Established in 1871
Swiss Medical Weekly
Formerly: Schweizerische Medizinische Wochenschrift
The European Journal of Medical Sciences

Original article | Published 18 July 2011, doi:10.4414/smw.2011.13220
Cite this as: Swiss Med Wkly. 2011;141:w13220

Chlamydia trachomatis infection in males in a juvenile detention facility in Switzerland

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Summary

QUESTIONS UNDER STUDY: Young offenders represent a group for which *Chlamydia trachomatis* infection screening is recommended in the US. In the absence of local epidemiological data it is difficult to assess whether such recommendations apply to the Swiss context. Our aim was to obtain local prevalence data for *Chlamydia trachomatis* infection among young male offenders as a basis for screening strategies in Swiss juvenile detention centres.

METHODS: This cross-sectional study was conducted in a juvenile detention facility in Geneva, Switzerland. Adolescent males aged 15–18 years admitted to the detention facility were invited to participate during a consultation with a nurse conducted within 48 hours of admission. Participants were asked to provide a first void urine sample for PCR detection of *Chlamydia trachomatis* infection and to complete a questionnaire on reproductive health behaviours.

RESULTS: 72 males were considered for participation in the study. 13 were excluded (mainly due to the language barrier or a shorter than 3 days' stay in the facility) and 9 (15%) declined participation. Not being sexually active was the most common reason for declining participation. Most participants originated from Switzerland or the European Union and 68% reported having ≥2 sexual partners in the past year. Only one participant (18 years, asymptomatic) had *Chlamydia trachomatis* infection (2%; 95%CI: 0–6%).

CONCLUSIONS: This study does not support screening for *Chlamydia trachomatis* among young offenders admitted to detention centres in Switzerland. Studies in other European detention centres should document the extent to which our findings are generalisable to the European context.

Key words: *chlamydia trachomatis; screening; prisons; adolescent; young offenders*

Introduction

With an estimated 92 million new cases a year, *Chlamydia trachomatis* infections (CTI) are the most common sexually transmitted bacterial infections in the world [1]. These infections can be the cause of severe reproductive health morbidity including pelvic inflammatory disease, chronic pelvic pain and tubal factor infertility [2]. They may also be a cause of male infertility [3]. They can easily be treated with a single dose of antibiotics, but often go undetected as they are frequently asymptomatic [2]. As a consequence, systematic screening has been recommended in high risk groups. These include sexually active adolescents, in particular females, in whom the prevalence of CTI has been shown to be particularly high (8–29%) [4].

Epidemiological studies in the US indicate that with a prevalence ranging between 5.9 and 14.4% young male offenders are also particularly at risk [5–7]. Screening adolescent males on admission to detention has been shown to be cost-effective in the US and has therefore been recommended [8]. Data suggest that CTI are also common in high risk populations and young offenders in Australia and the UK [9, 10]. In contrast, a study conducted 10 years ago in juvenile educational centres in Quebec showed a much lower prevalence of CTI among males (3%), suggesting that systematic screening of male delinquents may not always be warranted [11]. We found no report on the prevalence of CTI among male adolescent offenders in any other country. Conscript population data suggest a very low prevalence of CTI among young males in Switzerland (1.2%). The prevalence of CTI in males detained in the largest remand prison in Switzerland was also lower than described in US prisons [12]. We hypothesised that CTI rates in Switzerland may be too low to justify systematic screening of adolescent males entering detention centres, as recommended in the US [13]. The aim of this study was therefore to provide the first account of the point prevalence of CTI among male adolescent offenders in Switzerland to document the need for systematic screening in this population.

Methods

This cross-sectional study was conducted between July 2008 and February 2009 within the primary care health service of a juvenile detention facility in Geneva, Switzerland. This is a 30-bed facility in which 300–400 adolescents (11–19 years) are admitted each year. All adolescents admitted to the detention facility are offered an initial health assessment by a nurse within 48 hours of admission. During this assessment consecutive boys aged 15 years or older were invited to participate in the study. Exclusion criteria were: projected stay in the facility too short to allow time for the study (≤2 days), illiteracy and inability to understand the study languages (i.e. inability to read the information, consent and questionnaire documents which were available in French, English, Spanish, Arabic, Russian and Albanian), acute illness requiring immediate medical attention, mental disability (resulting in inability to provide informed consent), antibiotic use (tetracycline for acne, for example) within the past 3 months.

