was favorable, except in an Asian cohort reporting 6 patients with poor pregnancy outcomes.

Conclusion. The lack of data about murine typhus in pregnancy is of serious concern. Increase awareness of different presentations is needed in this population. Murine typhus infection can mimic other pregnancy-related pathologies that have very different treatments and outcomes. More data are needed about effective treatment and safety of doxycycline use during pregnancy.

TABLE 1: POPULATION DEMOGRAPHICS

Study name	Number of patients	Location	Gestational age (weeks)	First trimester	Diagnosis	Treatment	Poor outcome*
Graves 1992 [6]	1	Australia	23	0	serology	Erythromycin	None
Koliou 2006 [5]	1	Cyprus	30	0	Serology	Erythromycin	None
Gutierrez 2010	1	Texas, USA	24	0	Serology	Ampicillin	None
Jolley 2010[4]	1	California, USA	32	0	serology	Azithromycin	None
McGready 2010-14 [7, 9]	14 **	Thai-Burmanese border	21 (7-39)	4	7 PCR 7 serology	Azithromycin, ceftriaxone. 3: no treatment 3: antimalarials	4 (1 stillborn, 2 lbw, 1 premature) 1 no outcome
Chansamouth 2016 [8]	15	Laos	n/a	2***	1 PCR 14 serology* ***	5 without treatment rest unknown ***	2 preterm 3 no outcome
Tanabe 2019	2	Texas, USA	21 (12-30)	1	serology	Azithromycin +/- doxycycline	None

- *Poor neonatal outcomes: stillborn, premature and/or SGA.
- ** 3 were co-infected with malaria.
- *** data was analyzed in conjuction with Scrub typhus, does not include co-infection status.

TABLE 2: DATA ABOUT SIGNS AND SYMPTOMS, LABORATORY RESULTS AND IMAGING AT PRESENTATION

Study name	Graves 1992 [6]	Koliou 2006[5]	Gutierrez 2010 [10]	Jolley 2010[4]	McGready 2010-14 [7, 9]	Chansamo uth 2016 [8]	Tanabe 2019
Fever (°C)(range)	n/a	39.5	39.5	38.7	38.5 [38.0–39.9]	* 38.5 (38-40.5)	38.45 (38.4-38.5)
Duration of fever (days)	7	7**	6	n/a	3 (1-7)	*7 (1-12)	6 (5-7)
Headache	Yes	Yes	Yes	Yes	92.3 % (n: 13)	n/a	Yes
Myalgias	n/a	n/a	Yes	Yes	64.3 % (n:9)	n/a	Yes
Arthralgias	Yes	n/a	n/a	No	50 % (n:7)	n/a	No
Abdominal pain	n/a	n/a	Yes	No	n/a	0	½
Rash	Yes	Yes	No	Yes	0 %	n/a	Yes
WBC	Normal	8.8	n/a	8.6	7 +/- 4.5 [3.5–18.9]	9.3 (5.3-14.7)	n/a
Platelets	Normal	149	156	83	169 +/- 79 [58–280]	200 (108-393)	170 (145-196)
Abnormal LFT	Yes (no values given)	Yes (ALT 106/AST 98)	Yes (ALT 132/ast 145)	Yes (ALT 127/ast 150)[Office1]	n/a	n/a	Yes
Hepatomegaly	n/a	No	No	Yes	28.6 % (n:4)	n/a	1/2

- n/a: not available
- * data based on combination of murine typhus and scrub typhus. Analysis was not done for separate entities.
- **Data based on prior to admission fever duration

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

2129. When Is Methicillin-resistant *Staphylococcus aureus* not Methicillin-resistant *Staphylococcus aureus*?

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Background. As part of active surveillance in our NICU for methicillin-resistant *Staphylococcus aureus* (MRSA), two isolates representing modified *S. aureus* (MODSA), which are Methicillin resistant but lacking mecA or C were identified. Our current microbiology laboratory workflow for screening for MRSA involves plating isolates on chromoID agar (bioMérieux, Marcy-l'Etoile, France) as well as on sheep blood agar (SBA). B hemolytic colonies on SBA that are catalase and coagulase positive are set up for confirmation and antimicrobial susceptibility testing on the Vitek 2 (bioMérieux, Marcy-l'Etoile, France).

