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# Primary care of patients with sexually transmitted diseases or genitourinary symptoms in Hong Kong

## 探討醫生為性病和呈泌尿生殖系統疾病徵狀的香港病人提供的基層醫護服務

**Objectives.** To determine the adequacy of care received from general practitioners by patients with sexually transmitted diseases or genitourinary symptoms.

**Design.** Prospective study.

**Setting.** Hong Kong.

**Participants.** Diagnoses and drug data obtained from logbooks submitted by doctors studying for the Diploma in Family Medicine and candidates for Fellowship examinations between 1999 and 2002.

**Main outcome measures.** Diagnosis or symptom of a sexually transmitted disease and prescribed treatment.

**Results.** Sexually transmitted diseases and genitourinary symptoms accounted for 1.1% of the workload of these community doctors in Hong Kong. The majority of patients were young adult males. The overall standard of treatment was inadequate: both multi-pharmacy and inappropriate treatment was common; in up to 30% of cases, doctors ignored local or international guidelines.

**Conclusion.** Primary care doctors play an important role in the diagnosis and management of sexually transmitted diseases or genitourinary symptoms in Hong Kong. A high index of suspicion should be maintained and continuing education made available if doctors are to provide an equally high standard of care.

### Key words:

Primary health care;  
Quality of health care;  
Sexually transmitted diseases

### 關鍵詞：

基層醫護；  
醫護質素；  
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**目的：**探討全科醫生對患有性病或呈泌尿生殖系統疾病徵狀的病人提供的醫療服務是否足夠。

**設計：**前瞻性研究。

**安排：**香港。

**參與者：**1999至2002年間考取家庭醫學文憑的醫生以及院士試的考生，以其工作日誌上斷症及處方藥物的數據作研究。

**主要結果測量：**性病的診斷或病徵以及處方治療。

**結果：**性病和泌尿生殖系統疾病徵狀約佔參與研究的社區醫生工作量的1.1%，病人主要是年輕成年男士。研究顯示普遍的治療水準並不足夠，多重處方和治療不足的情況也十分普遍。當中，醫生在處理病症時無視本港或國際指引的個案佔30%。

**結論：**提供基層醫護的醫生，在診斷和治療香港性病和泌尿生殖系統疾病上擔當重要角色。要提供高水準的護理，醫生對這類疾病必須保持高度警覺，並持續進修不輟。

### Introduction

Sexually transmitted diseases (STDs) are a major public health concern

in Hong Kong, especially in the wake of a rapid increase in STDs and HIV cases in China.<sup>1,2</sup> Recent increased integration and cross-border activities have facilitated a thriving sex industry. Sex services in China are easily accessible and cheap, and there are increased numbers of illegal immigrants working as sex workers in Hong Kong.<sup>3</sup> Notification of STDs in Hong Kong is restricted to hepatitis B. Thus there is no official record of the prevalence of other STDs in the community. Statistics from the government-run social hygiene clinics showed a 2.4 times increase in new STD cases between 1991 and 1999 while primary syphilis increased by a factor of 14.7 over the same period.<sup>4</sup> This may be only the tip of the iceberg: a 1997 survey of all registered medical practitioners in Hong Kong revealed that 80% of patients with an STD were seen by private doctors who are not known to the government.<sup>5</sup> Three specialties took care of 90% of these cases: family medicine, dermatology, and gynaecology.

In Hong Kong, more than two thirds (70%) of primary care is provided by the private sector.<sup>6</sup> The cost of any laboratory test is thus borne by the patient. Few patients are able or willing to pay for laboratory testing that will confirm a precise diagnosis of an STD, especially when management by a syndromic approach achieves a high cure rate<sup>7,8</sup> and is also cost-effective. In order to optimise treatment at the patient's first medical contact and in an attempt to standardise STD care and replace a plethora of ineffective regimens, the Department of Health (DH) circulated guidelines on the management of common genitourinary infections using a syndromic approach in July 1998 and again in 2001 to all doctors registered with the Medical Council of Hong Kong (<http://www.info.gov.hk/aids>).

