weeks, with flattening of the lesions on the glans. All lesions were noted by the patient to have cleared after four weeks of imiquimod use, and only post inflammatory hyperpigmentation was noted at his review after six weeks. Minimal side effects were noted by the patient except for transient itch.

Discussion We report our first case of penile bowenoid papulosis responding to imiquimod monotherapy, and is the 5th reported case to date. Our case demonstrates one of the most rapid clinical clearance within six weeks, after only four weeks of imiquimod application. Other treatment modalities like electrocoagulation, 5-fluorouracil or topical interferon have all been associated with recurrence. Immunomodulatory treatment for this condition appears safe and efficacious, with the added convenience of being patient administered.

P2.085 THE CURRENT ANTIMICROBIAL SUSCEPTIBILITY IN CHLAMYDIA TRACHOMATIS IN JAPAN FROM THE NATIONWIDE SURVEILLANCE

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Chlamydia trachomatis is one of the principal pathogens for non-gonococcal urethritis. There have been a few studies about novel resistant strains isolated from the patients with genital chlamydial infection. However, the current common concept indicates that those were temporary and unstable strains with decreased antimicrobial susceptibility. Three societies, the Japanese Society of Chemotherapy, Japanese Association of Infectious Diseases and Japanese Society of Clinical Microbiology, performed the first national surveillance for *C. trachomatis* between April 2009 and October 2010. Based on the data obtained, the current situation of antimicrobial susceptibility in *C. trachomatis* and the results of the previous research on antimicrobial susceptibility in *M. genitalium* are discussed.

In 51 medical facilities in 8 prefectures of Japan, urethral discharge or urethral swab specimens were collected from male patients with urethritis. The specimens were sent to the Kitazato University Research Center for Anti-infectious Drugs via BD Universal Viral Transport. There, measurement of antimicrobial susceptibilities was performed according to the standard method of the Japan Society of Chemotherapy. The drugs used for antimicrobial susceptibility testing are shown below.

From 28 facilities, 207 specimens were collected and 48 specimens were positive for *C. trachomatis* by culture. Using these specimens, antimicrobial susceptibility testing could be performed for 19 strains. The MIC₅₀, MIC₉₀ and range (μg/ml) were as follows. EM: 0.06, 0.25, and 0.03~0.25; CAM: 0.008, 0.016, and 0.004~0.03; AZM: 0.125, 0.5, and 0.06~0.5; MINO: 0.5, 1, and 0.125~2; DOXY: 0.125, 0.25, and 0.03~0.5 μg/ml; CPFX: 2, 4, and 1~4; LVFX: 0.25, 0.25, and 0.125~0.5; TFLX: 0.125, 0.25, and 0.06~0.5; STFX: 0.06, 0.125, and 0.03~0.25.

Fortunately, there were no resistant strains of *C. trachomatis* in this surveillance. However, the current and future situation of antimicrobial susceptibility in the pathogens of non-gonococcal urethritis will be surveyed regularly.

P2.086 ORIGINS OF REPEAT INFECTIONS WITH CHLAMYDIA TRACHOMATIS (CT) AMONG HETEROSEXUAL MEN IN TWO SOUTHERN CITIES IN THE UNITED STATES

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Background Recent clinical trials have reported high repeat infection rates (12%–14%) following 1 g azithromycin. These data suggest that single-dose azithromycin may be inadequate, but high repeat infections rates could also be explained by exposure to an original or new partner or retesting before DNA clearance. The purpose of this study was to examine the origins of repeat CT infections among men.

Methods Men diagnosed with Ct by Gen-Probe Aptima Combo 2 at STD clinics in New Orleans, and Jackson, Mississippi were retested an average of 6 weeks after treatment with single-dose azithromycin. Detailed sexual behaviour histories were collected at baseline and follow-up via computer-assisted/self-administered interview and MLST genotyping was performed.

Results Of 367 men with Ct, 222 returned for a f/u visit [mean of 45 days post-baseline (s.d. 13)] and 14/217 (6.5%) were positive. Of the 14, 36% reported sexual re-exposure to a baseline partner, 14% reported sexual exposure to a new partner, 7% reported sexual exposure to both, and 43% denied sexual re-exposure. Thus far MLST genotyping completed for 3 baseline-f/u positive pairs. Two pairs with the same genotype (E/39) reported sexual re-exposure to a baseline partner and the pair with a new genotype reported sexual exposure to a new partner (D/19 to C/15).

