

#### 004.4 THE NETHERLANDS CHLAMYDIA COHORT STUDY (NECCST): RISKS OF LONG-TERM COMPLICATIONS FOLLOWING CHLAMYDIA TRACHOMATIS INFECTIONS IN WOMEN

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**Introduction** The Netherlands Chlamydia Cohort Study (NECCST) follows a cohort of women of reproductive age for  $\geq 10$  years to investigate *Chlamydia trachomatis* (CT) related risk (factors) for late complications including the role of host genetic biomarkers. This cohort builds on a prior large-scale Chlamydia Screening Implementation (CSI, 2008–2011). Here outcomes from the first NECCST collection round are described.

**Methods** In 2015–16 CSI women were invited to participate in NECCST. Data on CT-infections, pregnancies and the late complications Pelvic Inflammatory Disease (PID), ectopic pregnancy (EP) and tubal infertility (TI) were collected by questionnaires. CT Immunoglobulin G (IgG) was measured in self-collected blood samples. A positive CT history was defined as  $\geq 1$  positive outcome, either a positive CSI CT Polymerase Chain Reaction (PCR) result, a self-reported CT-infection or CT IgG presence. Risks were compared between women with/without a positive CT-history in NECCST-data combined with CSI-data.

**Results** Among the 5704 women enrolled, CT IgG prevalence was 14.5%. Of women with self-reported CT-infection or who had been CSI-PCR positive, 38.1% was CT-IgG positive. Of women without a self-reported CT-infection and who had been CSI-PCR negative, 7.0% was CT-IgG positive. Overall 29.2% ( $n=1,665$ ) had a positive CT-history. Women with a positive CT-history reported less planned pregnancies compared to women with a negative CT-history (19.5% vs 27.4%,  $p<0.001$ ). In contrast, unplanned pregnancies were more common among women with a positive CT-history (24.7% vs. 12.4%,  $p<0.001$ ). Women with a positive CT-history had a significantly higher risk of PID and TI compared to women with a negative CT-history: 5.0% vs. 2.0% ( $p<0.001$ ) and 1.1% vs. 0.3% ( $p<0.001$ ), respectively.

**Conclusion** Intermediate outcomes of NECCST after 4–7 years follow-up from CSI suggest a higher risk for PID and TI in women with a positive CT-history. NECCST is expected to yield valuable results for identification of risk factors for CT-complications which might enable targeted preventive methods.

#### 004.5 A PSYCHOSOCIAL EVALUATION OF THE ZIKA VIRUS: U. S. PREGNANT WOMEN'S KNOWLEDGE AND ATTITUDES ABOUT PREVENTION

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**Introduction** Zika, when transmitted during pregnancy, can be associated with significant infant morbidity. Little is known about pregnant women's knowledge and attitudes regarding the Zika virus.

**Methods** Pregnant women in the US ( $n=362$ ) completed an online survey about health and pregnancy. Questions regarding Zika assessed worry about infection (1 item), knowledge (9 items), feasibility of behavioural preventive strategies (6 items), and vaccine attitudes (3 items).

**Results** Participants were mostly 25–35 years old (67%), non-Hispanic White (65%), had at least some college education (84%) and had been pregnant before (71%). Thirty-three percent were very worried about Zika, 41% somewhat, and 26% not at all worried. The mean knowledge score was  $5.2 \pm 2.3$  (range=0–9). Most answered that mosquitos transmit Zika correctly (86%); only 29% knew that adults could not die from it. The percent correct for the other items ranged from 48% (the virus can stay in semen for an unknown period of time) to 68% (mother-baby transmission). Women reported it would be 'very hard' to do the following during pregnancy: not travel to a Zika infested area (31%), abstain from sex (28%), use condoms (25%), use repellent (24%), not have their partner travel to a Zika infested area (19%), and wear long sleeves/pants (18%). A vaccine was viewed as very important (72%). Strategies were endorsed as follows: vaccinate all women/men, 14–40 years old (38%); only women 14–40 years (20%), women or women/men planning a pregnancy (28%) and women whose partner has Zika (6%). Few (8%) reported not believing in vaccines. Seventy-two percent of the sample said they would agree to a Zika vaccine, 15% said they would decline.

**Conclusion** Despite intensive media reporting on Zika, pregnant women had gaps in knowledge, other than mosquito transmission. A significant minority of women found it very hard to implement behavioural strategies during pregnancy, particularly prevention of sexual transmission. A Zika vaccine appears to be acceptable with a preference for universal strategies.

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#### 004.6 THE "MALE PARTNER IN THE PRENATAL CARE STRATEGY" AS A RELEVANT OPTION TO REDUCE CONGENITAL SYPHILIS

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**Introduction** The increase in congenital syphilis rates represents near-failure to the usual public health resources, making room for new approaches such as the inclusion of the partner in prenatal care. To evaluate the influence of this new strategy "Male Partner in the Prenatal Care Strategy (MPPCS)" on: 1) The vertical transmission (VT) rate of syphilis; 2) The syphilis rate among pregnant women; 3) The syphilis rate in the partners who joined the strategy; 4) What variables influence partner's adherence in the MPPCS.

**Methods** This was a longitudinal study carried out in Ribeirão Preto (São Paulo State, Brazil). It was enrolled pregnant women (PW) and live births (LB) divided in two groups. The group in which had their partners participating in the MPPCS

project was denominated PW1 and LB1, and the group without participation in the MPPCS project was denominated PW2 and LB2. These groups were followed from beginning until the end of pregnancy. Were selected 5391 pregnant women (1781 of the PW1 and 3610 of the PW2), and 4044 LB (1376 of the LB1 and 2668 of the LB2). The statistical analyses were done by Chi-square test of Pearson with a 5% significance level.