Doctors in Hong Kong have different prescribing habits to their colleagues in other developed countries.<sup>9</sup> To date there has been no systematic analysis of the prescribing pattern of primary care doctors for the treatment of STDs or genitourinary symptoms. These two were identified rather than a single diagnosis so that an overview could be obtained of the problems experienced by primary care doctors. Information about the extent of the problem and standard of primary care is not readily available. We used a database obtained for other purposes: logbooks provided by the examinees of the Hong Kong College of Family Physicians and participants of the Diploma in Family Medicine course at the Chinese University of Hong Kong between 1999 and 2002. All records of patients between 11 and 80 years old were analysed.

## Participants and methods

Logbooks that contained data linking diagnosis and prescribed treatment from two sources began in 1999: examinees of the Hong Kong College of Family Physicians and an audit programme conducted as part of a postgraduate Diploma in Family Medicine.

Candidates for the examination of the Hong Kong College of Family Physicians include recent graduates of a 4-year training programme and 'practice eligible' candidates who may have been practising for many years. Candidates were required to provide a logbook that recorded 100 consecutive consultations with corresponding diagnosis and prescribed treatment. Permission to analyse these (without individual identification) was obtained from the Board of Examination of the Hong Kong College of Family Physicians. Students completing the postgraduate Diploma in Family Medicine course comprised community doctors with at least 2 years' experience from a wide range of backgrounds: DH and Hospital Authority clinics, non-governmental organisations, solo and group private practices. These students completed a logbook of 50 consecutive cases and noted age, sex, and diagnosis of the patient and drugs prescribed. A short questionnaire describing demographic and clinical practice characteristics was also completed.

Diagnoses were coded using the International Classification of Primary Care (Version 2) [ICPC-2]<sup>10</sup> and drugs were coded using the WHO Anatomical Therapeutic Chemical classification.<sup>11</sup> The ICPC-2 has been adapted for primary care use, and allows doctors to state the patient's reason for consultation, for example, abnormal sensation or discomfort, or a diagnosis. The ICPC-2 coding was done by medical students and drug coding by pharmacy students under the authors' supervision. Data were entered in duplicate by two individuals and then randomly selected for inspection to ensure accuracy. Discrepancies were resolved by research staff and checked by the authors if necessary. The final dataset was analysed using the Statistical Analysis System (Windows version 8, SAS Institute Inc, Cary, US). All patients with a defined genitourinary symptom or diagnosis of an STD were selected (X70-71, 74, 84, 90-92, and Y03, 25, 70-74, 76) [Table 1]. Diagnoses were tabulated and compared according to which category of doctor made the diagnosis using calculations for odds ratios (ORs) and confidence intervals: public or private doctor, examinees or practising family physician, male or female doctor, male or female patient, and doctors graduated from different places. Any treatment that fulfilled the rec-

**Table 1. The International Classification of Primary Care (ICPC) for sexually transmitted diseases or genitourinary symptoms**

ICPC code	Diagnosis
X70	Syphilis, female
X71	Gonorrhoea, female
X74	Pelvic inflammatory disease
X84	Vaginitis/vulvitis
X90	Genital herpes, female
X91	Condylomata acuminata, female
X92	Chlamydia infection, genital
Y03	Urethral discharge
Y25	Fear of sexually transmitted disease, male
Y70	Syphilis, male
Y71	Gonorrhoea, male
Y72	Genital herpes, male
Y73	Prostatitis/seminal vesiculitis
Y74	Orchitis/epididymitis
Y76	Condylomata acuminata, male

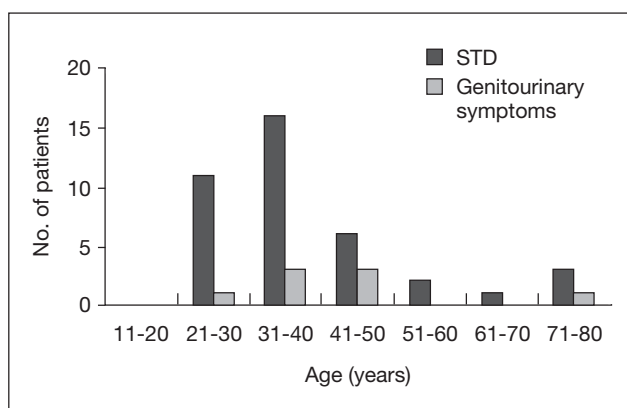
**Table 2. Characteristics of doctors and patients**

	Doctors, n=191	Patients, n=9503
Mean age (years)	37.8	41.3
Age range (years)	27-65	11-80
Sex*		
Male	156	4170
Female	35	5330
Places of graduation†		
Hong Kong	120	-
Mainland	33	-
Western countries	34	-
Others	2	-
Sector‡		
Private	131	5901
Public	59	3561

