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Letter to the Editor

Who should be screened for *Chlamydia trachomatis* infection? Three years' experience at a University Hospital in Switzerland

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Dear Editor,

Chlamydia trachomatis (CT) is the most frequent cause of bacterial sexually transmitted infection (STI) worldwide. In Switzerland, laboratories are required to report all positive CT tests to the Swiss Federal Office of Public Health (FOPH) since 1988.

According to the FOPH [1], the number of CT notifications has more than doubled from 2007 (n = 5241) to 2016 (n = 11022) and it is estimated that 3 to 10% of the sexually active population is affected. CT affects mostly young adults and is usually asymptomatic.

In contrast to previous statements, complications from this infection are not as frequently reported, nonetheless they can be substantial for the patient, naming pelvic inflammatory disease, ectopic pregnancy, chronic pelvic pain, and tubal factor infertility [2, 3].

Early diagnosis and treatment of CT infections can prevent these complications, reducing up to 50% the risk of unfavorable outcomes in the year following treatment [4].

Moreover, patients with CT can be frequently co-infected with *Neisseria gonorrhoeae* (NG) [5, 6], which is the second most prevalent STI affecting young adults.

A recent review published in the Swiss Medical Forum [7] set forth new recommendations adopted by the Federal Commission for Sexual Health (CFSS) and the Swiss Society of Infectiology (SSI) and Swiss society of Dermatology and Venerology regarding CT infections. In this review, systematic screening for CT in asymptomatic patients is yet not recommended. For most, CT detection in the different Swiss cantons was

opportunistic, physician-dependent and not comprised in the annual health check-up. In addition, screening is costly, with administration fees starting at 119 CHF, not including medical consultation costs.

Our experience working in the ambulatory Gynecological consultations at Geneva University Hospital (HUG) suggests that these recommendations may need precisions. International recommendations advise CT screening for women younger than 25 years old and pregnant women [8-10]. Screening is also justified in older women with risk factors, such as having a new sex partner or multiple sex partners. In Europe, only the United Kingdom offers an annual organized program for CT screening among women and men aged 16 to 25 years [11] and Sweden encourages a large screening and evaluation [12]. Other countries such as France, Luxembourg and Malta are currently conducting studies in order to introduce a national CT screening program. In this letter we discuss our most recent data on CT positivity and co-infection with NG among patients screened at different medical sectors at the HUG.

We have analyzed data provided by the Bacteriology Laboratory of the HUG between 2014 and 2016, comprising 43'621 samples testing for CT and NG using real-time PCR amplification. The overall positivity rates were 3.7% (1221/33261) and 1.8% (185/10360) for CT and NG, respectively. These rates remained stable through these years.

CT was detected in 3.3% of female samples (941/28193) and in 4.7% of male samples (233/4970) (p< 0.001). NG was detected in 1.4% of female samples (81/5931) and in 1.7% of male samples (73/4320) (p=

0.183). The rate of co-infection with CT and NG was 32.5% and 23.6% among female and male samples, respectively.

The distribution of CT positivity, by age group and sex is depicted in Figure 1.

The CT positivity rate peaked at the age group of 15-24 years for both women and men (7.4%, 489/6592 and 7.9%, 66/833, respectively). The distribution of NG positivity, by age group and sex is represented in Figure 2. The NG positivity rate peaked at the age group of 15-24 years for women (1.8%, 36/1968) and at 0-14 years (2.9%, 1/34) and 25-34 years (2.4%, 40/1670) for men.

The great majority of the samples came from the gynecological emergency sector ($n = 15\,151$), where large-scale screening is usually implemented. Considering the distribution of CT infection in the different wards of the HUG, the highest positivity rate was found in the general emergency department (8.0%, 86/1069), followed by the Youth Health Unit (5.3%, 57/1070), then by the abortion consultation (4.5%, 117/2599) and the general gynecological consultation (3.6%, 103/2846). The overall CT positive rate for all other services was 3.3% (858/25677). As for NG, the general emergency department had the highest positivity rate at 5.1% (51/998). The distribution of CT and NG positivity according to selected units compared to overall positivity is described in Figure 3. If we separate the Gynecology Clinic services, including the general gynecological, youth health unit and abortion consultation, from the other units, a difference between CT positivity rates were found between the two sectors (4.2% vs. 3.6%, $p = 0.028$). CT positivity rate was 7.8% (136/1753) among women aged 14-25 years and screened at the ambulatory Gynecological consultations.

The positivity rate for CT found in our analysis is consistent to what was found in another study in the Swiss cantons of Valais and Vaud [13], but slightly lower to what was found in the canton of Basel-Stadt [14], where the CT positivity rates were 4.7% and 11.2% for female and male samples, respectively. CT rates were found to be variable according to country, gender, age, and the degree of screening coverage [15], ranging from 3% (United Kingdom) to 5% (Slovenia) among women and 0.4% (Germany) to 5% (Slovenia) among men in a literature review published by the European Centre for Disease Prevention and Control [15]. The peak of CT infection in terms of age groups was consistent among studies [13-15] and similar to our data. The rate of NG co-infection with CT was similar to other publications [5, 6], but it is known to vary

Figure 1. Distribution of *C. trachomatis* positivity rate, by age group and sex (cases from 2014 to 2016).

