children ≥4Y. Among S. aureus cultures, 70–76% were methicillin sensitive (MSSA). Overall clindamycin susceptibility was 97%, with all resistant strains detected in children ≥4Y with MSSA. This is strikingly different than the institutional antibiogram showing 79% overall clindamycin sensitivity in S. aureus [82% in MSSA, 72% in methicillin resistant (MRSA)]. Kongela kingae was exclusively identified in children <4Y (21% of positives), which was also the group with the highest rate of culture-negative infection (41%). Intravenous clindamycin alone was the most frequent initial antibiotic regimen, prescribed for 41% of all patients. Initial antibiotic regimens matched organism susceptibilities in 90% of MRSA and 100% of MSSA infections.

Conclusion. Our study revealed high rates of clindamycin-susceptible S. aureus in older children and K. kingae and culture-negative infection in children < 4 years with OAI. Antibiotic susceptibilities differing from our institutional antibiogram suggest that disease-specific antibiograms will aid with empiric treatment decisions.

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392. Epidemiology and Treatment Outcome of Gram-Negative Polymicrobial, Gram-Positive Polymicrobial and Mixed Polymicrobial Prosthetic Joint Infection Babak Hooshmand, MD;1 Dima Youssef, MD;2 Kathleen M. Riederer, MT (ASCP);3 Susan M. Szpunar, PhD;4 Meredith M. Coyle, MD;5 and Ashish Bhargava, MD;4

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Background. Polymicrobial prosthetic joint infections (PMPIs) are rare but treatment is usually challenging. Published studies described the PMPIs without differentiating the predominant pathogens. We assessed clinical features and treatment outcome among Gram-negative polymicrobial (GNPM), Gram-positive polymicrobial (GPPM) and mixed polymicrobial (MPPM) PJIs.

Methods. A retrospective cohort was studied at three Ascension hospitals in December 2015, from January 2012 to December 2018. Cases were identified using the International Classification of Diseases, 9th and 10th Revision code specific for PJIs. Patient’s electronic medical records were reviewed.

Results. 38 patients with PMPII with a mean age of 67 years were identified. 71% patients were female and caucasians. Nineteen (50%) patients had PMPI, 16 (42%) had GPPM and 3 had GNPM. Among MPM PJIs, 14 (74%) involved hips, 4 (21%) knee and 1 (5%) ankle joint. Among GNPM PJIs, 7 (44%) involved hips, 8 (50%) knee and 1 (6%) shoulder joints. Among GPPM PJIs, 1 (33%) involved hip and 2 (67%) involved knee joints. 1 (33%) of patients had diabetes among MPM, GPPM and GNPM, respectively. Symptom onset of less than a week was noted in 13 (38%), 5 (31%), (3)and 0 of more than 3 weeks in 16 (37%), 7 (43%) and 0 in among MPM, GPPM and GNPM, respectively. 18 (95%), 12 (75%) and 2 (67%) patients presented with pain, 16 (84%), 6 (38%) and 3 (10%) patients had drainage among MPM, GPPM and GNPM, respectively. Among MPM PJIs, 12 (63%) underwent debridement, anti- biotics and implant retention (DAIR), 2 (11%) for two stage exchange, 4 (21%) for chronic suppressive therapy and 1 (5%) had an amputation. 6 (58%) were readmitted within 6 months; 3 (50%) required prosthetic removal, 1 (4%) each died, was made hospice and was lost to follow-up. Among GPPM PJIs, 12 (75%) underwent DAIR and 4 (25%) went for two stage exchange. 9 (69%) patients among GPPM PJIs were readmitted in 6 months and 3 (50%) required prosthetic removal. All 3 of GNPM PJIs underwent DAIR and none were readmitted in 6 months.

Conclusion. PMPIs were challenging infections. All GNPM PJIs presented within 1 week of symptoms and were treated successfully with DAIR. MPM and GPPM PJIs had high readmission rates and 6/26 (23%) managed with DAIR required prosthetic removal.

