LEARNING OBJECTIVES: more confidently treat patients with RVVC using maintenance fluconazole for longer than the previously described six months.

6 Time has come for routine penicillin skin allergy testing in obstetrics

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OBJECTIVES: Penicillin skin allergy testing has been advocated as part of antimicrobial stewardship initiatives, yet no estimate is available to determine how many women during pregnancy would benefit from this intervention. We evaluated the feasibility of penicillin skin allergy testing during pregnancy.

METHODS: Between January 1, 2018 to December 31, 2018, an Institutional Review Board-approved retrospective electronic medical record review of women who delivered and reported a penicillin allergy was performed. Sociodemographic variables, antibiotics utilization and indications, and allergic reactions from the first prenatal visit up through 6 weeks postpartum were extracted. All penicillin allergies were reviewed and coded for low or high risk for anaphylaxis.

RESULTS: 6321 deliveries occurred, of which 446 (7%) reported a penicillin allergy. Allergies were recorded at the initial encounter in 100% of patients at a mean gestational age of 15.2 ± 7.5 weeks gestation. Allergies associated with low risk of an anaphylaxis were reported in 45% (201/446) of women. Ten percent (44/446) of women had no documentation of the allergy severity. A total of 75% (334/446) of women received an antibiotic during the course of the pregnancy. The most common antibiotic indications were administration for cesarean prophylaxis (182/334, 54%), group B streptococcus (GBS) colonization (104/334, 31%), and urinary tract infection (62/334, 18%). Of the women categorized as low risk for anaphylaxis and eligible for a first generation cephalosporin, 49% (20/41) of those colonized with GBS and 51% (33/65) that underwent cesarean delivery did not receive an appropriate antibiotic regimen.

CONCLUSION: A majority of women during pregnancy that report an allergy to penicillin receive antibiotics. Over half of these women could be candidates for penicillin skin allergy testing. Most of these women are identified at a gestational age that allows the implementation of testing in an outpatient setting. Despite guidelines on the proper use of antibiotic prophylaxis in women with penicillin allergy during pregnancy, the variation in the recorded allergies and suboptimal antibiotic use suggest that penicillin skin allergy testing may improve antibiotic stewardship. Although optimization of guideline adherence could improve antibiotic selection, penicillin skin allergy testing determines the true risk of anaphylactic reaction rather than relying on the interpretation of the clinical history.

LEARNING OBJECTIVES: Leaners will have an understanding that a large portion of women during pregnancy will benefit from penicillin skin allergy testing.

7 Plague during pregnancy: a systematic literature review

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OBJECTIVES: To examine maternal and fetal mortality, risk of maternal-fetal transmission, and other outcomes associated with Yersinia pestis infection in order to better understand the clinical implications of plague during pregnancy.

METHODS: We searched twelve literature databases, performed hand searches, and consulted plague subject matter experts to identify articles published on plague during pregnancy. Articles that reported cases of infection during pregnancy and at least one maternal or fetal outcome were included. We abstracted information related to the clinical features of plague, maternal antibiotic treatment, maternal and fetal morbidity and mortality, and evidence for maternal-fetal transmission of Yersinia pestis.

RESULTS: Our search identified 5,922 articles, of which 59 were eligible for inclusion and described a total of 159 cases of plague in pregnant women. Cases were reported between 1897 and 2002 from 20 different countries worldwide. The majority of cases were published during the pre-antibiotic era; only 24 (15%) patients in this review were treated with antibiotics. Of those with primary manifestation of plague reported, 85% were bubonic, 13% were pneumonic and 3% were septicemic. Maternal and fetal fatality was 66% and 73%, respectively, among mothers not treated with antibiotics. In comparison, among mothers treated with antibiotics, maternal and fetal fatality was 29% and 62%, respectively. Of the 33 live births from untreated mothers, 21% were born preterm and 33% subsequently resulted in neonatal death. Among the five live births from treated mothers, there were no reports of premature birth or neonatal death. In untreated mothers, there were five cases with laboratory evidence of Yersinia pestis in either placental, fetal, or neonatal tissues examined immediately after delivery.

CONCLUSION: Plague during pregnancy is associated with high rates of maternal and fetal mortality; however, with appropriate antibiotic treatment, mothers and infants can survive. There is evidence to suggest that without maternal antibiotic treatment, maternal-fetal transmission of Yersinia pestis can occur. Taken together, these results indicate the need to define the ideal antibiotic regimen to treat pregnant women with plague to maximize maternal and infant survival.

LEARNING OBJECTIVES: Learners will be able to identify cases of plague during pregnancy and the risks of associated maternal and infant morbidity and mortality. This knowledge will help providers treat pregnant women with plague more effectively.

8 The impact of the vaginal microbiome on HIV infectivity among pregnant and non-pregnant women

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OBJECTIVES: Epidemiologic studies have demonstrated that disruption of vaginal flora in the form of bacterial vaginosis is related to increased risk of HIV acquisition. However, there is a paucity of biologic data to support this association. In this study, we aim to identify the specific alterations in the vaginal microbiome associated with risk of HIV infectivity.

