planning (FPC) and termination of pregnancy (TOP) in London.¹ This may stem from inadequate education on sexual health provided in schools.

We recently looked at all new female patients aged 13–20 years attending two clinics, an FPC and a GUM clinic in Swansea. Patients were asked to complete a questionnaire concerning their knowledge of sexually transmitted diseases (STDs), contraception, and attitudes to sexual health education. Eighty five patients from each clinic were enrolled between March and October 1992. Thirty seven (43.5%) patients in the FPC group reported that they had no formal teaching on STDs and 26 (30.6%) said they had no teaching about contraception. Comparable figures for the GUM group were 49 (57.6%) and 29 (34.1%) respectively. Twenty eight (32.9%) of women in the FPC group had obtained their information on sexual health from friends compared with 31 (36.4%) in the GUM group. No or inadequate contraception was used by 10 (11.7%) and 13 (15.3%) of the FPC and GUM groups respectively. In the FPC group, 49 (57.6%) said that they would prefer to have sexual health teaching from a school nurse or teacher (cf 49.5% in the GUM group) whilst 15 (17.8%) in each group indicated a preference to be taught by a visiting doctor.

Previous research carried out in the GUM department in Swansea showed a high incidence of genital infection in adolescents and lack of effective contraception with a particularly low rate of use of condoms.² Our more recent data confirm a lack of education on both STDs and contraception in the local FPC and GUM clinic population. We agree with Radcliffe and colleagues¹ that closer integration between GUM services and family planning clinics is desirable and our figures suggest that there is a need for health education in both groups. The need for closer co-operation between the medical and teaching professions has also been highlighted in a previous study³ and our current data would support this. If we are to achieve the targets on reducing teenage pregnancies and the incidence of gonorrhoea set out in the government white paper (Health of the Nation), there is an urgent need to improve sex education in our schools.

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Audit of diagnosis of gonorrhoea at first visit to a London genitourinary medicine clinic

The rapid and accurate detection of *Neisseria gonorrhoeae* may result in reduced transmission and complications of gonococcal infection. Microscopy of Gram stained specimens remains important for early treatment of *N gonorrhoeae*. A survey at our clinic demonstrated that the sensitivity of microscopy for gonorrhoea was lower than the 70% detection rate for cervical infection and 50% detection rate for rectal infection reported in previous studies.^{1,2} Therefore, we undertook an audit to establish the sensitivity of microscopy in the diagnosis of *N gonorrhoeae* and to identify any factors associated with reduced accuracy of diagnosis.

The results of microscopy of all Gram stained smears were compared with cultures taken to diagnose gonorrhoea over a one year period. In addition, over a three month period the chief Medical Laboratory Scientific Officer (MLSO) reviewed all slides from specimens which proved culture positive for *N gonorrhoeae* but on which no gonococci were detected by nursing staff. The MLSO assessed the specimen content, spreading and staining of the slides. The notes of 96 of 114 cases of gonorrhoea presenting during this three months were reviewed. The slides on which Gram negative intracellular diplococci were identified by nursing staff, but for which the *N gonorrhoeae* culture was negative, were regarded as true positives when the findings were confirmed by the chief MLSO. The slides on which "suspicious pairs" of diplococci were seen were regarded as positive, as this increased sensitivity of the test and maintained adequate specificity.

The sensitivity, specificity and positive predictive value of the tests under scrutiny are presented in the table.

The chief MLSO detected *N gonorrhoeae* in 16 of 25 specimens in which no gonococci were identified by nursing staff. One third of slides were considered inadequate by the chief MLSO; 66% of rectal slides were contaminated with excess faecal flora, 30% of cervical with excess vaginal flora, 15% were poorly stained and 5% had insufficient quantities of specimen.