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393. Changing Trends, Risk Factors, and Treatment Challenges in Staphylococcus aureus Septic Arthritis Valerie Gobao, BA;1 Mostafa Alifshawy, MD;2 Neel Shah, MD;3 Karin Byers, MD, MS;4 Mohamed Yassin, MD, PhD;4 and Kenneth Urish, MD, PhD;2

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Background. Staphylococcus aureus is a common organism in native septic arthritis. It is traditionally believed to be self-limited with rapid and aggressive debridement and appropriate antibiotic selection. The incidence of S. aureus septic arthritis is increasing and further characterization is needed to improve diagnosis and treatment. For patients presenting with native S. aureus septic arthritis, we evaluated the reliability of methici- lin-resistant S. aureus (MRSA) screening as a predictor to rule out MRSA septic arthritis, the association of intravenous drug use and treatment and surgical outcomes.

Methods. A retrospective case-control study of patients diagnosed with septic arthritis in the UPMC health system (Pittsburgh, PA) between 2012 and 2016 was completed. The primary outcomes of interest were surgical intervention and the need to alter antibiotic treatment. Patient demographics, characteristics, and outcomes were recorded.

Results. A total of 215 cases of septic arthritis were identified, and 64% (n = 138) had S. aureus cultured. In this set, 36% (50/138) of these patients were identified with MRSA. Of the patients diagnosed with MRSA septic arthritis, 50% screened prior to admission had a positive result (8/16) and 48% screened during admission had a positive result (14/29). Compared with septic arthritis with other organisms, risk fac- tors were not significantly different with S. aureus. We included history of intravenous drug use (OR: 4.3; CI: 1.7 to 10.8, P = 0.002) and being immunocompetent (OR: 0.3; CI: 0.1 to 0.6, P = 0.002). These infections were associated with concurrent infections of the spine (OR: 5.7; CI: 2.1 to 15.1, P = 0.0005). As compared with other organisms, there was a high prob-
included allergies (N = 6), GI toxicity (N = 5), increased liver function tests (N = 2), leukopenia (N = 2), acute kidney injury (N = 1), exacerbatated epilepsy (possibly due to low phenytoin; N = 1), and vasculitis (N = 1). Patient age, sex, and Charlson comorbidity index did not predict rifampin intolerance. In 5/80 (6%) patients who never received rifampin, reasons included liver disease, drug interactions, and rifampin resistance. Overall, 27% (22/80) could not be adequately treated with rifampin.

Conclusion. In this study cohort of PJI patients, contraindications to rifampin initiation were infrequent, but discontinuation due to intolerance, allergy, or toxicity occurred in nearly a quarter of patients. Drug-drug interactions can preclude its use, or may cause important medication switches in critical areas such as antiocsculation, epilepsy treatment, and HIV care. Research into the anti-staphylococcal efficacy and safety of alternative rifamycins (such as rifabutin and rifapentine) in patients with staphylococcal hardware infections is warranted.

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396. Aminoglycoside Acute Kidney Injury (AKI) Following the Implantation of Tobramycin Loaded Polyethylene Methacrylate (PMMA) Cement and Calcium Sulfate (CaSO4) Beads for the Treatment of Periprosthetic Joint Infection (PJI) Logan Volk, PharmD1, Raymond Chinn, MD2, and Joshua Minuto, MD2, 1Sharp Memorial Hospital, San Diego, California; 2Sharp Rees-Stealy Medical Group, Sharp Memorial Hospital, San Diego, California

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Background. Antibiotic loaded bone cement (ALBC) in PMMA, generally with tobramycin and vancomycin (TV) is commonly used for the treatment of PJI. CaSO4 beads, loaded with TV is biodegradable and can be used alone or in combination with PMMA. Identification of AKI following documented of sustained supra-therapeutic tobramycin levels a patient with chronic PJI treated with ALBC (both PMMA + CaSO4) prompted the development of guidelines to mitigate risk of AKI in patients treated with ALBC. Although AKI may be enhanced with vancomycin, case reports with TV in PMMA implicate tobramycin. We provide data in a cohort of patients treated for PJI using PMMA or PMMA + CaSO4.