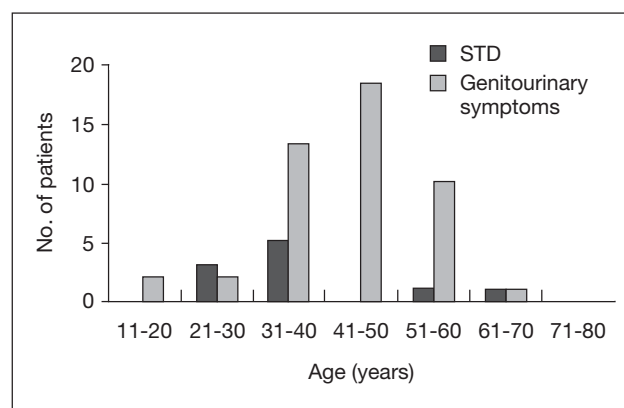
\* Data were missing for 3 patients

† Data were missing for 2 doctors

‡ Data were missing for 1 doctor and 41 patients



**Fig 1. Male patients with a diagnosis of a sexually transmitted disease (STD) or genitourinary symptoms**



**Fig 2. Female patients with a diagnosis of a sexually transmitted disease (STD) or genitourinary symptoms**

ommendations made in any of the published guidelines (DH,<sup>12</sup> Centers for Disease Control and Prevention [CDC], US,<sup>13</sup> or Association for Genitourinary Medicine, UK [UK guidelines<sup>14</sup>]) was regarded as appropriate. This included prescription of systemic antibiotics, and antifungal or antiviral drugs. If treatment included one recommended drug sufficient to treat a particular STD, it was considered adherence to the guideline.

## Results

Logbooks were completed by 191 (male, 81.7%) doctors. Table 2 shows the characteristics of doctors and the number of patients in this dataset. There were 9503 consultations for patients aged between 11 and 80 years old, of whom 56.1% were female. The total number of diagnoses was 11 974 in the dataset and the number of drugs prescribed per patient was 2.63 (standard deviation, 1.40).

Doctors diagnosed 49 (10 female, 39 male) patients with a definite STD and 54 (46 female, 8 male) patients with genitourinary symptoms. Three patients had two STD diagnoses. This represented 1.1% of the total workload. Figures 1 and 2 show the numbers and proportion of diagnoses by age and sex. The morbidity of STDs or genitourinary symptoms in both male and female patients was similar. In terms of age of both sexes, nearly half of STDs and genitourinary symptoms occurred in patients aged 31 to 40 years. Incidence of which rose from 1.40% in those aged between 21 and 30 years, to 1.93% in those aged between 31 and 40 years, dropping after the age of 50 years. A diagnosis of a genitourinary syndrome or STD was made by 67 (47 male and 20 female) doctors. Female doctors were twice (OR=2.40) as likely to diagnose an STD as their male colleagues (Table 3), and doctors trained in Mainland China (OR=2.16) and in the West (OR=1.60) diagnosed and

**Table 3. Diagnosis of sexually transmitted diseases (STDs) or genitourinary (GU) symptoms according to characteristics of doctors**

Characteristic of doctors	Diagnosis of GU symptoms			Diagnosis of STDs		
	Yes (No. [%])	No (No. [%]) <sup>†</sup>	OR <sup>‡</sup> (95% CI)	Yes (No. [%])	No (No. [%])	OR (95% CI)
Groups						
DFM*	80 (1.0)	7739 (99.0)	1.66 (1.06-2.59)	37 (46.3)	43 (53.7)	0.73 (0.30-1.79)
Trainee	26 (0.6)	4173 (99.4)		14 (53.8)	12 (46.2)	
Sex						
Female	36 (1.7)	2103 (98.3)	2.40 (1.60-3.60)	12 (33.3)	24 (66.7)	0.40 (0.17-0.92)
Male	70 (0.7)	9809 (99.3)		39 (55.7)	31 (44.3)	
Female doctors						
Female patients	30 (2.0)	1439 (98.0)	2.30 (0.95-5.55)	7 (23.3)	23 (76.7)	0.06 (0.0061-0.61)
Male patients	6 (0.9)	662 (99.1)		5 (83.3)	1 (16.7)	
Male doctors						
Female patients	28 (0.5)	5280 (99.5)	0.57 (0.35-0.92)	4 (14.3)	24 (85.7)	0.03 (0.0098-0.13)
Male patients	42 (0.9)	4527 (99.1)		35 (83.3)	7 (16.7)	
Place of graduation						
Mainland	26 (1.5)	1740 (98.5)	2.16 (1.34-3.46)	16 (61.5)	10 (38.5)	2.18 (0.83-5.71)
Western countries	28 (1.1)	2525 (98.9)	1.60 (1.01-2.54)	13 (46.4)	15 (53.6)	1.18 (0.47-2.98)
Hong Kong	52 (0.7)	7503 (99.3)		22 (42.3)	30 (57.7)	
Sector						
Public	39 (0.8)	4797 (99.2)	0.86 (0.58-1.27)	15 (38.5)	24 (61.5)	0.54 (0.24-1.20)
Private	67 (0.9)	7066 (99.1)		36 (53.7)	31 (46.3)	

