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Confirmation of reactive gonorrhoea Gen Probe APTIMA Combo 2 assay using the alternative sequence mono-specific APTIMA gonococcus assay

Sir: We concur with the findings of Moss and Mallinson¹ that the Gen Probe APTIMA Combo 2 (AC2) assay is useful for testing for gonorrhoea in low prevalence populations and furthermore we have found it useful for testing extragenital sites. We also used culture and AC2 assay in tandem to test for gonorrhoea, however, in addition most discrepant samples were sent to University Hospital, Aintree for further analysis with the alternative sequence mono-specific APTIMA gonococcus assay.

Between 1 April and 31 December 2006 54 patients tested positive for gonorrhoea by culture at 61 sites (28 urethral, 16 rectal, nine cervical and eight pharyngeal); 67 tested positive for gonorrhoea by AC2 assay at 85 sites. There were no culture positive/AC2 negative results in any of our patients. A note review was performed to elucidate details of contacts and positive gonorrhoea results from other sites in the same patient. Nineteen of the 24 discrepant samples were sent for alternative sequence assay, although seven samples were stored frozen for six months prior to the second assay being performed. Table 1 shows details of AC2 positive/culture negative results.

Table 1 shows that 17 (71%) of 24 sites which initially only tested positive by AC2 had evidence supporting these being true positive results. Thus, we were able to diagnose gonorrhoea in a further nine patients using AC2 assay; 16% more than would have been diagnosed by culture alone, in-line with published estimates of the sensitivity of gonococcal culture.²

Nucleic acid tests have so far had limited evaluation on rectal and oropharyngeal samples and are not currently recommended for testing of these sites.² The HPA Regional Microbiology Network has recently recommended that where AC2 assay is used, reactive gonococcal results should always be confirmed by alternative sequence mono-specific

APTIMA gonococcus assay,³ as was done in some of our patients. These results have encouraged us to change our gonorrhoea testing practice. Culture is only performed on genital sites when microscopy is positive, the patient is contact of gonorrhoea infection, to confirm an AC2 positive result or as a test of cure. We will continue to test specimens from rectal and pharyngeal site using culture as well as the AC2 assay until a larger body of evidence is collected. However, we would suggest that in future the use of AC2 to screen for gonorrhoea at all sites will be shown to be increasingly acceptable.

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Detection of quinolone-resistant *Neisseria gonorrhoeae* in urogenital specimens with the use of real-time polymerase chain reaction

Sir: In a recent issue of this journal, Jabeen *et al.*¹ added to the growing body of literature describing the worldwide emergence of fluoroquinolone resistant *Neisseria gonorrhoeae* (QRNG).^{2–5} Although fluoroquinolones are a first-line treatment for syndromic urethritis in Peru,⁶ the presence of QRNG has not been documented in that country. However, considering the relatively recent emergence of QRNG, resistant NG strains might have recently become prevalent. Recently, a number of molecular methods have been developed recently for the detection of QRNG.^{7–9} These assays might facilitate detection and surveillance of QRNG by allowing the testing of urogenital samples without the need of culture. The goal of our study was to use a real-time polymerase chain reaction (PCR) assay to conduct a pilot study to assess the presence of QRNG among a small group of persons at high-risk in urban, coastal Peru.

Samples were collected at Peruvian sites of the National Institute of Mental Health HIV/STD Prevention Trial.¹⁰ The target population included those at high-risk for sexually transmitted diseases residing in low-income areas of Peru. All participants underwent interview and collection of urine or

Table 1 AC2 positive/culture negative results

Site	Culture negative/ APTIMA positive	GC culture positive other sites	Contact of culture-positive gonorrhoea	Second target positive for GC/ samples sent*	Supporting evidence for true positivity (%)
Urethra	4	1	0	2/4	2 (50)
Rectum	3	1	0	3/3	3 (100)
Pharynx	15	5	1	9/11	12 (82)
Cervix	2	0	0	0/1	–

