LETTERS TO THE EDITOR

Methicillin resistant Staphylococcus aureus (MRSA) balanoposthitis in an insulin dependent diabetic male

Editor,—Balanoposthitis is a common condition affecting 11% of the male attendees at GUM clinics. It is an inflammation of the glans penis and the prepuce, and its causes include bacterial and yeast infections, parasitic infestations, trauma, and irritants. However, to our knowledge, no case has been reported to be caused by MRSA.

A 49 year old insulin dependent diabetic male was an inpatient for repair of an upper jaw fracture developed a penile itch with swollen foreskin, which was difficult to retract, together with longitudinal fissures on the prepuce and subpreputial discharge. In his recent past he had had two incidents of unprotected sexual intercourse with two known females. He was clinically diagnosed as having candida balanitis and was commenced on clotrimazole cream, which did not produce a clinical response over the course of a week. The swabs taken before the commencement of clotrimazole cream failed to grow candida; however, MRSA resistant to erythromycin, penicillin, and claxocillin but sensitive to mupirocin was isolated.

Screening tests for chlamydia, gonorrhoea, and trichomonas were negative. A 10 day course of mupirocin 2% ointment completely resolved his symptoms. Subpreputial swab after treatment was negative.

MRSA has been a well recognised cause of hospital acquired infections worldwide since it was first detected in Europe in the 1960s. The organism can survive for long periods in both the hospital and the home environment and can colonise the skin, nose, or throat of patients and healthcare staff. Several reports have suggested that diabetic patients are more susceptible to Staphylococcus aureus bacteremia MRSA has been isolated from different sites in diabetic patients but not the genitalia. MRSA rarely invades intact skin; however, it can give rise to severe infections—for example, wound infection, bacteraemia, endocarditis, and osteomyelitis.

This case illustrates the fact that MRSA is an organism to consider in patients who develop balanoposthitis while in hospital or shortly after discharge especially those whose immune system is incompetent.

There may be implications of spread of MRSA in the community for sexual contacts of patients carrying MRSA in the genital area.

Contributors: Both authors managed the patient and wrote the manuscript.

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Chlamydia trachomatis reinfection rate: a forgotten aspect of female genital chlamydia management

Editor,—Hills et al reported that repeated episodes of infection of female genital tract with Chlamydia trachomatis increase the risk of hospital admission for pelvic inflammatory disease and ectopic pregnancy. The first diagnosed attack of genital infection with chlamydia presents the clinician with a unique opportunity to implement measures to minimise the risk of reinfection—that is, health promotion and contact tracing.

During April-June 1998 we reviewed the case notes of female patients who were diagnosed with genital chlamydia at Leicester Royal Infirmary and Derbyshire Royal Infirmary GUM clinics in the year 1996 for evidence of repeat episode of genital chlamydia. We also noted the following data: age at presentation with the first episode of infection, time for presentation with reinfection, test of cure if performed, co-infection with gonorrhoea, review by health adviser, contact(s) traced and treated in the first 3 months after diagnosis. For the purpose of the study we defined reinfection as a patient testing positive for genital chlamydia 30 days or more after the completion of treatment. We also looked at the genital chlamydia treatment protocols in both clinics.

A total of 540 female patients were diagnosed with chlamydia (311 at Leicester and 229 at Derby). The patients’ mean age at first episode was 22.6 years for Leicester and 23.4 years for Derby. The health advisers had made contact with 94.5% (294) in Leicester and 97.8% (224) in Derby; 85.2% (265) of the patients diagnosed at Leicester returned at 30 days or more and were retested for chlamydia compared with 87.3% (200) at Derby; 9% (24) episodes of repeat infection were identified in Leicester group compared to 17% (34) episodes in the Derby cohort. The mean period for presentation with reinfection was 9.4 months (range 3–25) at Leicester and 9.8 months (range 2–24) at Derby. At Leicester the contacts of 66.5% (207) patients were traced and treated compared to 64.6% (148) at Derby. A test of cure was performed on 282 patient in Leicester (where it was routine practice); 2.5% (seven) were found to be positive for chlamydial infection, while the test of cure was performed on 22 patients in Derby (where it was performed selectively) revealed no positive cases.

Of the reininfected patients 58.3% (14) at Leicester were reinfected because of failure to trace and treat their partner(s) compared to 35.5% (12) at the Derby clinic.

