5.4
3.5
16.4
13.9
1.2
7.1
methicillin-resistant
2.6% of the US population 13 years of age and older. Infectious endocarditis (IE) and residents with an iSA infection; iSA incidence was calculated as cases/100,000 census been conducted in Monroe County, NY (2010 Census population: 744,344) as part week of treatment) were significant determinants of the outcome (but not methicil 95% CI 0.71–0.95) and the duration of RMP treatment (OR 0.83; 95% CI 0.75–0.92 per RMP in the first 2 weeks and 43 patients (54%) received at least 2 weeks of RMP . Six (20%) were resistant to fluoroquinolone. The median duration of antimicrobial ther acute PJI (i.e., <1 month following the implantation), DAIR with exchange of removal interventions.

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Background. Staphylococci are the most frequent bacteria in PJI. In patients with acute (e.g., <1 month following the implantation), DAIR with exchange of removal components followed by a combination of antibiotics including rifampin (RMP) (particulary RMP + fluorquinolone) are recommended. Unfortunately, some patients could not receive RMP due to drug–drug interaction or stopped it due to an adverse event. Finally, it is unclear whether the dose and the duration of RMP influenced the prognosis.

Methods. Retrospective cohort study in four hospitals including patients with staphylococcal acute post-operative PJIs treated with DAIR in 2011–2016. Univariate and multivariate Cox analysis and Kaplan–Meier curves were used to determine the risk factors for treatment failure.

Results. Seventy-nine patients were included (median age: 71 years [IQR 53–89]; 55 men [69.6%]; median ASA score: 2 [IQR 2–3]). Cultures revealed 65 (82%) S. aureus and 14 (18%) coagulase negative staphylococci, including 14 methicillin-resistant isolates (18%); among all isolates, only two (3%) were resistant to RMP and 16 (20%) were resistant to fluoroquinolone. The median duration of antimicrobial therapy was 92 days (IQR 31–152). Only 59 patients received RMP (75%), and 35 (44%) the combination RMP + fluorquinolone. Median duration of RMP was 57 days (IQR 16–86) and median dose 14.6 mg/kg (IQR 13–17). Forty patients (51%) received RMP in the first 2 weeks and 43 patients (54%) received at least 2 weeks of RMP. Six patients (8%) developed an adverse event leading to RMP interruption. During a median follow-up of 443 days (IQR 220–791), 21 patients (27%) experienced a treatment failure including 12 persistence of the initial pathogen (57%) and nine superinfections. The increasing incidence of invasive MSSA/MRSA among PWIDs, frequently accompanied by concurrent chronic liver disease, polysubstance use, and need for extended hospital stay, poses an increasing challenge to the public health and clinical communities. This highlights the critical need to prevent worsening of the epidemic of injection drug use and provide comprehensive treatment for individuals engaging in highest risk drug-related behaviors.

Table 1. Incidence (per 100,000 County Residents) of PWID-Associated iSA by Age Group

| Year  | 18-49 | 50-64 | 65-84 | Total |
|-------|-------|-------|-------|-------|
| 1     | September 1, 2014–August 31, 2015 | 7.1   | 5.2   | 12.3  |
| 2     | September 1, 2015–August 31, 2016 | 13.9  | 5.2   | 19.1  |
| 3     | September 1, 2016–August 31, 2017 | 16.4  | 5.2   | 21.6  |

Disclosures. All authors: No reported disclosures.

1212. Whole Genome Sequencing for High-Resolution Methicillin-Resistant Staphylococcus aureus Outbreak Tracing in Neonatal Intensive Care Units and In silico Resistance andVirulence Markers Detection

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Background. The French National Reference Center for Staphylococci used whole genome sequencing (WGS) to investigate outbreaks due to a virulent MRSA clone containing the toxic shock syndrome toxin-1 (TSST-1+), sequence type 5, Geraldine clone) increasingly reported in neonatal intensive care units (ICUs).

Methods. We analyzed 48 isolates previously characterized by spa typing: 31 isolates from outbreak 2 (infected or colonized patients, healthcare workers carriers and environment), 12 isolates from four distinct outbreaks (2, 3, 4, and 5) that occurred in geographically independent neonatal ICUs, and five sporadic strains. We performed WGS using a de novo assembly approach to perform comparisons between isolates (Epi-Log, bioMérieux). A phylogenetic analysis was constructed by comparing single nucleotide variations (SNVs) in 2020 core-genomes using a cutoff of 40 SNVs for defining isolates belonging to the same transmission cluster. We detected in silico resistance and virulence markers using the same bioinformatic pipeline.