*Four of five samples unconfirmed by alternative sequence assay were sent for analysis more than 6 months after initial sampling
GC = gonococci

self-collected vaginal swab specimens. Participants gave informed consent, and institutional review board approval was obtained from participating institutions. Study specimens were initially tested for the presence of NG using PCR (Roche Amplicor,TM Roche Diagnostics, Lima, Peru). Of the 4468 samples tested during the first two years of the study, 27 samples tested NG-positive. Of these participants, thirteen gave consent for use of their specimens for future studies. We tested for fluoroquinolone resistance by using a previously reported real-time PCR assay for the detection of mutations in the Ser91 amplicon of the *gyrA* gene.¹¹

Of the 13 samples tested for this sub-study, all amplified DNA product with the real-time assay. Two of the 13 (15.4%) were identified as having a mutation in the Ser91 codon of the *gyrA* gene, with a peak melting point temperature of approximately 57°C vs. 64°C for the wild-type specimens.

We report a mutation in the Ser91 region of *gyrA* in NG in human urogenital specimens consistent with QRNG in Peru. Although the sample size is limited and therefore not a reliable prevalence estimate, our finding of quinolone resistance is notable in a country where fluoroquinolones are the recommended first-line therapy for urethritis.⁶ Considering CDC recommendations to alter treatment protocols when prevalence exceeds 1%,¹² our findings might encourage clinicians and policy-makers to be mindful of treatment options, seek to corroborate these findings and potentially consider alterations to gonorrhoea treatment protocols.

Moreover, the use of a molecular assay to measure fluoroquinolone resistance in this setting is novel. Because the use of molecular methods allows antimicrobial susceptibility determination by genotype in non-cultivated urogenital specimens, routine surveillance for genotypic markers of resistance may be expanded by this method. The simplicity and speed with which resistance can be measured offers a substantial advantage over prior methods that rely on bacterial culture. Because QRNG continues to be an emerging epidemic throughout the world and the use of molecular methods may substantially reduce difficulties of detection, their use should be considered by surveillance programs charged with monitoring resistance in *N. gonorrhoeae*.

Conflict of interest: The authors of this manuscript have no financial or other affiliation that may pose a conflict of interest.

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The study protocol was approved by the Naval Medical Research Center Institutional Review Board

(NMRCD.2002.0007) in compliance with all applicable federal regulations governing the protection of human subjects.

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Risky sexual behaviour, taboo of HIV/AIDS and HIV-prevention topics: interviews with HIV-positive immigrants from the former Soviet Union

Sir: The article of Wall *et al.* in the *International Journal of STD & AIDS* (2006) described determinants of risky sexual behaviour in Russia in the light of the HIV epidemic.¹ We found it interesting to interview some of the immigrants to Bavaria Federal State of Germany from the countries of the Former Soviet Union (FSU) with a high prevalence of HIV, following their HIV diagnosis, about their attitude toward HIV/AIDS. There have been no studies on the subject involving FSU immigrants with HIV infection to Western Europe or America.

Germany is one of the European countries with a high number of FSU immigrants. In the last 18 years over two million ethnic German resettlers, Jewish refugees and their relatives immigrated to Germany,² and the immigration process is still going on. Russia, Kazakhstan and Ukraine were the three most common countries of origin for ethnic German resettlers in 2005 ($n = 35,396$), with 59.6, 31.7 and 3.7%, respectively.³

In 2005 UNAIDS estimated the HIV prevalence in sexually active people aged 15-49 years in Ukraine, Estonia, the Russian Federation and the Republic of Moldova as the highest in East Europe, at 1.4, 1.3, 1.1 and 1.1%, respectively.⁴ The number of HIV-positive FSU immigrants in Germany is not published, but an increasing number of HIV diagnoses in immigrants newly arrived from the FSU regions with a high prevalence of HIV infection is to be expected in the next years.

