230. Nontyphoidal *Salmonella* from Clinical and Retail Meat Sources Reveal Antimicrobial Resistance Genes for Ceftriaxone and Ciprofloxacin

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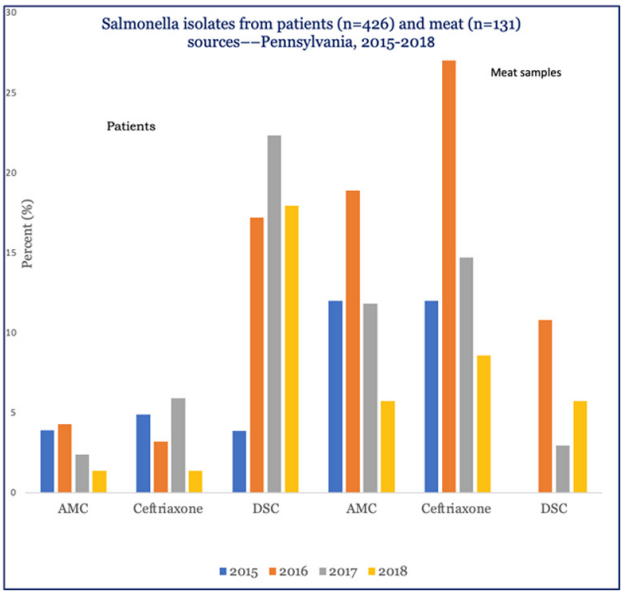
Session: P-11. Basic and Translational Science

Background. Pennsylvania participates in the National Antimicrobial Resistance Monitoring System (NARMS), which includes monitoring of Nontyphoidal *Salmonella* (NTS), a leading cause of bacterial foodborne illnesses in the United States.

Methods. Clinical NTS isolates submitted to the Pennsylvania Department of Health (2015-18) were tested for susceptibility to 15 antimicrobial agents and analyzed by whole-genome sequencing (WGS). Concurrently, we conducted a prospective microbiological survey of NTS in retail meat products (chicken breasts, ground turkey, and pork chops) with susceptibility testing and WGS.

Results. Of a sample of 426 clinical *Salmonella* isolates from humans analyzed for antimicrobial susceptibility, 65 (15.3%) had decreased susceptibility to ciprofloxacin (DSC). Ampicillin resistance was observed in 39 (9.2%) and 15 (3.5%) were ceftriaxone-resistant. Ten ceftriaxone-resistant isolates had genetic elements that confer resistance to third generation extended-spectrum cephalosporins (ESC) [bla_{CMY-2}, n=8 and $bla_{CTX-M-65}$, n=2]. The $bla_{CTX-M-65}$- positive isolates had a mutation in *gyrA* that confers fluoroquinolone resistance. Thirteen clinical isolates carried plasmid-mediated fluoroquinolone resistance genes (PMQR) [*qnrB19, qnrS1, qnrA1*]. We detected NTS in 131 (3.8%) of 3480 meat samples tested. 7 (5.3%) had DSC, while 38 (29%) and 21 (16%) were resistant to ampicillin and ceftriaxone, respectively. Four *S.* Infantis isolates had DSC and a $bla_{CTX-M-65}$ gene plus a mutation in *gyrA*. Thirteen meat isolates had the bla_{CMY-2} gene. One additional $bla_{CTX-M-65}$-positive S. Infantis without *gyrA* from ground turkey (SRR6351119) differed from four clinical isolates by ≤10 single-nucleotide polymorphisms. Percent of isolates from patients and meat sources that demonstrated resistance to amoxicillin-clavulanate (AMC), ceftriaxone, and decreased susceptibility to ciprofloxacin (DSC) to nine antimicrobial classes tested.



Among isolates from patients, resistance to ceftriaxone, a third-generation cephalosporin preferred for severe infections in children, increased from zero in 2015 to 5.8% in 2017. Overall, DSC increased in isolates from human sources while in strains from meat sources, DSC increased from zero in 2015 to over five percent in 2018.

Conclusion. NTS isolated from human and meat sources were multi-drug resistant. Demonstration of similar resistance genes in meat and in ill humans may be consistent with spread of antibiotic-resistant pathogens from food sources. Dissemination of genes that confer resistance to third generation cephalosporins and fluoroquinolones, including some on mobile plasmids, may undermine recommended treatment for severe NTS infections. These results underscore the need for antimicrobial stewardship efforts in both agriculture and human medicine.

Disclosures. **All Authors**: No reported disclosures

231. Retrospective Comparison of Intravenous Therapy, Oral Therapy, and Lipoglycopeptides for the Treatment of Osteomyelitis

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Session: P-12. Bone and Joint

Background. The use of oral (PO) antibiotics and lipoglycopeptides are challenging the previous standard of osteomyelitis (OM) treatment, but there is currently a paucity of comparative data between these approaches.