Following informed consent, participants were asked to provide a first void urine sample for PCR detection of CTI using Abbott CT/NG reagents on an m2000 platform (Abbott Molecular Diagnostics, Des Plaines, IL). All participants also completed a questionnaire on sociodemographic characteristics and reproductive health behaviours. From clinical experience we anticipated a low prevalence of CTI. Using the formula proposed by Bland, we estimated that a sample size of 50 would be sufficient to measure such prevalence rates with a standard error no larger than 3% [14]. Descriptive statistics (proportions with 95% CI for dichotomous variables and mean and SD for continuous variables) were computed using Stata version 9.1.

The study was approved by the Ethics Committee of Geneva University Hospital (protocol 08-063).

Results

During the study period 72 males (15–18 years) were considered for participation in the study and 13 were excluded on the basis of criteria (mainly language barrier, 5 individuals, and short stay in the facility, 4 individuals). Of the remaining 59 males, 9 (15%) declined participation. Not being sexually active was the most common reason for declining participation (5 individuals). There were no differences between the mean ages of those who were included in the study and those who were excluded or declined participation.

Table 1 presents participants' sociodemographic and health characteristics. The majority were from Switzerland or the European Union and reported having multiple sexual partners in the past year. Nine participants reported urogenital symptoms (lower abdominal pain 4; frequency 3; dysuria 2). Only one participant had CTI (2%; 95%CI: 0–6%). This individual was 18 years old and asymptomatic. He was incarcerated for less than a week and therefore had left the facility by the time the results of screening were available. The results were forwarded to him but we cannot be certain that he followed our advice on treatment.

Discussion

Despite being sexually active at a young age and reporting having multiple sexual partners in the past year, these adolescent males detained in a Swiss juvenile detention centre had a low prevalence of CTI, a prevalence much lower than that reported for adolescents in the US, where prevalence in detention settings is reported to be as high as 14% [5]. They are nevertheless in line with recent data for Swiss conscripts [13], and are also similar to those found ten years ago in a study of adolescents in educational centres in Quebec [11]. That sexual risk behaviour was not necessarily correlated with risk of CTI is also consistent with previous reports [6]. Low prevalence in the general

Table 1: Sociodemographic and health characteristics of 50 male detainees participating in the study.

Characteristic or behaviour	**Mean (SD) or n (%)**
Age (mean, SD)	16.2 (0.9)
Origin [1]	
Switzerland & European Union	30 (60)
Other European country	8 (16)
Africa	7 (14)
Other	5 (10)
Religion [1,2]	
None	14 (28)
Christian (catholic, protestant, orthodox)	19 (38)
Muslim	16 (32)
Number of years in school (mean, SD)	8.7 (3.0)
Number of sexual partners, past 12 months [2]	
None	4 (8)
One	11 (22)
Two to five	22 (44)
Six or more	12 (24)
Urogenital complaints [1,3]	9 (18)
IV drug use (lifetime)	0

[1] self-reported
[2] missing data for one participant
[3] dysuria, frequency, discharge, lower abdominal pain in the past week

population associated with moderately high rates of condom use in Switzerland (75% males aged 16–20 years report using a condom at first intercourse) may in part explain our results [15]. None of the 9 participants who reported urogenital symptoms in the questionnaire had CTI, which underlines the unspecific nature of such symptoms particularly in the stress-related context of recent incarceration. Short detention durations and the mobile nature of this population mean a positive screen does not necessarily lead to treatment [7]. This was the case of the individual in whom CTI was identified in the context of our study and for whom confirmation of treatment could not be obtained. This highlights the fact that in addition to prevalence findings, follow-up and treatment opportunities should be factored into decisions on CTI screening strategies.

Limitations to our study include the potential selection bias related to moderate rates of exclusion. Since the language barrier resulted in the exclusion of 5 potential participants we cannot be certain that the rate of CTI would not have been higher had these migrants been included. Yet CTI prevalence was low despite the fact that 40% of participants came from countries beyond Switzerland and the European Union. In addition, from a clinical perspective, screening and treating young people who do not understand what is being undertaken due to a language barrier is ethically questionable. Many of those who declined participation indicated they were not sexually active. This reduces the likelihood that CTI were missed in males who were not included in the study. Though a larger sample size would have provided a more precise estimate, it is unlikely that with such a low prevalence this would have altered our conclusions in a significant way.