Conclusion Early repeat infection rate among men with Ct in this study was lower than recently reported and about half could be explained by sexual re-exposure. Rates in the other two studies may have been inflated by high re-exposure rates or premature testing using NAAT since many of the participants were tested before 3 weeks. Studies that examine repeat infections should consider re-exposure/new exposure and retest when DNA clearance is assured. Our data does not support high treatment failure rates for 1 g azithromycin treatment of Ct.

P2.087 IN VITRO ANTIMICROBIAL SYNERGY TESTING, USING ETEST METHODOLOGY, OF NEISSERIA GONORRHOAE FOR EVALUATION OF SUSCEPTIBILITY WHEN USING DUAL ANTIMICROBIAL THERAPY?

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Background Antimicrobial resistance in *Neisseria gonorrhoeae* is a major public health problem worldwide. Recently, the first gonococcal isolates with high-level resistance to extended-spectrum cephalosporins, including ceftriaxone, were reported and gonorrhoea may become untreatable in certain circumstances. As a response, dual antimicrobial therapy (mainly ceftriaxone+azithromycin) has been introduced in the USA and Europe. The aim of this study was to apply a method for *in vitro* synergy testing, using Etest methodology, of various combinations of antimicrobials, i.e. currently used or of potential interest for future dual antimicrobial therapy.

Methods The eight WHO 2008 *N. gonorrhoeae* reference strains and 51 clinical *N. gonorrhoeae* isolates were investigated by synergy testing using Etest of in total 15 combinations of ceftriaxone, cefixime, azithromycin, moxifloxacin, spectinomycin, and gentamicin.

Results Highest levels of synergistic and/or additive effects, without any observed antagonistic effects, were observed for the combinations cefixime+gentamicin (in total 80% of isolates), azithromycin+gentamicin (65%), and cefixime+azithromycin (63%). The combination of ceftriaxone+azithromycin, currently recommended in the dual antimicrobial therapy, also showed

substantial synergistic and/or additive effects (34%), without any observed antagonistic effects. Nevertheless, the results of *in vitro* antimicrobial synergy testing need to be interpreted with some caution, because these may not absolutely correspond to the *in vivo* situation.

Conclusion This study demonstrates *in vitro* synergy between several of the antimicrobials currently used or potentially considered for dual antimicrobial therapy of gonorrhoea and this is also the first study using Etest as an objective, easily performed and reproducible *in vitro* method for dual antimicrobial synergy testing of *N. gonorrhoeae*. Such method might be crucial if susceptibility testing for combination antimicrobial therapy will be performed prior to treatment of gonorrhoea.

P2.088 N. GONORRHOEAE ANTIMICROBIAL RESISTANCE IN URUGUAY: PERIOD 2010 – 2011

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Background The increasing antimicrobial resistance in *N. gonorrhoeae* threatens the effectiveness of single-dose treatment compromising the control of the infection.

Recent reports of third generation cephalosporins and azithromycin resistance coupled with the already described frequent ciprofloxacin resistance makes it mandatory to monitor the local susceptibility patterns.

Methods Susceptibility by agar dilution technique to ciprofloxacin, azithromycin, ceftriaxone, penicillin and tetracycline was performed to 59 and 56 isolates received in 2010 and 2011 respectively. GASP - LAC MIC interpretative criteria standards were used. Beta-lactamase production was detected by chromogenic cephalosporin method.

Results In 2011 CIM 90 shifted for ciprofloxacin (8-fold), azithromycin (4-fold) and ceftriaxone (2-fold). The rates of resistant isolates reached 28% and 10% for ciprofloxacin and azithromycin respectively. All the isolates tested were susceptible to ceftriaxone.

Isolates showing resistance to one drug frequently shared resistance or decreased susceptibility to other antibiotics.

One isolate showed decreased susceptibility to ceftriaxone (CIM 0.125 µg/mL) and ciprofloxacin (CIM 0.5 µg/mL), resistance to azithromycin (CIM 2 µg/mL) and is a TRNG.

Conclusions In 2011 an overall increase in either resistance, decreased susceptibility and multidrug resistance was observed. These observed increasing antimicrobial resistance and multidrug resistance to first line treatment antibiotics is worrisome and reinforces the need of continuous surveillance.

