002   |
| + MRSA History                        | 4.4% (12)                   | 3.9% (1)                 | 2.721 (1.37-5.43)       | 0.026   |
| Recent hospitalization                | 19.1% (51)                  | 14.8% (4)                | 1.521 (0.96-2.40)       | 0.075   |
| Residence in SNEF/Medical Home        | 3.2% (9)                    | 11.3% (2)                | 0.312 (0.10-0.98)       | 0.047   |
| Prolonged Hospitalization             | 7.2% (20)                   | 25.9% (7)                | 0.264 (1.74-12.36)      | 0.001   |
| Presence of any Invasive Device**     | 59.3% (142)                 | 80.8% (21)               | 0.397 (0.21-0.78)       | 0.007   |
| Central Venous Line (CVL)             | 48.4% (134)                 | 74.1% (20)               | 3.333 (1.30-8.56)       | 0.049   |
| Permanent CVL                         | 4.4% (11)                   | 7.4% (2)                 | 2.221 (0.92-5.38)       | 0.092   |
| Ventriculoperitoneal (VP) Shunt       | 4.3% (13)                   | 6.5% (1)                 | 1.876 (0.76-4.60)       | 0.164   |

Disclosures. All authors: No reported disclosures.

1132. Evaluation of Broad-Spectrum Antimicrobial Therapy for Acute Mastoiditis in Pediatric Patients: An Antimicrobial Stewardship Perspective
Soyoon Kim, PharmD1; Brady Moffett, PharmD, MPH1; Beth Pali, RN, BSN2; Jill D’Souza, MD2; Anjali Datta, MD, MPH1; Texas Children’s Hospital, The Woodlands, Texas; Baylor College of Medicine, The Woodlands, Texas
Session: 138. Antibiotic Stewardship (Pediatric): Assessment and Development Friday, October 4, 2019: 12:15 PM

Background. Acute mastoiditis (AM) continues to remain a serious complication of acute otitis media in children. There is a significant variation in antimicrobial management in children with AM. Recent studies and Uptodate recommends empiric coverage with vancomycin and antipseudomonal medication in patients with AM. The purpose of this study was to evaluate the epidemiology, management and outcome of AM in pediatric patients.

Methods. A retrospective, observational study was designed to evaluate epidemiology and management of AM in hospitalized pediatric patients from July 1, 2011 to June 30, 2017. Patients between 6 months and 19 years of age admitted with a diagnosis of AM as per ICD 9/10 codes were included in the study. Information regarding demographic, clinical, laboratory, microbiological, radiological, antibiotic (Abx) usage, surgical intervention and outcome were collected from medical records.

Results. A total of 97 patients were evaluated (64% male, mean age 6.6 ± 4.3 years). Cultures (Ca) were obtained in 95 patients as in Figure 1. Of the patients who grew P aeruginosa, 2 had intracranial extension, both of which were polymicrobial and 5 did not receive empiric antipseudomonal therapy but had no complications on follow-up. Table 1 shows the most common empiric Abx therapy. Fifty-nine patients (61.5%) had a change in Abx, the most common being a ceftriaxone or a combination of empiric. Broader spectrum coverage was reserved for those with complicated AM.

Conclusion. Although not as common as β-lactam allergies, NBL allergies were noted in a substantial number of new patients. When described, the majority of patients did not have severe reactions, and were most likely nonallergic adverse reactions. As many of the patients have chronic conditions and require subsequent antibiotics, adjudication of true allergy status may be beneficial.

Table 1: Descriptive Data for Pediatric AM

| NBL Antibiotic Class With Reported Allergy | N=300 | %  |
|------------------------------------------|-------|----|
| Sulfonamides                              | 160   | 53 |
| Macrolides                                | 110   | 37 |
| Vancomycin                                | 28    | 9  |
| Clandamycin                               | 22    | 7  |
| Fluoroquinolones                          | 9     | 3  |
| Aminoglycosides                           | 6     | 2  |
| Tetracyclines                             | 2     | 1  |

Disclosures. All authors: No reported disclosures.