Conclusions

In contrast to US recommendations our results do not support systematic screening of male adolescents on admission to Swiss juvenile detention centres [8]. That the only infected participant was asymptomatic also argues against targeted screening in this population. These findings further support the need to collect regional data before implementing recommendations based on epidemiological findings from other countries. Future studies including other detention centres in Switzerland and in Europe should provide information as to the extent to which our findings can be replicated in a larger sample and apply to the entire country and, more broadly, to the European setting. Further studies should also provide data on the prevalence of CTI in female adolescent detainees in Europe, as women detainees have repeatedly been shown to be at much higher risk of CTI than males [6, 7].

Funding / potential competing interests: This study was supported by funds from the University of Geneva (Fonds Mimosa).

Acknowledgement: We are grateful to Bernard Pedretti for his help in collecting the data.

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References

1 World Health Organization. Global prevalence and incidence of selected curable sexually transmitted infections. Overview and estimates Geneva: WHO2001.

2 Scholes D, Stergachis A, Heidrich FE, Andrilla H, Holmes KK, Stamm WE. Prevention of pelvic inflammatory disease by screening for cervical chlamydial infection. N Engl J Med. 1996;334(21):1362–6.

3 Gonzales GF, Munoz G, Sanchez R, Henkel R, Gallegos-Avila G, Diaz-Gutierrez O, et al. Update on the impact of *Chlamydia trachomatis* infection on male fertility. Andrologia. 2004;36(1):1–23.

4 Burstein GR, Gaydos CA, Diener-West M, Howell MR, Zenilman JM, Quinn TC. Incident *Chlamydia trachomatis* infections among inner-city adolescent females. JAMA. 1998;280(6):521–6.

5 Kahn RH, Mosure DJ, Blank S, Kent CK, Chow JM, Boudov MR, et al. *Chlamydia trachomatis* and *Neisseria gonorrhoeae* prevalence and coinfection in adolescents entering selected US juvenile detention centers, 1997-2002. Sex Transm Dis. 2005;32(4):255–9.

6 Aalsma MC, Wiehe SE, Blythe MJ, Tong Y, Harezlak J, Rosenman MB. Mental health screening and STI among detained youth. J Community Health. 2011;36(2):300–6.

7 Joesoef MR, Kahn RH, Weinstock HS. Sexually transmitted diseases in incarcerated adolescents. Curr Opin Infect Dis. 2006;19(1):44–8.

8 Mrus JM, Biro FM, Huang B, Tsevat J. Evaluating adolescents in juvenile detention facilities for urogenital chlamydial infection: costs and effectiveness of alternative interventions. Arch Pediatr Adolesc Med. 2003;157(7):696–702.

9 NSW Young People in Custody Health Survey. Key Findings Report. New South Wales: Department of Juvenile Justice 2003.

10 Menon-Johansson AS, Winston A, Matthews G, Portsmouth S, Daniels D. The first point prevalence study of genital *Chlamydia trachomatis* infection in young male inmates in the UK. Int J STD AIDS. 2005;16(12):799–801.

11 Poulin C, Alary M, Ringuet J, Frappier JY, Roy E, Lefebvre J. Prevalence of chlamydial infection and frequency of risk behaviours for STDs and HIV infection among adolescents in public juvenile facilities in the province of Quebec. Can J Public Health. 1997;88(4):266–70.

12 Steiner A, Haller D, Elger B, Sebo P, Gaspoz JM, Wolff H. *Chlamydia trachomatis* infection in a Swiss prison: a cross sectional study. Swiss Medical Weekly. in press.

13 Baud D, Jaton K, Bertelli C, Kulling JP, Greub G. Low prevalence of *Chlamydia trachomatis* infection in asymptomatic young Swiss men. BMC Infect Dis. 2008;8:45.

14 Bland M. An introduction to medical statistics. In: oxford medical p, editor. Oxford: Oxford University Press; 2000. p. 343–4.

15 Narring F, Tschumper A, Inderwildi Bonivento L, Jeannin A, Addor V, Butikofer A, et al. SMASH 2002: Santé et styles de vie des adolescents agés de 16 à 20 ans en Suisse (2002). Lausanne: IUMSP; 2003.