Both clinics manage genital chlamydia with what was considered standard treatment and perform contact tracing wherever possible. Two reininfected patients from each clinic were also co-infected with gonorrhoea.

Other risk factors for reinfection—for example, ethnic origin, number of sexual partners,—were not analysed as these data was not discernible from the notes.

This retrospective study highlights the fact that a substantial number of patients get reinfected with chlamydia despite health education and counselling by health advisers. Though the figures (66.5% and 64.6%) for partner notification and treatment were close to that proposed by the Central Audit Group (70%) the proportion of those traced and treated is still too high. Does the message that repeat episodes of genital chlamydia are more damaging get through to our patients or do we need a new health education strategy?

Currently, as the success of treatment of genital chlamydia is evaluated by the level of contact tracing, the number of patients referred to health advisers, and number of contacts per index patient seen and treated, we believe it is time to evaluate outcome measures in terms of reinfection rates. Large prospective studies need to be done to elucidate this aspect of chlamydial infection management.

Contributions: PS had the original idea; EH collected and analysed the data EH and JD wrote the manuscript.

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Accepted for publication 8 March 2001

The Society of Apothecaries Diploma examination in Genitourinary Medicine: death of the viva voce?

Editor,—The London Apothecaries Diploma in Genitourinary Medicine is likely to become even more important in the near future as all specialist registrars and probably
many non-consultant grades will be expected to pass it as part of higher training in the speciality in the United Kingdom. It would be interesting to have some figures on the number of candidates anticipated in the near future and how this will affect the examination mechanism.

The Apothecaries Diploma Board rejected viva voce examinations some time ago as being prone to bias. This is consistent with much current research on examination techniques. Oral examinations are regarded as being inherently biased and of poor inter-examiner reliability. How much, however, is being inherently biased and of poor inter-examiner variation inherent in the viva, all candidates for the Liverpool Diploma are viva’d independently by both sets of (two) examiners. Clearly, this would be extremely inconvenient way of basing a clinical skills/data examination. Many non-consultant grades will be expected to pass it as part of higher training in the speciality in the United Kingdom. It would be uniquely the province of actors. The viva is a good mechanism to discriminate between candidates precisely because the examiner can adjust the level of difficulty of questions to the ability of each candidate. The viva is a good instrument to measure clinical thinking, ability to take a sexual history, and counselling. Role play need not be unrepresentative of the province of actors. The viva is particularly useful for borderline candidates—for example, those who are disadvantaged in essays which are notoriously dependent on proficiency in English (not to mention handwriting!). In order to reduce interexaminer variation inherent in the viva, all candidates for the Liverpool Diploma are viva’d independently by both sets of (two) examiners. Clearly, this would be extremely cumbersome and time consuming for the current and anticipated numbers taking the Apothecaries Diploma.

The venerable Apothecaries’ Hall is apparently “unsuitable” for projecting slides a convenient way of basing a clinical skills/data examination. A meatal swab for the detection of chlamydia is more acceptable than a vaginal swab and has a similar sensitivity to the traditional technique of urethral sampling. Although urine samples have the advantage of being collected non-invasively, the sensitivity of LCR testing on urine is less than for urethral samples. This may be due to the presence of inhibitors in urine. The reduced sensitivity on urine samples may be unacceptable, particularly if testing populations with a high prevalence of chlamydia infection. Furthermore processing of urine samples is more labious.

It is currently recommended that specimens for the detection of genital Chlamydia trachomatis infection by LCR are taken 2–4 cm from the urethral orifice and the swab rotated for 3.5 seconds. Many men are unable to tolerate this. It is often painful and may discourage patients from seeking medical attention.

A pilot study was conducted to compare the sensitivity of LCR testing for genital chlamydial infection in men, taken from the meatus itself against the standard technique. All male patients attending the GUM clinic over a 3 month period were included in the study if they had symptoms or signs compatible with chlamydia, or if a contact of a known case of chlamydia. A swab was taken from the urethra in the standard fashion. A second swab was taken from the meatus. After the sixth week of the study the order of the first and second swabs was changed, in order to evaluate any bias related to the order of the swabs. Specimens were processed using Abbott Laboratories LCX Chlamydia and handled according to the manufacturer’s guidelines.

