First Nationwide Antimicrobial Susceptibility Surveillance for *Neisseria gonorrhoeae* in Brazil, 2015-2016

Maria Luiza Bazzo¹; Magnus Unemo²; Lisléia Golfetto¹; Pâmela Cristina Gaspar³; Ana Flávia Pires³; Mauro Cunha Ramos⁴; Miriam Franchini⁴; William Antunes Ferreira⁴; Lidiane Da Fonseca Andrade⁴; Guilherme Henrique De Oliveira Arnhold⁴; Simone Veloso Faria De Carvalho⁴; Ligia Maria Bedeschi Costa⁴; Maria Rita Rabelo Costa⁴; Rosana Barboza De Matos⁴; Luciane Guimarães Dias⁴; Letícia Eidt⁴; Antônio Carlos Gerbase⁴; Jairo De Souza Gomes⁴; Leonor Henriette De Lannoy⁴; Hanalydia Machado¹; Jéssica Martins¹; Chayane Ariel Souza Coelho Muniz⁴; Lúcia De Fátima Mendes Pereira⁴; Cláudio Campos Do Porto⁴; Felipe De Rocco¹; Thaís Mattos Santos⁴; Marcos André Schörner¹; Maria Da Purificação Pereira Da Silva⁴; Roberto José Carvalho Da Silva⁴; Loeci Natalina Timm⁴; Waldemara De Souza Vasconcelos⁴; Cássia Maria Zocoli⁴; Adele Schwartz Benzaken³.

1- Federal University of Santa Catarina; 2- WHO Collaborating Centre for Gonorrhoea and other Sexually Transmitted Infections, Department of Laboratory Medicine, Microbiology, Faculty of Medicine and Health, Örebro University; 3- Department of Surveillance, Prevention and Control of Sexually Transmitted Infections, HIV/AIDS and Viral Hepatitis, Ministry of Health; 4-Brazilian-GASP Network

Background

Gonorrhoea and antimicrobial resistance (AMR) in *Neisseria gonorrhoeae* are major public health concerns globally. Enhanced AMR surveillance for gonococci is essential worldwide. However, recent quality-assured gonococcal AMR surveillance in Latin America, including Brazil, has been limited with exception of e.g. from Argentina and Chile.

Methods

Gonococcal isolates from 550 men with urethral discharge were examined for susceptibility to ceftriaxone, cefixime, azithromycin, ciprofloxacin, benzylpenicillin and tetracycline using agar dilution method, according to CLSI recommendations and quality assured according to WHO standards.

Results

The level of resistance (intermediate susceptibility) to tetracycline, ciprofloxacin, benzylpenicillin, and azithromycin was 61.6% (34.2%), 55.7% (0.5%), 37.1% (60.4%), and 6.9% (8.9%), respectively. All isolates were susceptible to ceftriaxone and cefixime using the US CLSI breakpoints. However, according to the European EUCAST cefixime breakpoints 0.2% (n=1) of isolates was cefixime resistant and 6.9% (n=38) of isolates had a cefixime MIC bordering resistance (Figure 1). To ceftriaxone, two (0.4%) isolates presented a MIC of 0.125 mg/L, which is bordering resistance according to EUCAST.

Figure 1: MIC distributions for ceftriaxone and cefixime for clinical *N. gonorrhoeae* isolates (n=550) in Brazil from 2015 to 2016.

Conclusions

This study describes the first national surveillance of gonococcal AMR in Brazil, which was quality assured according to WHO standards. The high resistance to ciprofloxacin (which promptly informed a revision of the Brazilian STI treatment guideline), emerging resistance to azithromycin, and decreasing susceptibility to extended-spectrum cephalosporins necessitate a continuous surveillance of gonococcal AMR and increased awareness when prescribing treatment in Brazil. Initiatives to improve the Brazilian GASP including training, increasing the number of isolates, representativeness (geographic, for risk groups and including females and extra-genital sites), linkage to epidemiological data, survey for treatment failures, updating to the 2016 WHO gonococcal reference strains for quality control, and molecular epidemiological examinations using whole genome sequencing are considered for future surveillance.