Since the beginning of 2004, six FSU immigrants have been diagnosed with HIV infection at our Department of Dermatology. A 1.0-1.5 h semi-structured interviews in Russian (a common language in the post Soviet Union area) were conducted with four of them after obtaining their written consent:

- (1) a 30-year-old man (CDC stage of the HIV infection A1), married, immigrated in September 2001 from Kazan, capital of the Republic Tatarstan, Russia, a student and partially employed, became HIV-infected in his home country, first diagnosed in Germany in February 2004, interviewed in February 2007;
- (2) a 27-year-old woman (CDC A1), married to No. 3 for two years, immigrated in August 2003 from a small village in Belarus, student, unemployed, became HIV-infected probably in her home country, first diagnosed in Germany in September 2004, interviewed in December 2004;
- (3) a 37-year-old man (CDC B1), married to No. 2, immigrated in 1976 from a small village in Moldova, unemployed, became HIV-infected according to him from his wife, No. 2, first diagnosed in Germany in September 2004, interviewed in December 2004;
- (4) a 30-year-old woman (CDC A1), divorced, immigrated in August 2005 from St Petersburg, Russia, unemployed,

became HIV-infected in her home country, first diagnosed in Germany in December 2005, interviewed in April 2006.

All respondents mentioned that HIV infection was transmitted by unprotected sex (without a condom). None of the respondents used intravenous drugs. Despite a very small sample of the interviewed HIV-positive FSU immigrants, two important aspects regarding the attitude to HIV/AIDS were determined: tabooing of the topics of sexual life, STDs and HIV/AIDS in personal and social environment leading to inappropriate HIV/STI prevention, and a pronounced fear of stigmatization should the HIV diagnosis be discovered.

All of the participants said that the Soviet school curriculum had insufficient sexual health education content, limited only to the human reproduction system; 'There was Anatomy, of course, but the teacher never brushed on the subject of sexual intercourse' (No. 2). No information about STDs and HIV prevention was included at all in the school course; 'In my time, there was nothing like the sex education today' (No. 4). With regard to this issue, interviewee No. 4 referred to the easily available information on sex and STDs in modern popular magazines, rather than the regular sex education in modern schools in FSU countries. The poor sexual health and STDs education was accompanied by tabooing of the topic of sex and STDs prevention in the Soviet society and in the Soviet family, leading to the development of psychological complexes; 'That's the problem - complexes; I've had complexes since my childhood, that topic was a taboo, something dirty...' (No. 2). The taboo of STDs and HIV/AIDS topics in personal and social life seems to have led to the firm conviction 'It will never happen to me!' (No. 2), resulting in disregard for personal HIV prevention measures and in risky sexual behaviour without using a condom; 'People don't want to deal with it [HIV] - 'It is not for us, it is not our world' (No. 1).

Despite the fact that all the respondents were well informed (e.g. in radio, TV or magazines) about HIV/AIDS and its sexual transmission, they had not used a condom during sexual intercourse with strangers; 'We all have heard about it, but until you are personally affected, you don't care. One hears or reads about it, and one forgets. It's written about in the newspapers, but one reads and soon forgets' (No. 3).

The definitive stigmatization and discrimination of HIV-positive people in Russia in social and professional aspects was well described.⁵ Our HIV-positive FSU immigrants show panic at the idea that their HIV diagnosis could be found out by a family member or by a close friend, or by German social and immigration agencies who sponsor FSU immigrants; 'If my mother finds out that I am infected she will be terribly shocked!; You can't tell anyone about it' (No. 2). For this reason, in spite of their lack of German speaking skills, the HIV-positive FSU immigrants do not bring a Russian speaker with them for interpretation to doctor's or psychologist's appointments; 'If I tell my friend about my disease, she will run from me like from the plague' (No. 2). Adequate medical treatment or care in such cases is almost impossible.

Misconceptions about HIV/AIDS with knowledge gaps,^{6,7} poor German language skills, social and cultural differences between the FSU countries and Germany, including public health systems,⁸ tabooing of the HIV/AIDS topic in social life, together with risky sexual behaviour, could make HIV prevention and care for immigrants from the FSU countries very difficult. In light of the HIV epidemic in the FSU countries and the continuing political immigration of ethnic Germans resettlers