Twenty five patients were asked to evaluate the swabs and to state which swab caused least discomfort or if there was no difference between them. A total of 208 men were recruited to the study. The overall prevalence of genital chlamydia infection in our population was 25% (52/208). A confirmed diagnosis was made by at least one of the samples performed from the same man were positive for chlamydia, or if one sample was positive together with an equivocal result. There were no false positive tests using these criteria giving all methods a specificity of 100%.

There was no significant difference in detection rates between the subgroups where the order of swabs was changed.

There was no significant difference in detection rates between the meatal technique and standard technique.

A meatal swab for the detection of chlamydia is more acceptable than a vaginal swab and has a similar sensitivity to the traditional technique of urethral sampling. Urine samples, although non-invasive, are less likely to yield a definitive diagnosis compared to urethral/meatal swabs and require extra processing by laboratories. In a high prevalence setting (such as a sexual health clinic), the meatal technique provides a specific, sensitive, and well tolerated sampling method for the detection of chlamydia infection in men.

Further studies to confirm our findings in symptomatic, and asymptomatic, chlamydia infection are needed before introducing this technique as routine clinical practice.

Contributors: HIL, principal investigator and author; SM, investigator and edited final draft; JLD, data collection and obtained specimens; MSH, investigator, specimen processing.

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1 Esmail A, May C. Oral exams—get them right or don’t bother. BMJ 2000;320:375.

Detection of chlamydia on meatal swabs

EDITOR,—The advent of ligase chain reaction (LCR) and other DNA technologies and techniques has allowed the development of alternative specimens for ligase chain reaction (LCR) testing first-void urine in a ligase chain reaction assay for detection of Chlamydia trachomatis and Neisseria gonorrhoeae in urine and genital swab specimens from a sexually transmitted disease clinic population. J Clin Microbiol 1998;36:1630–3.


7 Abbott Diagnostics Division. Package Insert for LCX™ Chlamydia.

Accepted for publication 8 March 2001

HIV positive and negative homosexual men have adopted different strategies for reducing the risk of HIV transmission

EDITOR,—To reduce the risk of HIV transmission, some homosexual men have adopted a strategy whereby they only have unprotected anal intercourse (UAI) with a person of the same HIV status (known as “discordant UAI”). In London, homosexual men in a relationship are more likely to know the HIV status of their UAI partner than men not in a relationship and so establish concordance. However, this was not examined for HIV positive and negative men separately. A survey conducted in January-February 2000 among homosexual/bisexual men attending one of six gyms in central London, as part of an ongoing behavioural surveillance programme, has allowed the risk reduction strategies to be considered by HIV status. A total of 792 homosexual men (median age 35 years) completed a confidential questionnaire (estimated response rate 50–60%) of whom 169 (21.3%) were HIV positive, 477 (60.2%) HIV negative, and 169 (21.3%) had never had an HIV test (data missing for 20 men). Just under half the men (55.1%) said they were currently in a relationship with another man; this did not differ significantly by HIV status (p=0.1).