Case note review demonstrated that 46 (96%) of 48 cases of symptomatic urethral infection and 7 of 9 cases of symptomatic rectal infection were diagnosed by Gram stained smear. Of the 96 patients, fourteen reported that they were contacts of gonorrhoea, 10

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Table Sensitivity, specificity and positive predictive value of Gram stained smear to detect *N gonorrhoeae*

Micro/Cult	♂Urethral n = 6451	♂Rectal n = 1355	♀Urethral n = 5903	♀Cervical n = 6122	♀Rectal n = 51
+/+	231	40	7	8	0
sp/+	5	6	3	4	0
+/-	12	6	7	6	1
sp/-	4	10	1	1	2
-/+	28	80	30	41	3
-/-	6171	1213	5855	6062	45
Sensitivity	89%	40%	25%	29%	0%
Specificity	99%	98%	99%	99%	—
Positive Predictive Value	0.98	0.83	0.94	0.95	0.3
Sensitivity at re-audit	76%	41%	36%	38%	50%

sp = suspicious pairs; micro = microscopy; cult = culture.

(71%) of which were diagnosed by Gram stained smear.

The findings were presented to the clinic staff and it was recommended that particular care should be taken to clean the cervix prior to sampling and that rectal samples should be taken from "clear" areas of mucosa at proctoscopy in order to reduce the proportion of inadequate slides. In addition, nursing staff should practice microscopy with known positive slides and have regular training in Gram stain technique. The audit was then repeated over the next three months. No significant difference was found in the detection rates of gonorrhoea on repeating the audit (see table). The male rectal and female "specimen" diagnosis rates had improved but the small numbers of cases means that a statistically significant difference will be difficult to achieve.

This study shows that although the detection rate for gonorrhoea in male urethral specimens was satisfactory, the detection rates in female and rectal slides remained poor by comparison with a similar study conducted at this centre in 1973.² It should be noted, however, that in 1973 there were 441 cases of gonorrhoea in women and in 1991 only 70. Interestingly, comparison of the sensitivity of microscopy performed by MLSOs in a genitourinary service allied to our centre under clinic conditions showed no significant difference from the study presented. Improvement in the diagnosis rate was found in those cases of symptomatic infection, as has been described by previous surveys,³ in those cases known to be contacts of gonorrhoea, and when suspicious pairs seen on microscopy were regarded as positive findings. Finally, we would re-emphasize the importance of careful specimen taking by the attending physician and of continual in-post training for those performing microscopy, especially where positive findings are few.

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High level ciprofloxacin resistance in *Neisseria gonorrhoeae*

Neisseria gonorrhoeae has been regarded as highly susceptible to ciprofloxacin (MIC₉₀: < 0.025 mg/l). Limited clinical resistance to ciprofloxacin^{1,2} and other quinolone antibiotics has been reported (MIC₉₀: < 0.125 mg/l).³ In November 1993 we isolated *N gonorrhoeae* from an infection acquired in northern Spain which expressed levels of resistance to ciprofloxacin more commonly associated with *Enterobacteriaceae* (MIC₉₀: 16mg/l). In this region, markedly increased resistance has been linked recently with widespread medical and veterinary use of quinolones.⁴ We briefly describe the clinical and bacteriological findings of the case.

A 37 year old seaman presented at the department of genitourinary medicine with an urethral discharge and dysuria which had begun one week previously. He gave a history of vaginal sexual intercourse with an unknown prostitute in Bilbao, Spain, 24 hours before the onset of symptoms. His previous sexual intercourse had taken place 10 months earlier. Six days before presentation, he had commenced oral ciprofloxacin, 250 mg twice daily for five days without improvement. Examination confirmed the presence of a purulent urethral discharge and an urethral smear showed intracellular Gram-negative diplococci. He was treated with 1.5 g cefuroxime intramuscularly followed by oral doxycycline 100mg twice daily for seven days.

B-lactamase producing *N gonorrhoeae* was isolated from the urethral swab. On susceptibility testing, no zones of inhibition were obtained with nalidixic acid (30 µg) or ciprofloxacin (1 µg and 5 µg) discs. The MIC to ciprofloxacin was 16.0 mg/l (plate incorporation method). By disc diffusion tests, the