Methods. Data were obtained to describe clinical findings. As part of a quality improvement initiative, tobramycin and serum creatinine levels were obtained in eight subsequent patients who received PMMA or PMMA + CaSO4 and clinical guidelines were developed to standardize aminoglycoside dosing and monitoring. Vancomycin levels were not routinely monitored.

Results. Figure 1 describes the clinical course of the index patient. Table 1 lists doses, serum creatinine and tobramycin levels the cohort of PJI patients. All patients treated with PMMA + CaSO4 had tobramycin levels from 3.5 to 8.7 µg/mL on a post-operative day (POD) 1 compared with < 2 µg/mL in patients treated with PMMA alone. All patients’ levels peaked on POD 1.

Conclusion. Patients treated with CaSO4 had higher levels in the early postoperative period compared with patients treated with PMMA. In all patients, serum levels appeared similar after 48 to 72 hours. Our experience suggests the use of CaSO4 + PMMA may have important clinical consequences in patients with decreased clearance and/or those at risk for early postoperative renal impairment. Guidelines developed mitigated this potential complication since we have not identified AKI in subsequent patients undergoing treatment of PJI with ALBC. Features of guidelines included: (1) identification of high-risk patients; (2) a flowsheet to guide dosing recommendations based on low/high risk; (3) routine monitoring of levels on POD 1 with a goal of tobramycin levels ≤ 2 µg/mL.

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398. Description of a Pediatric Lyme Arthritis Cohort in an Endemic Region AnC J. Abney, MD1, 2; Raymond1 and Brian T. Nowalk, MD2; 1University of Minnesota Medical School, Minneapolis, Minnesota; 2Medical College of Wisconsin, Milwaukee, Wisconsin; 3University of Minnesota Medical School, Minneapolis, Minnesota

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Background. Lyme arthritis commonly presents as an acute inflammatory monarticular arthritis, frequently challenging to distinguish from septic arthritis. While management for Lyme arthritis focuses on antibiotic therapy, septic arthritis requires operative debridement plus antibiotic therapy. Delay in Lyme serology results may complicate decisions on surgical intervention in Lyme endemic areas. During the transition period of western Pennsylvania to a Lyme endemic region many children ultimately diagnosed with Lyme arthritis were managed by operative intervention due to diagnostic ambiguity. The impact of an operative intervention on outcomes of pediatric Lyme arthritis is unknown.

Methods. We conducted a retrospective chart review from 2008 to 2018 of patients admitted to UPMC Children’s Hospital of Pittsburgh and diagnosed with Lyme arthritis. We recorded the clinical presentation, laboratory data, details of hospitalization and follow-up, costs and outcome after therapy to compare the impact of antibiotic therapy alone (non-operative group) vs. antibiotics plus operative debridement (operative group).

Results. We identified 164 patients admitted for management of arthritis with the eventual diagnosis of Lyme arthritis. Fifty-two patients underwent operative debridement in addition to antibiotic therapy. Operative debridement plus antibiotics was associated with increased duration of admission, increased the cost of hospitalization, and increased PICC line placement compared with antibiotics alone. In patients for whom follow-up information was available, resolution of symptoms was documented in 62 of 66 patients in the non-operative group and 46 of 47 patients in the operative group with a median duration to symptom resolution of 17 and 23 days, respectively.

Conclusion. Operative debridement for pediatric patients with Lyme arthritis was associated with increased cost and duration of hospitalization, and a greater number of procedures, while being similarly efficacious to non-operative management with antibiotic therapy alone.

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