\* Diploma in Family Medicine

<sup>†</sup> Data were missing in some logbooks<sup>‡</sup> OR odds ratio

treated STDs or genitourinary symptoms more frequently than the Hong Kong graduates. There was no statistically significant difference between private and public doctors.

Treatment for STD or genitourinary symptoms varied from advice only to multiple prescriptions for up to six drugs with an average of 1.99 prescriptions per patient. Tables 4a and 4b show the numbers and types of medication used for each category of STD or genitourinary symptom in men and women, respectively. Treatment according to DH, CDC, or UK guidelines was prescribed to 36 (75.0%) of the 48 males and 41 (70.7%) of the 58 females with an STD or genitourinary symptoms. Two of the seven antibiotics prescribed to treat gonorrhoea, and six of the nine prescribed for non-specific urethritis were not recommended by any of the guidelines. Guidelines were ignored when treating epididymitis. Acute prostatitis, a serious and severe illness, was grossly undertreated. One patient with gonorrhoea received four antibiotics (doxycycline, erythromycin, ceftriaxone, and ofloxacin): the last two were recommended by the guidelines. Ceftriaxone that should be injected intramuscularly for 10 days was prescribed to a single patient with syphilis. The UK guidelines recommend it only for penicillin-allergic patients: even in these circumstances, oral doxycycline or erythromycin is an acceptable alternative. The CDC and DH guidelines recommend acyclovir in the treatment of primary

herpes infection, or in immunocompromised patients, yet it was prescribed to all patients with genital herpes.

Table 4b shows that vaginitis was the most common condition in female patients, accounting for 67.9% (n=38) of all female STDs or genitourinary symptoms. The DH guidelines recommend treatment with oral metronidazole or tinidazole and a topical antifungal. Only three (7.9%) patients were prescribed metronidazole while six (15.8%) were given four or more drugs. Seven other non-recommended antibiotics accounted for 17 other prescriptions handed to these patients. A wide range of creams with different combinations and constituents including steroid were used. In four patients with a diagnosis of pelvic inflammatory disease, only two (50%) received adequate treatment according to the CDC and UK guidelines.

## Discussion

Sexually transmitted diseases and genitourinary symptoms accounted for 1.1% of the workload of these general practitioners in Hong Kong, a proportion matches that of common conditions (eg dyspepsia or low back pain) encountered in primary care settings.<sup>15</sup> Sexually transmitted diseases were most commonly diagnosed in young male adults, but were rare in adolescents (male and female). Women were more likely to receive a diagnosis of genitourinary symptoms whereas men were likely to be diagnosed with an

**Table 4a. Prescribed treatment compared with recommended treatment in male patients with sexually transmitted diseases or genitourinary symptoms\***