P2.089 ANTIMICROBIAL SUSCEPTIBILITY PROFILE OF NEISSERIA GONORRHOEAE ISOLATES IN THE PROVINCE OF QUÉBEC: 2012

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Background Since 1988, the LSPQ (Laboratoire de santé publique du Québec) coordinates the *Neisseria gonorrhoeae* antimicrobial resistance programme, to support treatment guidelines updates. In the context of decreasing susceptibilities to 3rd generation cephalosporins, azithromycin and cefixime were added to our antibiotic susceptibility panel.

Methods All *N. gonorrhoeae* strains isolated in clinical laboratories throughout the province were submitted to the LSPQ. The susceptibility profiles to azithromycin (AZI), cefixime (CEF), ceftriaxone (CFX), ciprofloxacin (CIP), ertapenem (ERT), gentamicin (GEN),

penicillin (PEN), spectinomycin (SPE), tetracycline (TET), and tigecycline (TIG) were determined by the agar dilution method according to CLSI guidelines. WHO criteria were used to determine decreased susceptibility (DS) to cephalosporins. In 2010 and 2011, 5 antibiotics were tested (AZI, CEF, CFX, CIP and SPE) and 5 other antibiotics were added in 2012 (ERT, GEN, PEN, TET and TIG).

Results In 2012, a total of 502 strains isolated from 352 males (70%), 145 females (29%) and 5 unknown (1%) were tested. All strains were susceptible to cefixime, ceftriaxone and spectinomycin, 47.4% were resistant to ciprofloxacin, 35.7% to tetracycline, 26.3% to penicillin, and 1.4% to azithromycin (MIC = 16 mg/L). Gentamicin MICs ranged from 2 to 16 mg/L (MIC₅₀ = 8 mg/L and MIC₉₀ = 16 mg/L). Tigecycline MICs ranged from 0.03 to 2 mg/L (MIC₅₀ = 0.5 mg/L and MIC₉₀ = 1 mg/L). Ertapenem MICs ranged from ≤ 0.004 to 0.12 mg/L (MIC₅₀ = 0.03 mg/L and MIC₉₀ = 0.06 mg/L). DS to cefixime, DS to ceftriaxone and resistance to azithromycin data are presented in the attached table. Cefixime MIC of 0.125 mg/L was identified in 61 strains (6.6%) in 2010, 72 (9.0%) in 2011 and 20 (4.0%) in 2012.

Conclusions Although DS to cefixime has emerged in Québec, it remains at low level. Resistance to an alternative treatment option, azithromycin, is also emerging. This highlights the need to continue our resistance monitoring programme to support public health interventions.

Abstract P2.089 Table 1

Antibiotic susceptibility	AB2010 (n = 920)	AB2011 (n = 797)	2012 (n = 502) *
DS to cefixime (≥ 0.25 mg/L)	0.2%	0.8%	0.8%
DS to ceftriaxone (≥ 0.125 mg/L)	0.1%	0.1%	0.6%
Resistance to azithromycin (≥ 2 mg/L)	1.2%	1.0%	1.4%

Legend: * partial data, DS: decreased susceptibility

P2.090 MULTI-DOSE CEFIXIME FOR REDUCED SUSCEPTIBILITY GONORRHEA: A PHARMACOKINETIC MODEL

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Background Gonococcal minimal inhibitory concentrations (MIC) to 3rd generation-cephalosporins have been rising worldwide. New treatments for resistant gonococci are urgently needed. We developed pharmacokinetic models to assess whether multiple doses of 600mg or 800mg of cefixime would achieve serum levels sufficient to treat gonococcal isolates with elevated cefixime MICs (≥ 0.5 µg/mL).

Methods Based on published data, we assumed 800mg of cefixime has a peak total concentration (C_{max}) of 4.9 µg/mL, an elimination half-life of 3.5 hours, and a volume of distribution of 32 L. We extrapolated a 600mg dose C_{max} as the midpoint (4.25 µg/mL) between the 400mg C_{max} (3.7 µg/mL) and 800mg. We created simulation models to identify regimens which could achieve total serum cefixime concentrations that exceed 4 times the MIC for over 20 hours, a previously proposed criterion for defining pharyngeal gonorrhoea treatment regimens. We also assessed the pharmacokinetics of free serum cefixime concentrations assuming a 30% unbound fraction, an alternative criterion for gonorrhoea therapy.

Results Simulations suggest that 600mg or 800mg every 12 hours for two doses would achieve total serum cefixime levels sufficient to