Our analysis focused on how sexual risk behaviour varied both by HIV as well as by relationship status. For HIV negative and positive men, UAI was classified as either discordant (UAI with a partner of the same HIV status) or non-discordant (UAI with a partner of unknown or discordant HIV status). Men reporting more than one UAI partner were classified as discordant only if all UAI partners were of the same HIV status as themselves. Men also indicated whether they had had UAI with a main partner only, casual partner(s), or both. One third of all men (32.9%, 259) reported UAI in the previous 3 months; HIV positive men 42.1% (53/125) HIV positive, 34.7% (47/137) HIV negative (data missing for two men) (p=0.1). Overall, discordant UAI was reported by 18.7% (89) of HIV negative and 21.4% (27) of HIV positive men (p=0.4). For HIV negative men, discordant UAI was predominantly reported by those in a relationship and rarely by men who were not (28.6% vs 5.0%, p<0.001) (table 1). Concordant UAI was usually with a main partner alone. By way of comparison, HIV positive men were just as likely to report
concordant UAI whether they were in a rela-
tionship or not (22.2% vs. 20.6%, p < 0.05),
often with a casual rather than main partner.
The observation that HIV negative men were
more likely to report concordant UAI in the
context of a relationship while HIV positive men
were just as likely to report concordant UAI whether they were in a relationship or not was confirmed in a multivariate model. With HIV status and relationship as independ-
ent variables and concordant and non-concordant UAI as the dependent variables, the interactions between HIV status and relationship was highly
significant (p=0.001).
Concordance among negative men can only
be established with confidence if both
men test for HIV together. For this reason it
is difficult for HIV negative men to establish
cordance with a casual partner. On the other
hand, HIV positive men can establish
cordance with a casual or regular partner,
simply by mutual disclosure. This requires no
confirmatory test. Although sero-
concordant UAI among positive men carries
no risk of HIV transmission to an uninfect-
ed man, there is the possibility of non-
consensual and drug resistance for the
men themselves.
These data provide further evidence that
HIV positive and negative homosexual men
have both adopted HIV risk reduction strategies for the less, high risk sexual
behaviour (that is, non-concordant UAI) was
reported. Overall, non-concordant UAI was
reported by 15.8% (75) of HIV negative and
22.5% (26) of HIV positive men (p=0.05).
No significant differences were seen when strat-
fied by either relationship or HIV status
(table 1). In the multivariate model there was
no significant association between non-
concordant UAI and either HIV status
(p=0.4) or being in a relationship (p=0.7).
Non-concordant UAI was usually reported
with a casual partner with one notable excep-
tion. HIV negative men in a relationship were
equally likely to report non-concordant UAI
with a main partner alone (8.0%) as with a
casual partner (6.5%) highlighting the con-
 tinuing risk for HIV transmission between
regular partners.1 However, for most men
the risk of HIV transmission occurred in the
context of a casual sexual encounter. Surveys
done in the gyms in 1998 and 1999
revealed similar patterns of sexual risk behav-
our (data available from authors).
In conclusion, HIV negative and positive homosexual men have adopted different strategies for reducing the risk of HIV trans-
mision with their sexual partners. HIV nega-
tive men predominantly reported concordant
UAI with a main partner in the context of a
relationship while HIV positive men were
more likely to report concordant UAI with a
casual partner. HIV prevention programmes
need to reinforce risk reduction strategies,
tailored to a person’s HIV status, while
simultaneously addressing high risk sexual
behaviour.2

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negotiation in the AIDS era: negotiated safety revi
behaviour among gay men in a relation-
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drug susceptibility and response to initial
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in North America. Eighth Conference on Retrovirus and Opportunistic
Infections, Chicago, USA. Abstract number 756.
5 Davidsonov U, de Wit JBF, Stroebe W: Assessing
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6 Dodds JP, Nardone A, Mercey DE, et al. Increase in
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men, London 1996–98: cross-sectional, questiona-

Accepted for publication 8 March 2001

A mobile phone text message and
Trichomonas vaginalis

Editor,—Over the past decade vast numbers of
the general population have accepted the internet,
e-mail, and mobile phones. Among new
patients attending our centre 70.3% (90/128) of men and 73.7% (93/123) of women provide mobile telephone numbers
for contact. However, the use of mobile phones as a mechanism for contact tracing as far as I am aware has not been reported pre-
viously.
A 26 year old Afro-Caribbean man pre-
sented to our clinic and informed us that his
boyfriend had attended a GUM clinic but
unfortunately he did not know why. However,
he informed us that he had a text message on
his mobile. He duly brought up the message,
which gave the woman’s clinic number and the
KC60 diagnosis of C6A.
On examination there were no abnormali-
ties seen, there were no polymorphs on
microscopy, swabs for gonorrhoea, chlamy-
dia, and trichomomas were all clear. He was
treated with a 5 day course of metronidazole
as per MSSH guidelines.
If this patient had turned up without a
contact slip, epidemiological treatment of tri-
chomomas is unlikely to have been instituted
and contact tracing would have been impos-
sible. Thanks to the use of text messaging on
this man’s mobile, appropriate treat-
ment was initiated. Certainly patients and
health advisers appreciate the security offered
by mobile phones (no other family members
can take the calls), the instant access, and it
avoids additional paper work. The use of text
messaging and mobile phones for contact
tracing may be considered as an adjunct to
contact slips in GU clinics.