**Results** The results showed that VT rates of syphilis were lower in the group where the partners have adhered to the MPPCS. The VT rate found were: 0.7% in LB1% and 1.5% in LB2 ( $p=0.04$ ). The syphilis rate found in the partners participating in the MPPCS was 1.3%. In the pregnant women, there was no association between the occurrence of syphilis between PW1 (1.6%) and PW2 (2.0%), with  $p=0.20$ . The main variable that have influenced partner's adherence rate in the MPPCS project was the commitment of the health care team, with some units presenting 98% of partner's adhesion and others with less than 20%.

**Conclusions** The adherence of partners in the MPPCS was very important in the identification and treatment of male-pregnant women with syphilis, and significantly reduced the TV rate of syphilis. The commitment of the health care team is the most important variable in the adherence of the partner to the MPPCS.

## Oral Presentation Session 5

### *Neisseria gonorrhoeae*

#### 005.1 AN ANALYSIS OF THE EFFICACY OF CLINICALLY RELEVANT NEW DUAL DRUG COMBINATIONS FOR TREATMENT OF MULTI- AND EXTENSIVELY-DRUG RESISTANT *NEISSERIA GONORRHOEAE*

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**Introduction** With the emerging potential crisis of untreatable gonorrhoea CDC and WHO have issued a call for new therapeutics options. Hence, this study was conducted to evaluate the *in vitro* efficacy of 21 dual antibiotic combinations of currently recommended as well as not in-use antibiotics, for treatment of multidrug resistant (MDR) and extensively drug resistant (XDR) *Neisseria gonorrhoeae* strains.

**Methods** Minimum inhibitory concentration (MIC) of 83 *n. gonorrhoeae* strains including 67 MDR and one XDR strain was determined by Etest for cefixime (IX), ceftriaxone (CRO), spectinomycin (SC), azithromycin (AZ), gentamicin (GM), moxifloxacin (MX) and ertapenem (ETP) alone and as 21 antimicrobial combinations by E-test fixed ratio method. Fractional inhibitory concentration index (FICI) was calculated for each combination and geometric means were determined. A FICI value of:  $\leq 0.5$ ,  $>0.5$  to  $\leq 1.0$ ,  $>1.0$  to  $\leq 4.0$  and  $>4.0$  denotes synergistic, additive, indifferent and antagonistic effects respectively. Statistical significance was determined by Mann-Whitney's *U*-test.

**Results** The synergy/additive effect without any antagonism was observed in antimicrobial combinations of GM+ETP (34.9%/38.6%), MX+ETP (32.5%/36.2%), AZ+MX (20.5%/25.3%), IX+AZ (9.6%/13.3%) and CRO+AZ (4.8%/30.1%).

Geometric mean of FICI for these combinations was 0.57, 0.76, 0.91, 1.0 and 1.15 respectively. Mean MICs of GM+ETP, MX+ETP and AZ+MX was significantly ( $p$  value  $<0.0001$ ) less than that of the individual drugs. The combinations of SC+AZ, GM+MX, TX+GM and AZ+GM revealed 14.4%, 9.5%, 7.2% and 7.2% of antagonism with 0%, 8.4%, 15.7%, and 13.3% of synergistic effect respectively. No significant effects were observed with IX+SC, IX+MX, IX+ETP TX+SC, TX+MX, TX+ETP, SC+GM, SC+MX, SC+ETP and AZ+ETP.

**Conclusion** The study highlights the higher efficacy of GM+ETP, MX+ETP and AZ+MX combinations for MDR and XDR strains than currently recommended CRO+AZ and IX+AZ combinations. In the context of no new classes of antibiotics available, this presents a glimmer of hope to clinical management of the superbug *N. gonorrhoeae*.

#### 005.2 PHARYNGEAL GONOCOCCAL INFECTION: SPONTANEOUS CLEARANCE AND PERSISTENCE AFTER TREATMENT

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**Introduction** Infection of *Neisseria gonorrhoeae* in the pharynx (pharyngeal Ng) is associated with gonococcal transmission and development of antimicrobial resistance. We aimed to assess determinants for: (1) spontaneous clearance and (2) persistence after treatment of pharyngeal Ng.

**Methods** At the sexually transmitted infections clinic Amsterdam, females-at-risk and men who have sex with men are routinely screened for pharyngeal Ng using an RNA-based nucleic acid amplification test (NAAT; Aptima Combo 2). A test-of-cure (TOC) 7 days after treatment is suggested for positive cases. We retrospectively examined medical records of pharyngeal Ng patients (January 2012-August 2015). To evaluate spontaneous clearance (sub-study 1), we included patients who had follow-up NAAT result prior to antibiotic treatment. To evaluate persistence after treatment (sub-study 2), we included patients who received 500 mg ceftriaxone intramuscular injection and returned for a TOC 7–28 days after treatment.

**Results** In sub-study 1, 1266 cases (median time between first consultation and follow-up of 10 days [interquartile range/IQR 7–14]) were included; spontaneous clearance was found in 139 (11.0%) and was associated with age  $>45$  years (vs 16–24 years) (aOR=1.96 [95% CI 1.06–3.60]), and with time from first consultation to follow-up (aOR=1.08 [1.06–1.10], per extra day). In sub-study 2, 781 cases (median time between first treatment and TOC of 8 days [IQR 7–12]) were included; persistence after treatment was found in 36 (4.6%), and was less likely among patients who received ceftriaxone in combination with other antibiotics (vs monotherapy) (aOR=0.36 [0.12–1.04]), and with longer time from treatment to TOC (aOR=0.74 [0.60–0.90], per extra day). In TOC 15–28 days after treatment, only 1/105 cases (1.0%) persisted.

**Conclusion** Spontaneous clearance of pharyngeal Ng is associated with later time of follow-up and higher age. Combining