Results. For outbreak 1, 25 of 31 isolates were identified as two different but related spa types t002 and t111 which were highly related (<13 SNVs), suggesting the transmission of the same strain; 6/31 isolates were genetically distinct (>80 SNVs) from the previous cluster of outbreak 1. The other three outbreaks showing respectively a spa t002 for outbreak 3 and outbreak 4 and a spa t045 for outbreak 5 were not affiliated to the main cluster of outbreak 1. The third cluster included numerous virulence factors (including TSST-1) and resistance markers conferring a peculiar antibiotic resistance profile to the Geraldine clone.

Conclusion. WGS provides the resolution power to reveal unsuspected transmission events not indicated by conventional methods (different spa type). Based on its high resolution WGS is an all in one tool for epidemiology, virulence and resistance analysis. It really transforms outbreak management and is the best control practice for an early response and should replace conventional methods for detection of MRSA transmission.

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1213. Evaluation of an Alcohol-Based Antiseptic for Nasal Colonization of Methicillin-Resistant Staphylococcus aureus (MRSA)

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Results. During September 2014–August 2017, 1,460 iSA cases were identified; 150 (10%) in PWID. The incidence of PWID-associated iSA doubled among 18-49 year olds during years 1–3 (Table 1). The proportion of cases occurring in PWID increased among both MRSA (7% to 20%) and MSSA (6% to 11%). PWID were significantly younger (P < 0.0001) than noninjection drug users, and more often White (P < 0.0001) and non-Hispanic (P = 0.001). Almost all PWID with iSA used other illicit drugs (n = 112, 91% of 123 unique cases); 89% (110) were smokers, and 46% (56) had chronic liver disease. PWID with iSA had a longer mean length of stay (26 days [SD 22] vs. 21 [37], P = 0.011; PWID with MRSA were more likely to have hepatic (22% vs. 8%, P = 0.03) and pneumonia (9% vs. 1%, P = 0.04) when compared with PWID with MSSA. Among iSA, a history of recurrent skin abscess/boil (24% vs. 8%, P = 0.02) was more common in PWID with MRSA; fewer with PWID with MSSA were obese (2% vs. 15%, P = 0.02).

Conclusion. The increasing incidence of invasive MSSA/MRSA among PWID, frequently accompanied by concurrent chronic liver disease, polysubstance use, and need for extended hospital stay, poses an increasing challenge to the public health and clinical communities. This highlights the critical need to prevent worsening of the epidemic of injection drug use and provide comprehensive treatment for individuals engaging in highest risk drug-related behaviors.

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1214. High Frequency of Genes Encoding Resistance to Heavy Metals in Methicillin-Resistant Staphylococcus aureus (MRSA) Endemic Lineages From South America

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Background. Due to concerns for emergence of mupirocin resistance, there is an interest in use of topical antiseptics for nasal decolonization of Staphylococcus aureus. Alcohol-based nasal antiseptics have recently been developed as an alternative to mupirocin, but there is limited data on efficacy, particularly among patients where the burden of carriage is often high.

Methods. We evaluated the effectiveness of a one-time application of a commercial alcohol-based nasal sanitizer for reduction in nasal methicillin-resistant Staphylococcus aureus (MRSA) in MRSA-colonized patients. Patients received either a single dose or triple dose over 3 minutes; the triple dose is recommended for pre-operative dosing. Swabs were used for quantitative culture of MRSA from the anterior nares and vestibule prior to and 10 minutes, 2 hours, and 6 hours after application. For a subset of patients, cultures for MRSA were collected from hands, clothing, groin, and chest/axilla.

Results. Of 34 MRSA carriers enrolled, 27 (79%) had MRSA detected in nares, 32 (94%) were male, and the mean age was 65. Of the 27 carriers positive for nasal MRSA, 15 (56%) received a single alcohol dose and 12 (44%) received a triple dose over 3 minutes. As shown in the figure, the single and triple dose applications significantly reduced MRSA concentrations at 2 hours post-treatment when the initial burden was low, but not when a high burden of carriage was present. Additional studies are needed to determine whether higher alcohol doses or repeated applications might result in improved efficacy.

Conclusion. A single application of an alcohol nasal sanitizer significantly reduced nasal MRSA at 2 hours post-application when the initial burden of colonization was low, but not when a high burden of carriage was present. Additional studies are needed to determine whether higher alcohol doses or repeated applications might result in improved efficacy.

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