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Chaperoning male patients

Editor,—I was delighted to see the letter by
Fisk et al. in the journal. My staff and I were
becoming alarmed at the suggestion that
male patients should have a chaperone when
they are being examined by a male doctor.
Was common sense finally leaving the spe-
cialty? There are thousands of consultations
taking place throughout the country, in both
primary and secondary care, where sexual
issues are discussed. These often include a
genital examination, and just because there is
a problem found with one or two individual
patients or doctors it doesn’t mean the whole
national service has to be turned upside
down. Surely, the last thing an overworked,
under pressure, genitourinary medicine serv-
ice needs is to have another section of its
skilled staff standing idly by in a room, while
either a consultation or examination is taking
place. I have never found any difficulty in
taking the swabs on my own, and labelling the
stuff myself, and have never felt the need for
another person handing me things during a
male examination. Indeed, I could easily see
that interfering with the process at times, as
there are some issues patients feel more com-
fortable discussing on a one to one basis, and
they can feel embarrassed and hindered if
there is a chaperone present.

An occasional complaint is a small price to
pay for the 99.9% otherwise effective consul-
tations that occur. It’s lovely to see work like
this published, as it backs up the evidence base
that says we don’t need this

Table 1

<table>
<thead>
<tr>
<th>Type of partner for UAI</th>
<th>HIV negative men (n=477*)</th>
<th>HIV positive men (n=126)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Main only</td>
<td>Casual†</td>
</tr>
<tr>
<td>Men in a relationship reporting</td>
<td>27.1 (75)</td>
<td>15.4 (4)</td>
</tr>
<tr>
<td>Condom use*</td>
<td>19.8 (55)</td>
<td>6.5 (2)</td>
</tr>
<tr>
<td>Total</td>
<td>35.7 (97)</td>
<td>31.9 (87)</td>
</tr>
<tr>
<td>Men not in a relationship reporting</td>
<td>2.5 (5)</td>
<td>5.0 (10)</td>
</tr>
<tr>
<td>Condom use*</td>
<td>1.5 (3)</td>
<td>1.5 (3)</td>
</tr>
<tr>
<td>Total</td>
<td>4.0 (8)</td>
<td>6.5 (13)</td>
</tr>
</tbody>
</table>

*Data on UAI or relationship status missing for two HIV negative men.
†Men reporting casual partners only or main and casual partners. Concordant UAI reported by one partner only.
‡Men reporting UAI with a partner of unknown or predominantly with a partner of unknown HIV status.
Lichen sclerosus of the glans is significantly associated with penile carcinoma

Editor,—We read with interest the article by Riddell et al on 66 men with penile lichen sclerosus (PLS) attending a department of genitourinary medicine. In this study, the authors found no cases of malignancy. We have previously reported a retrospective study on the incidence of cancer on 86 cases of PLS retrieved from our histopathological files over a 10 year period (1987–97). In that study, five cases showed malignant transformation—namely, squamous cell carcinoma (SCC) (three cases), in situ carcinoma (one case), and verrucous carcinoma (one case).

Since that report, we decided to interview all PLS patients in order to rule out any further malignancy that occurred over time. Of 86 patients identified, 60 were evaluated at our clinic. Among these, we found three additional patients treated with partial penectomy for invasive SCC at other institutions. Their medical records were obtained together with paraffin embedded tissue samples to perform polymerase chain reaction (PCR) for human papillomavirus (HPV) testing. Clinical and laboratory information for these cases, together with previously reported patients, are summarised in table 1.

In this current study, eight (9.3%) out of 86 patients with PLS developed an epithelial cancer. Data analysis using the t test confirmed in our series a statistically significant risk of malignant degeneration ($p<0.05$). Clinically, the most common presentation of epithelial cancer arising with PLS was that of an infiltrated or ulcerated plaque followed, in decreasing order of frequency, by a nodular lesion or verrucous papules. The glans was the most commonly affected area. The average age of onset of PLS was 45 years, and that of development of cancer was 62 years. The average lag time from onset of PLS to cancer development was 18 years (range 10–34 years). This long latency time might explain the paucity of cases, mostly anecdotal, reported in the literature in the past 22 years (approximately 20) compared with our study, in which a long follow up disclosed 9.3% malignant degeneration in a series of 86 patients.

Also, the latency time was shorter in the HPV positive patients (average 15 years) compared with the HPV negative patients (average 23 years). The role of HPV in the pathogenesis of penile cancer is not fully understood. Some HPV, such as type 16 and 18, are likely to play a part, but not all penile carcinomas are HPV positive, as shown in our study. Also, PLS is not commonly associated with HPV infection. In our study we found five patients positive for HPV 16 infection, and this may have hastened the progression towards cancer resulting in a shorter lag time. However, routine HPV testing on larger series is necessary in order to draw any definitive conclusion.

