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Extended-spectrum beta-lactamase producing Enterobacteriaceae among healthy pregnant women in Switzerland: preliminary results of an ongoing cross-sectional study

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Background: Colonization rates of extended-spectrum beta-lactamase producing *enterobacteriaceae* (ESBL-E) in pregnant women vary from 3-15%. ESBL-E positive mothers have been identified as most important risk factor for subsequent colonization of their preterm infants. Outcomes of ESBL-E infected neonates are often worse and outbreaks in neonatal intensive care units have been reported. No guideline exists for ESBL-E screening in pregnancy. We aim to determine the prevalence of ESBL-E in pregnant women, to identify potential risk factors for ESBL-E colonization and to compare the ESBL-E detection rate of a vaginal-perineal swab to the standard rectal swab.

Material/methods: At the outpatient obstetrics clinic of the University Hospital Basel, Switzerland, we are recruiting women attending their routine follow-up visit at 36-38 weeks of gestational age. A paired rectal and vaginal-perineal swab are obtained and analysed for the presence of ESBL-E. On a case basis neonates of ESBL-E positive mothers undergo screening for ESBL-E. We used Fisher's exact test and determined the sensitivity, specificity, positive and negative predictive values of the vaginal-perineal swab compared to the rectal swab.

Results: Since November 2014, 5 (2.7%) of the first 181 recruited women have been tested positive for ESBL *E. coli*. Three were positive only in the rectal swab and two were positive at both sites. In the univariable analysis only quinolone use but none of the other potential risk factors showed a

statistically significant association with ESBL-E carriage (P=.03) (Table). The predictive indexes (95% exact confidence interval) of the vaginal-perineal swab compared to the rectal swab were as follows: 0.2 (0.01-0.70) for sensitivity, 1.0 (0.97-1.00) for specificity, 1.0 (0.05-1.0) and 0.98 (0.94-0.99) for positive and negative predictive values, respectively. One of four healthy neonate had ESBL *E. coli* confirmed in stool culture.

	ESBL negative (n=176)	ESBL positive (n=5)	p-value
Non-European, n/total (%)	22/163 (13.5)	2/5 (40.0)	0.15
History of recurrent UTI, n/total (%)	12/176 (6.8)	0/5 (0.0)	1.00
Diarrheal illness during travelling, n/total (%)	18/143 (12.6)	0/5 (0.0)	1.00
Hospital stay in foreign country, n/total (%)	8/150 (5.3)	1/5 (20.0)	0.26
≥ 1 antibiotic course, n/total (%)	5/174(2.9)	0/5 (0.0)	1.00
Quinolone treatment during pregnancy	0/178 (0.0)	1/5 (20.0)	0.03*
Co-Amoxicillin treatment during pregnancy	11/176 (8.0)	0/5 (0.0)	1.00

Conclusions: ESBL-E carriage rate among pregnant women in this part of Switzerland is lower than in the general Swiss population (10%) but use of quinolones may increase the risk of colonization. The low sensitivity of the vaginal-perineal swab suggests that this site is inappropriate for screening pregnant women. However, confidence in the estimates is weak and the results need to be confirmed after completion of the study. The impact of routine screening for ESBL-E in a low prevalence setting remains to be determined.