Methods. This retrospective study included patients diagnosed with OM treated with intravenous (IV) antibiotics, PO antibiotics, or lipoglycopeptides between January 1, 2010 and June 1, 2020. Patients in the PO group could receive no more than 14 days of IV antibiotics prior to the PO course, and inclusion into the lipoglycopeptide group required at least 2 doses of drug to be administered. The primary outcome was occurrence of clinical failure within six months of completion of therapy, which was defined as new antibiotics or unplanned surgical intervention for an infection at the same site. Secondary outcomes included in-hospital length of stay (LOS), amputation within 6 months of therapy completion, and incidence of drug and line-related adverse effects. Previous osteomyelitis at index site, surgical intervention as a part of initial management, presence of *Staphylococcus aureus* on culture, utilization of outpatient parenteral antibiotic therapy (OPAT) services (IV group only), and concomitant PO therapy (lipoglycopeptide group only) were included in a bivariate analysis and variables with a p-value < 0.2 were included in a multivariate regression model.

Results. The IV group included 257 patients, while the PO and lipoglycopeptide groups included 20 and 15 patients respectively. In the IV group, 89 (35%) of the patients experienced clinical treatment failure compared to 5 (25%) in the PO group and 5 (33%) in the lipoglycopeptide group (p=0.71). Median LOS was significantly shorter in the PO group compared to the IV and LGP groups [1 day (IQR 0-2.5) vs. 7 days (IQR 4-10) and 4 days (IQR 4-9), p=0.003]. No difference between groups was observed for amputation within 6 months or incidence of adverse effects. The only variable included in the multivariate regression model was previous osteomyelitis at index site [OR 1.75, 95% CI (1.07 – 2.87)].

Conclusion. PO and lipoglycopeptide therapy resulted in similar outcomes compared to IV antibiotics. Only previous OM at the same site was identified as an independent risk factor for failure.

Disclosures. **Ryan P. Moenster, Pharm.D., FIDSA**, **AbbVie** (Speaker's Bureau)**Melinta** (Consultant, Speaker's Bureau)

232. Safety and Effectiveness of Intravenous to Oral De-escalation Compared to Continued Vancomycin Therapy in Orthopedic Infections

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Session: P-12. Bone and Joint

Background. The Oral versus Intravenous Antibiotics for Bone and Joint Infection (OVIVA) trial determined oral antibiotics administered during the first six weeks of therapy were non-inferior to parenteral antibiotics. There was no difference in the incidence of serious adverse effects. The objective of this study was to evaluate the safety and effectiveness of de-escalating to oral therapy compared to continuing parenteral vancomycin therapy in patients with orthopedic infections in a real-world setting.

Methods. We conducted a single-center, retrospective cohort study of patients discharged between April 1, 2018 and April 1, 2020 with an orthopedic infection, a prescription for at least four weeks of parenteral vancomycin, and documented follow-up. The primary outcome was incidence of adverse events defined as provider documentation of the event and changes to therapy. The secondary outcome was incidence of 6-month treatment failure defined as repeat surgical intervention or therapy escalation.

Results. One hundred fifty-seven patients were included. Twenty-nine (18.5%) patients were de-escalated to oral therapy. Three (10%) patients in the oral therapy group had an adverse event compared to 35 (27%) in the vancomycin group (p=0.058). Of the 35 patients with an adverse event in the vancomycin group, eight were due to parenteral access-related complications. Treatment failure occurred in three (10%) patients in the oral therapy group compared to 27 (21%) patients in the vancomycin group (p=0.29). Three (10%) patients in the oral therapy group had an unplanned readmission compared to 25 (20%) patients in the vancomycin group (p=0.24).

Baseline Characteristics, Unplanned Readmission Rates, and Incidence of Adverse Events and 6-Month Treatment Failure

Characteristic or Outcome	Oral De-escalation (n=29)	Continued IV Vancomycin (n=128)	P-value
Indication			
Prosthetic Joint Infection, n (%)	6 (21)	55 (43)	0.03
Native Joint Infection, n (%)	7 (24)	7 (5)	0.001
Osteomyelitis, n (%)	11 (38)	35 (27)	0.26
Vertebral Osteomyelitis, n (%)	4 (14)	29 (23)	0.29
Total Duration of Therapy, days, median (IQR)	42 (42-56)	42 (42-56)	0.37
Completed Therapy, n (%)	29 (100)	118 (92)	0.12
Concomitant Antimicrobial, n (%)	16 (55)	63 (49)	0.56
Antibiotic Allergies Present, n (%)	3 (10)	40 (30)	0.02
Unplanned Readmissions, n (%)	3 (10)	25 (20)	0.24
Adverse Reaction, n (%)	0 (0)	11 (8.6)	
Treatment Failure, n (%)	3 (10)	17 (13.3)	
Adverse Reaction, n (%)	3 (10)	35 (27)	0.058
Dermatologic Reaction, n (%)	3 (10)	5 (3.9)	
Worsening Renal Function, n (%)	0 (0)	11 (8.6)	
Parenteral Access-Related Complications, n (%)	---	8 (6.3)	
Treatment Failure, n (%)	3 (10)	27 (21)	0.29