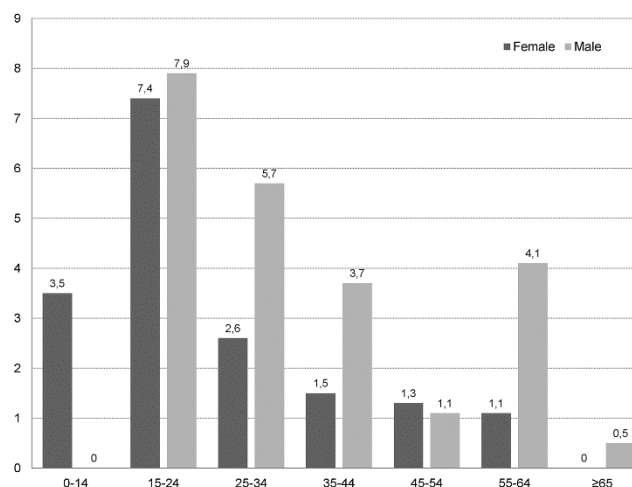


Figure 2. Distribution of *N. gonorrhoeae* positivity rate, by age group and sex (cases from 2014 to 2016).

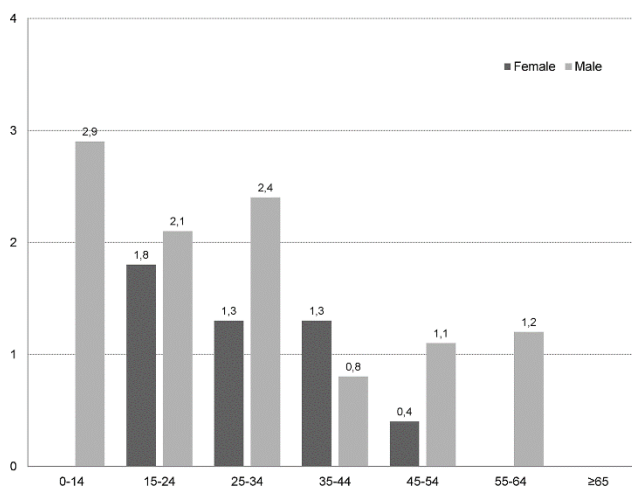
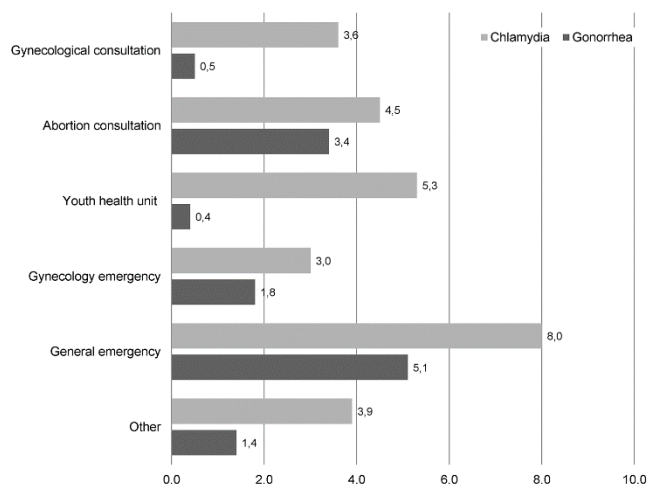


Figure 3. Distribution of *C. trachomatis* and *N. gonorrhoeae* positivity rates according to selected units of the University Hospital of Geneva.



considerably, depending on the setting and the background prevalence of these STIs.

The positivity rate of CT in HUG was higher among men than women, which demonstrates that, while there is no formal recommendation for screening for CT in young adults, this should be considered in high-prevalence settings such as the emergency room and Youth Health Unit.

From our analysis, we can also observe a higher positivity of CT infection in the gynecological ambulatory consultations, especially among adolescents' and termination of pregnancy clinics, comparing to other sectors, which confirms our previous suspicions that the gynecological ambulatory clinic is a high-prevalence setting and Chlamydia screening should be systematically recommended in patients aged 14-25 years.

Moreover, CT positivity rate and co-infection with NG was fairly significant in our population.

Based on our experience in Geneva, a city with a Racial/Ethnic varied population, we believed that CT screening should be offered to young adults consulting in high risk settings, such as the general emergency department and Gynecological consultations. This screening might have an impact in preventing further complications of CT infection. Knowing that young adults and adolescents are those who probably have less financial means, the cost of screening should be reviewed in order to allow affordable access.

Due to the high rate of co-infection of CT with NG, in the presence of a positive test, screening for the other STI should be systematically performed. Since the current used PCR analyzer used in our laboratory gives concomitant results for both STIs, these results should be made available, without increasing costs for the patient.

Further case-control studies are needed in order to establish the real impact of CT infection and consequent complications, so that cost-effectiveness studies will establish more clearly the necessity for CT screening as a public health intervention.

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