Similarly to vulvar lichen sclerosus, which has been observed to undergo malignant degeneration in 3–6% of women, a likely malignant evolution of PLS should be considered. Careful and systematic histopathological evaluation of any ulcerated or indurated plaques developing within PLS is therefore strongly recommended. The association between PLS and cancer may very well therefore further investigation that includes long term follow up and routine PCR analysis for HPV infection.

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Table 1 Clinical and histopathological features of eight cases of carcinoma on penile lichen sclerosus

<table>
<thead>
<tr>
<th>Patient No</th>
<th>Age of onset of PLS (years)</th>
<th>Age of onset of Ca (years)</th>
<th>Lag time (years)</th>
<th>Site</th>
<th>Clinical aspect of malignancy on PLS</th>
<th>Histopathology</th>
<th>PCR testing for HPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1*</td>
<td>41</td>
<td>62</td>
<td>21</td>
<td>glans</td>
<td>fungating keratotic nodule with a white-yellowish hue slightly elevated verrucous papules</td>
<td>SCC</td>
<td>negative</td>
</tr>
<tr>
<td>2*</td>
<td>36</td>
<td>59</td>
<td>23</td>
<td>glans</td>
<td>multiple erythroemathous, indurated, and ulcerated plaques</td>
<td>well differentiated</td>
<td>SCC</td>
</tr>
<tr>
<td>3*</td>
<td>41</td>
<td>55</td>
<td>14</td>
<td>glans, corona sulcus</td>
<td>sharply circumscribed, erythroemathous, and ulcerated plaque</td>
<td>SCC</td>
<td>well differentiated</td>
</tr>
<tr>
<td>4*</td>
<td>39</td>
<td>49</td>
<td>10</td>
<td>glans, corona sulcus, inner aspect of the foreskin</td>
<td>sharply circumscribed, erythroemathous, and ulcerated plaque</td>
<td>SCC</td>
<td>well differentiated</td>
</tr>
<tr>
<td>5*</td>
<td>29</td>
<td>47</td>
<td>18</td>
<td>glans</td>
<td>exophytic verrucous whishinod nodule sharply circumscribed, erythroemathous, and ulcerated plaque</td>
<td>SCC</td>
<td>well differentiated</td>
</tr>
<tr>
<td>6</td>
<td>75</td>
<td>85</td>
<td>10</td>
<td>glans</td>
<td>sharply circumscribed, erythroemathous, and ulcerated plaque</td>
<td>SCC</td>
<td>well differentiated</td>
</tr>
<tr>
<td>7</td>
<td>66</td>
<td>70</td>
<td>15</td>
<td>glans</td>
<td>sharply circumscribed, erythroemathous, and ulcerated plaque</td>
<td>SCC</td>
<td>well differentiated</td>
</tr>
<tr>
<td>8</td>
<td>33</td>
<td>67</td>
<td>34</td>
<td>glans, corona sulcus</td>
<td>sharply circumscribed, erythroemathous, and ulcerated plaque</td>
<td>SCC</td>
<td>well differentiated</td>
</tr>
</tbody>
</table>

*Previously reported cases.1

PLS = penile lichen sclerosus; Ca = carcinoma; PCR = polymerase chain reaction; HPV = human papillomavirus; SCC = squamous cell carcinoma; VC = verrucous carcinoma.
<table>
<thead>
<tr>
<th>Time (in weeks of gestation)</th>
<th>1 T = 12 weeks (“Booking blood”)</th>
<th>2 T = 29 weeks</th>
<th>3 T = 33 weeks (“Booking blood”)</th>
<th>4 T = 13 weeks post partum (child presents)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hospital where blood taken</strong></td>
<td>X Blood was stored and retrospectively tested</td>
<td>Y Index antenatal test (serum not available for repeat retrospective testing)</td>
<td>Y Blood was stored and retrospectively tested</td>
<td>St Mary’s Postnatal test. Blood stored</td>
</tr>
<tr>
<td><strong>HIV antibody screening tests</strong></td>
<td>Clear negative Detect-HIV&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Clear negative</td>
<td>Weak positive</td>
<td>Strong positive</td>
</tr>
<tr>
<td></td>
<td>i OD=0.030, CO=0.144</td>
<td>i Abbot Axsym HIV 1/2 pO&lt;sup&gt;2&lt;/sup&gt; S/CO=0.42</td>
<td>OD=0.098, CO=0.252</td>
<td>OD=14.86, CO=1.00</td>
</tr>
<tr>
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<sup>1</sup>Enzyme immunoassay (EIA) for detection of antibody to HIV-1 and 2. Biochem ImmunoSystems Inc, Montreal, Quebec, Canada.