METHODS: We analyzed cervicovaginal lavage specimens previously collected from 42 (22 pregnant and 20 non-pregnant) healthy

women as part of a larger prospective longitudinal cohort study. Bacterial communities were characterized by phylogenetic analysis of 16S rRNA gene sequences. Taxonomic classification was carried out using the Silva 132 classifier for variable region 4, which matches the sequences to the SILVA database. HIV infectivity was measured using an established in vitro model of HIV infectivity, the TZM-bl assay. Descriptive statistics were performed using chi squared test, student's t test and PERMANOVA. Multivariate logistical regression was performed to assess the risk of HIV infectivity related to lactobacillus predominated flora compared to diverse flora after controlling for potential confounders.

RESULTS: The majority of samples (79%) were dominated by one or more species of Lactobacillus that constitute > 50% of all sequences obtained. Such samples were categorized as "lactobacillus predominant," whereas all other samples were categorized as "diverse." Non-lactobacillus predominant populations had a mean Nugent score diagnostic for bacterial vaginosis for both pregnant (9.3 vs. 1.3, p = 0.001) and non-pregnant (9.0 vs. 1.6, p 0.001) patients. In the unadjusted analysis for pregnant patients, the mean HIV inhibition appeared to be lower in the group with diverse flora compared to those with lactobacillus predominated flora, although this difference was not statistically significant (26.5 65.2 vs. 77.4 32.0, p = 0.217). After controlling for potential confounders, there was no difference in risk of HIV infectivity related to lactobacillus predominated flora compared to diverse flora in pregnant (OR 1.03, 95% C.I. 0.97-1.13, p = 0.376) or non-pregnant patients (OR 1.08, 95% C.I. 0.83-1.62, p = 0.595).

CONCLUSION: Further study is necessary to assess the risk of HIV infectivity related to lactobacillus predominated flora compared to diverse flora.

LEARNING OBJECTIVES: Learners will be able to describe characteristics of bacterial communities that may affect HIV infectivity.

9 High viral load in women living with HIV linked to a different dysbiotic vaginal microbiota compared to women without HIV

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OBJECTIVES: To compare the vaginal microbiota of women living with HIV to the vaginal microbiota of women with recurrent bacterial vaginosis and healthy women without HIV to determine if there are differences in the vaginal microbiome between these women, what factors influence these differences, and to characterize HIV clinical parameters including viral load and CD4 count in relation to the vaginal microbiome.

METHODS: Women between the ages of 18-49 years who were premenopausal and not pregnant were recruited into three cohorts: healthy women, women living with HIV, and women with recurrent bacterial vaginosis (BV). Demographic and clinical data were collected via interviews and medical chart reviews. Vaginal swabs were collected for Gram stain assessment and microbiome profiling utilizing the cpn60 barcode sequence. To compare overall community composition differences, we used compositional data analysis methods, then visualized communities with principal components analysis, hierarchical clustering, and Kruskal-Wallis tests where appropriate.

RESULTS: Clinical markers such as odour and abnormal discharge, but not irritation, were associated with higher microbial diversity. WLWH with unsuppressed HIV viral loads are more likely than HIV-negative women with recurrent BV to have non-Gardnerella dominated microbiomes. HIV is associated with higher vaginal microbial diversity and this is related to HIV viral load, with unsuppressed women demonstrating higher relative abundance of Megasphaera, Clostridiales, and Prevotella species.

CONCLUSION: Dysbiosis in these cohorts was clearly defined by metagenomic methods and in women living with HIV, unsuppressed HIV viral loads were associated with a distinct dysbiotic profile consisting of very low levels of Lactobacillus and high levels of anaerobes.

LEARNING OBJECTIVES: identify differences in the vaginal microbiome between women living with HIV, women with recurrent BV and healthy women without HIV or BV.

10 Repeat trichomonas vaginalis infections among pregnant women in the southern United States

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OBJECTIVES: The epidemiology of T. vaginalis among pregnant women, including rates of repeat infection, is not well known, particularly in the Deep South. Our objectives were to determine the frequency and predictors of repeat T. vaginalis infection after treatment for an initial episode of infection among pregnant women delivering at a large academic medical center in the Southern United States.

METHODS: Pregnant women with an initial episode of T. vaginalis infection during 2013 were identified from an existing database of women with cervical cancer screening test results within 3 years before delivery. The electronic medical record of these patients was reviewed for socio-demographics, sexual behavior, STI history, diagnostic method of T. vaginalis, treatment of T. vaginalis, and evidence of a repeat positive T. vaginalis test after initial diagnosis (and prior to delivery). The association of clinically significant predictors was then examined using univariate and multivariable logistic regression analyses and expressed as crude and adjusted odds ratios (cORs and aORs), respectively.

RESULTS: Of 3,958 pregnant women with deliveries at our institution during 2013, 2,321 met the eligibility criteria for the cervical cancer screening study and were included in the parent database. Of these 2,321 women, 116 (5.0%) had an initial episode of T. vaginalis infection during their pregnancy and had their medical record abstracted: 59.5% were ≤25 years old, 94.8% were African American, 16.4% currently used illicit drugs, 44.0% reported genital symptoms, and 80.2% were treated with the 2 gram stat dose of metronidazole. Of these 116 women, 8 (6.9%) had evidence of a repeat positive T. vaginalis infection at a median time of 108 days (IQR 55-184 days) after their first positive test. In multivariable analyses, women who were symptomatic at initial T. vaginalis diagnosis (aOR 3.56: 95% CI 0.72, 34.93), who received the 2 gram dose of metronidazole at initial diagnosis (aOR 2.75; 95% CI 0.28,