Diagnosis	No. of patients	Mean No. of drugs (range)	Treatment	No. of patients	Recommendation <sup>†</sup>		
					DH	CDC	UK
Condylomata acuminata	8	1.0 (1.0-2.0)	• Cryotherapy/liquid nitrogen	3	√	√	√
			• Imiquimod	2	√	√	√
			• Podophyllotoxin	2	√		√
Genital herpes	5	1.2 (1.0-2.0)	• Acyclovir	5	√	√	√
Gonorrhoea	14	2.4 (1.0-5.0)	• Ceftriaxone	4	√	√	
			• Cefibuten	1	√		
			• Ofloxacin	2		√	√
			• Ciprofloxacin	1		√	√
			• Doxycycline	9			
			• Spectinomycin	5	√		
			• Erythromycin	1			
Non-gonorrhoeal urethritis	10	2.1 (1.0-4.0)	• Doxycycline	5	√	√	√
			• Tetracycline	1	√		
			• Ciprofloxacin	3			
			• Norfloxacin	2			
			• Azithromycin	1	√	√	√
			• Spectinomycin	2			
			• Nitrofurantoin	1			
			• Ceftriaxone	1			
			• Cefuroxime	2			
Orchitis/epididymitis	1	4.0	• Ampicillin and cloxacillin	1			
Prostatitis/seminal vesiculitis	1	2.0	• Doxycycline	1			
Syphilis	1	1.0	• Ceftriaxone	1			
Urethral discharge	4	2.8 (2.0-5.0)	• Ceftriaxone	1			
			• Cefotaxime	1			
			• Azithromycin	1			
			• Ofloxacin	1			
			• Doxycycline	1			
			• Metronidazole	1			
			• Amoxycillin	1			
Haemospermia	2	2.0 (2.0-2.0)	• Erythromycin	1			√
			• Levofloxacin	1	√		
Suspected of sexually transmitted disease	2	2.5 (1.0-5.0)	• Amoxycillin	1			
			• Clotrimazole	1		√	
			• Doxycycline	1		√	
			• Metronidazole	2		√	

\* Some patients had more than one diagnoses or received more than one medications

† DH denotes Department of Health, and CDC Centers for Disease Control and Prevention

STD. Female doctors or doctors trained in the West or Mainland China were more likely than their male colleagues or Hong Kong graduates to diagnose genital symptoms in female patients. Doctors were more likely to diagnose an STD or genitourinary symptoms in patients of the same sex as themselves.

This reflects the strong sex preferences of patients who will, when possible, select a doctor of the same sex for such a consultation. Treatment was nonetheless often inadequate: both multi-pharmacy and inappropriate treatment were common; a significant number of prescriptions followed neither local nor

**Table 4b. Prescribed treatment compared with recommended treatment in female patients with sexually transmitted diseases or genitourinary symptoms\***

Diagnosis	No. of patients	Mean No. of drugs (range)	Treatment	No. of patients	Recommendation <sup>†</sup>		
					DH	CDC	UK
Cervicitis	1	3.0	• Clotrimazole	1			
			• Doxycycline	1		√	
			• Gentamicin	1			
Condylomata acuminata	2	2.0 (2.0-2.0)	• Fusidic acid	1			
Genital herpes	2	2.0 (2.0-2.0)	• Acyclovir	2	√	√	√
Genital trichomoniasis	3	1.3 (1.0-2.0)	• Metronidazole	3	√	√	√
Pelvic inflammatory disease	4	2.5 (2.0-3.0)	• Ciprofloxacin/ceftriaxone/cefoxitin with probenecid + doxycycline +/- metronidazole	1		√	√
			• Levofloxacin/ofloxacin +/- metronidazole	1		√	√
			• Doxycycline	1			
			• Metronidazole	2			
			• Amoxicillin	1			
Vaginitis	38	2.3 (0-6.0)	Antibiotics				
			• Metronidazole	3		√	√
			• Clindamycin	1		√	√
			• Gentamicin	1			
			• Doxycycline	1			
			• Norfloxacin	1			
			• Ampicillin	3			
			• Chloramphenicol	1			
			• Cefuroxime	1			
			• Septrin	1			
			Antifungal/candidiasis				
			• Clotrimazole	16			√
			• Tioconazole	3			√
			• Nystatin	2		√	
			• Miconazole	1			√
			• Ketoconazole	5			
			Cream				
			• Antifungal and antibiotics cream	6			
			• Steroid cream	4			
			• Antibiotics, steroid, and antifungal cream	3			
• Steroid and antibiotics cream	3						
• Antibiotics cream	1						
• Metronidazole/tinidazole + Clotrimazole pessary	3		√				
• Tioconazole pessary	1		√				
Vaginal discharge	6	1.4 (0-4.0)	• Nystatin (treatment of vaginitis)	1	√		
			• Metronidazole (treatment of vaginitis)	1	√	√	
			• Clotrimazole	1		√	
			• Amoxicillin	1			
			• Ampicillin	1			
Genital pain	2	2.0 (1.0-3.0)	• None of drugs related to pain control in genitourinary symptoms				

\* Some patients had more than one diagnoses or received more than one medications

† DH denotes Department of Health, and CDC Centers for Disease Control and Prevention

international guidelines. Inadequate treatment of conditions, such as pelvic inflammatory disease or prostatitis is particularly alarming because of the potential serious repercussions.