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<sup>5</sup>Passive particle agglutination test for detection of antibodies to HIV-1 and 2 Fujirebio Inc, Tokyo, Japan.

<sup>6</sup>Western blot for detection of antibodies to HIV antigens. Genelabs Diagnostics, Singapore.

<sup>7</sup>Polymerase chain reaction (PCR) for quantitative detection of HIV-1 RNA. Roche Diagnostics, Branchburg, NJ, USA.

<sup>8</sup>Signal amplification nucleic acid probe assay for quantitative detection of HIV-1 RNA. Chiron Corp Emeryville, CA, USA.

### Table 1 Peripartum HIV test results

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**Economic advantages of ligase chain reaction for diagnosis of genital Chlamydia trachomatis infection in GUM clinic attenders**

**EDITOR,—**Genital infection with *Chlamydia trachomatis* is highly prevalent and recognised as a major threat to public health. There is now a wealth of evidence to demonstrate the superiority of DNA amplification techniques over antigen detection and immunoassay. Only one large study has directly compared ligase chain reaction (LCR) with enzyme immunoassay (EIA) on identical clinical material and no studies have analysed the health economic impact of LCR in a genitourinary medicine (GUM) clinic population. We studied the diagnostic effectiveness and cost of LCR compared with EIA. All GUM attendees undergoing sexual health screening were offered the opportunity to participate. Men presenting with dysuria or urethral discharge were defined as symptomatic. Swabs were collected in a randomised order from the cervix in female patients and 4–5 cm proximal to the urethral meatus in male patients. Urethral specimens in male patients were evaluated for evidence of urethritis (defined by ≥4 polymorphs per high powered field). EIA was performed using a standard immunoassay technique (Organon Chlamydia-Tek),<sup>1</sup> with confirmation of reactive tests by microdot DIF. LCR (LCX system, Abbott Laboratories) was also performed on every specimen.<sup>2</sup> Specimens of urethral secretions were stored at –20°C. Results were confirmed retrospectively testing (Cooper Ligase Amplification, San Diego, CA, USA) and confirmed by ligase chain reaction (LCR) on CPHL.
testing positive by LCR alone were retyped by an alternative PCR assay for DNA sequences coding for the major outer membrane protein (MOMP) of Chlamydia trachomatis.

A total of 148 male and 153 female patients were tested; 23/148 (16%) swabs from male patients were testing positive by LCR alone were retested by LCR and EIA, respectively, were 100%, 100%, 100%, 100%, £4.05. Of 33 cases of chlamydial infection, 15 cases (12 (92%) in men and two (20.0%) in women) would have remained undetected if EIA had been used alone. Although EIA tests cost less than LCR, the inferior detection rate for EIA (17 patients need to be screened per case detected) compared with LCR (nine patients screened per case detected) was also included in analysis of the results. The cost per case of chlamydial infection detected using EIA in this population was £65, compared with £50 for LCR.

In a hypothetical cohort of 100 GUM attendees, with an 11% prevalence of chlamydial infection (as in the present study), testing with EIA would cost £905 and would detect 6.4 of the 11 cases. Testing the cohort with LCR would cost £564 and detect all 11 cases. The additional cost of LCR is thus £159. The additional benefit is 4.6 additional cases detected is £34.

The clinic in which the study was conducted sees 6000 new attendees annually. Had EIA been used alone, 276 cases of chlamydial infection would have been missed in a one year period, at an estimated cost of over £82 000. A full economic evaluation would require that these long term health and economic benefits are calculated and compared with other uses of NHS resources.

In summary, this study demonstrates that the overall sensitivity of LCR was double that of EIA, the previous standard diagnostic test used. Because of its improved sensitivity and increased case detection rate, the cost of LCR per case detected is equivalent to that of EIA in an urban UK GUM clinic population. Use of LCR as the diagnostic test of choice for both screening and clinical diagnosis in this setting thus represents a cost effective strategy.