Methods. These 2 isolates (from Baby 1 and Baby 2) tested positive for green colonies on the chromoagar plates. The Vitek 2 subsequently identified both these

isolates as MRSA. However, for research purposes, all positive NICU MRSA isolates are tested via whole-genome sequencing (WGS). Both isolates were identified by WGS as methicillin-susceptible *Staphylococcus aureus* (MSSA). We subsequently went back and performed additional workup on these isolates. Isolates were plated on SBA and chromagar again and incubated for 24 hours. 2 colonies of different morphologies from the chromagar plates and 3 from the SBA were randomly selected and subcultured to chromagar and SBA for a total of 5 subcultures. Each of the subcultures was tested using staphaurex, mannitol salt agar and the Cepheid Xpert MRSA assay and all were confirmed to be *Staphylococcus aureus*.

Results. All 10 isolates tested negative by the Cepheid Xpert MRSA assay for MRSA. Phenotypic testing was set up again for all ten isolates using the vitek GP panel, as well as cefoxitin disk, and oxacillin E test using Mueller–Hinton agar supplemented with 2% NaCl as per CLSI methods. See table attached for results.

Conclusion. In conclusion, these two cases highlight the difficulty in identifying non-MecA, non-MecC-mediated MRSA isolates in the clinical microbiology laboratory. This is particularly important as more laboratories rely on testing for MecA by PCR for surveillance testing. These 2 cases were further complicated by heterogeneous sub-populations of *Staphylococcus aureus*. Failure to recognize these variant forms of MRSA can lead to difficulties in implementing appropriate therapy and infection control measures. Improved methodologies are needed.

Table 1 – Results of phenotypic and genotypic testing

Test	Result	I[1]	Result	I[1]	Result	I[1]	Result	I[1]	Result	I[1]
Baby 1										
CEFOXITIN SCREEN (Vitek)	NEG		NEG		POS		NEG		NEG	
OXACILLIN	<=0.25	S	0.5	S	0.5*	R*	<0.25	S	0.5	S
OXACILLIN E TEST (MH WITH 2% NACL)	0.25	S	0.19	S	8	R	0.25	S	0.25	S
CEFOXITIN DISC (manual)		S		S		S		S		S
Baby 2										
CEFOXITIN SCREEN	*POS		*POS		NEG		NEG		*POS	
OXACILLIN	>=4	R	>4	R	0.5	S	0.5	S	>4	R
OXACILLIN E TEST (MH WITH 2% NACL)	8	R	8	R	0.5		0.5		8	R
CEFOXITIN DISC		S		S		S		S		S

I = interpretation

S = susceptible

R = resistant

R* = converted via expert rule to resistant

Pos = positive

Neg = negative

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

2130. Detection of Carbapenemase-Producing Organisms and Impact on Antimicrobial Utilization for Carbapenem-Resistant Enterobacteriaceae (CRE) Infections

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Background. CREs are feared pathogens with resistance occurring through the production of carbapenemases. Identification of carbapenemase-producing (CP) organisms assists with proper antimicrobial selection of commonly used agents, such as ceftazidime/avibactam (CA), meropenem/vaborbactam (MV), and tigecycline (TG). AdventHealth Orlando implemented a CRE screening method based on meropenem (MER) and a confirmatory CRE PCR testing in March 2018. Prior to implementing this test, patients were deemed to have CRE infections (CREI) if the organism demonstrated resistance to any carbapenem. The objective of this study was to evaluate the impact of this testing on the utilization of anti-CRE antibiotics.

Methods. This was a retrospective pre (March 2017–February 2018)- and post (March 2018–February 2019)-implementation study examining the impact of CRE PCR testing. Outcomes included the number of antibiotic days saved, average duration of therapy (DOT), median length of stay (LOS), and change in CP-CRE prevalence. The intervention consisted of the implementation of CRE PCR testing and included inpatients > 18 years old who received either CA, MV, or TG for the treatment of a CREI.

Results. Post-implementation, 30 unique patients were identified as having a positive *K. pneumoniae* carbapenemase gene by PCR, indicating a CP-CRE and received CA, MV, or TG; whereas, 42 patients in the pre-implementation group had a CREI and received CA, MV, or TG. Testing to identify CP-CREs led to a 50% reduction in the number of antibiotic days for CA, MV, and TG (575 vs. 287 days, $P < 0.0001$). Additionally, the average DOT decreased by 2.5 days in the post-implementation group (10.5 days vs. 8 days, $P = 0.18$) along with a 3.5-day shorter median LOS (15 days vs. 11.5 days, $P = 0.48$). The CRE prevalence based on resistance only to MER