An ideal study would contain a random sample of doctors and patients, but this is impossible to obtain from the predominantly private primary care delivery system that exists in Hong Kong if doctors do not receive some incentive. In Australia, doctors who take part in the Breach Project receive continuous medical education points.<sup>16</sup> In the UK, a contractual relationship exists between general practitioners and the government. In Hong Kong nonetheless, the large number of randomly selected patients seen by a large number of doctors (although selected) should overcome this difficulty. The large number and variety of problems seen in this dataset were similar to the only previous major morbidity study in Hong Kong.<sup>15</sup> The participating doctors in this study were a self-selected group who were paying substantial fees, taking their own time to attend and study for a postgraduate course.<sup>17</sup> Thus, they probably represent a proportion of Hong Kong doctors keen to practise the best medicine possible: the overall performance of all doctors in primary care practice is probably worse. Another limitation of this study is that non-pharmacological treatments, such as counselling, contact tracing, and laboratory tests were not included.

Sexual issues remain an embarrassing social taboo in a conservative Chinese society like Hong Kong.<sup>18,19</sup> Doctors who graduated from the West and China diagnosed and treated STDs more often than the Hong Kong graduates. It is possible that patients with an STD were more likely to choose a Mainland or western-trained doctor over a Hong Kong graduate. Alternatively, Mainland or western-trained doctors may have been better at diagnosing these conditions. The problem in a society of STDs has recently been the focus of much publicity in China and in the West, and a lot of attention is focused on the management and treatment of STDs.<sup>20</sup> More training to improve doctors' communication skills and the ability to initiate and discuss sensitive topics, such as taking a sexual history, is strongly recommended at undergraduate and postgraduate levels of medical education.

The doctors in this study used many 'new drugs', such as ceftriaxone, ceftibuten, and spectinomycin. This may reflect the ability of pharmaceutical companies to influence prescribing habits by powerful and persuasive advertising where side-effects, cost-effectiveness, and induction of resistance caused by

these broad-spectrum drugs are downplayed.<sup>21</sup> Contrary to this, some doctors persisted in prescribing drugs like ciprofloxacin that has high local resistance.<sup>22</sup> Other drugs are potentially dangerous and no longer recommended in most developed countries except in specific situations. They include chloramphenicol,<sup>23,24</sup> clindamycin,<sup>25</sup> and injections of gentamicin. Alternative and better antibiotics are available.

The risk of acquiring a sexually transmitted infection is largely dependent on sexual behaviour, so promotion of safe sexual conduct, both at a societal level and during individual consultations, is vital. The DH should include major STDs in its infectious diseases surveillance programme. The problem may also be better controlled by the introduction of screening programmes for high-risk individuals and removing the discriminatory culture towards STDs and STD sufferers.

Adherence to standard STD management guidelines varies around the world: 65% to 81% in Botswana's primary health care system,<sup>26</sup> and 94% to 98% in Western Australia and two managed-care organisations in the US.<sup>27,28</sup> It appears that there is room for improvement in Hong Kong with its rate of 70% to 75% adherence to guidelines.

Making a specific diagnosis of an STD is often difficult, thus a syndromic approach is recommended. This allows a likely effective treatment plan to start immediately without a host of laboratory tests that are often unavailable for frontline doctors or expensive for patients.

It is important to recognise the stigma associated with attending a genitourinary clinic.<sup>29,30</sup> They also have a limited capacity and operate at inconvenient times for many patients who work long hours. Private primary care clinics are open for longer periods of time, 7 days a week. Rather than persisting with the current policy that requires doctors to refer patients to specialist clinics, primary care doctors should be taught the best way to detect and treat these infections. Workshops run by the DH should be organised regularly and up-to-date treatment guidelines made available. Effective treatments should be made easily available if the current STD epidemic is to be brought under control.

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## Corrigendum

“A prospective evaluation of health-related quality of life in Hong Kong Chinese patients with chronic non-cancer pain” (June 2005;11:174-80). We have been informed by the authors of this article that the Chinese name of Dr A Lee should have been the following:

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