

Original Article

Partner notification for gonorrhoea in Hong Kong

香港的淋病性伴通知法

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Partner notification (PN) has been used to control the spread of sexually transmitted diseases in Hong Kong. A multi-centre prospective study was carried out to determine the effectiveness of PN in gonorrhoea patients diagnosed in Social Hygiene Service. Eight hundred and twelve patients were newly diagnosed with gonorrhoea in the six month study period. The proportion of outstanding contacts screened was 10.0%, while the proportion of patient referral which resulted in verified contact attendance was 52.8%. The proportion of elicited partners who were newly diagnosed was 30% and the brought-to-treatment index was 16%. This study showed that the efficacy of PN system for gonorrhoea patients adopted by Social Hygiene Service was comparable to international standard.

香港一直沿用性伴通知法以控制性病的傳播。為了判定在社會衛生科診所診斷有淋病的病人當中性伴通知法的成效，我們進行了一項多中心前瞻性研究。在6個月中，共有812名病人新診斷為淋病。當中10.0%為顯著接觸者。由病人通知所得的確實接觸者就診率為52.8%。尋出病人中患新症者佔30%，導治率為16%。本研究顯示社會衛生科性伴通知法的成效與國際水平相若。

Keywords: Gonorrhoea, partner notification

關鍵詞：淋病，性伴通知法

Introduction

Partner notification (PN) of sexually transmitted diseases (STDs), also known as contact tracing is the process by which partners of individuals with

an infectious STD are notified, advised of their exposure and offered treatment. In as early as 1936 in US, the tracing of sexual partners was regarded as an important element of syphilis control as it "breaks the chain of transmission".¹ However, the public health effectiveness of PN remains contentious, as high quality trials with large sample sizes and sophisticated methods of randomisation both in Hong Kong and the rest of the world were lacking.

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Objectives

The main aims of the study were to evaluate the effectiveness of PN in gonorrhoea patients via

patient referral by the Social Hygiene Service and to identify the key factors affecting the success of PN in this group of patients.

Method

Patients newly diagnosed with gonorrhoea in all the eight Social Hygiene Clinics (SHCs) in Hong Kong (Chai Wan Social Hygiene Clinic, Wan Chai Male Social Hygiene Clinic, Wan Chai Female Social Hygiene Clinic, Yaumatei Male Social Hygiene Clinic, Yaumatei Female Social Hygiene Clinic, Yung Fung Shee Social Hygiene Clinic, Tuen Mun Social Hygiene Clinic and Fanling Integrated Treatment Centre) between 1st July 2005 and 31st December 2005 were included in the study. Gonorrhoea is defined either by a positive smear of exudates from the urethra, cervix or rectum showing polymorphs with intracellular gram-negative diplococci or culture using Thayer-Martin medium.

After a patient was diagnosed to have gonorrhoea, he/she was then given a PN note to pass on to his or her partner(s), inviting the partner to attend SHC for medical consultation on a voluntary basis. Data for PN outcomes were collected prospectively during follow-up sessions. The data were recorded on a structured data collection proforma and updated at each interview by the health advisors. The cut-off time for defining failure was set at four months after the STD diagnosis was first made.

This study used the following measures to evaluate the effectiveness of PN:

1. **Proportion of outstanding contacts screened:** This is equal to the number of partners returned divided by the total number of partners referred plus the number of patients with no traceable partners. Therefore, a high proportion of contacts screened is indicative of an effective PN program.
2. **Proportion of patient referral which resulted in verified contact attendance:** This is calculated by dividing the number of partners

returned by the number of PN notes given out. Thus, the higher the proportion, the more successful the PN program.

3. **Proportion of elicited partners who were newly diagnosed:** This is equal to the number of partners newly diagnosed with STD divided by the number of partners elicited or investigated.
4. **Brought-to-treatment index:** This is equal to the number of partners newly diagnosed with STD divided by the number of cases interviewed for PN.²

Results

Patient demographics

Seven hundred and eighteen male patients and 85 female patients (excluding female sex workers) were newly diagnosed with gonorrhoea in the study period. An additional 9 subjects were female commercial sex workers (CSW). The male to female ratio, excluding the CSW, was 8.45 to 1 (Figure 1). Four hundred and twenty-two patients were aged over 40, accounting for around half of the study population. Only 22 patients (2.7%) were aged below 20 (Figure 2).

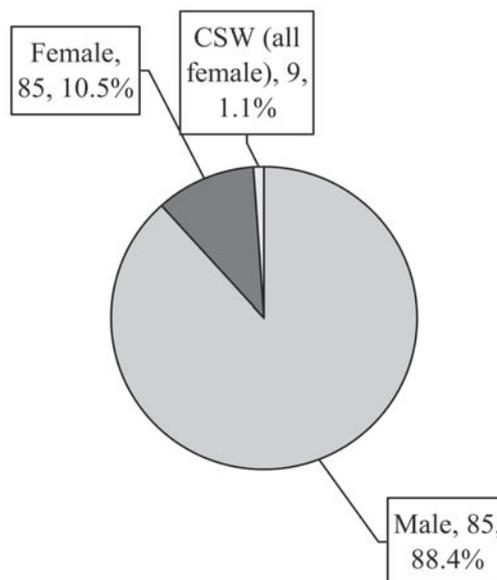


Figure 1. Gender composition of the 812 patients.

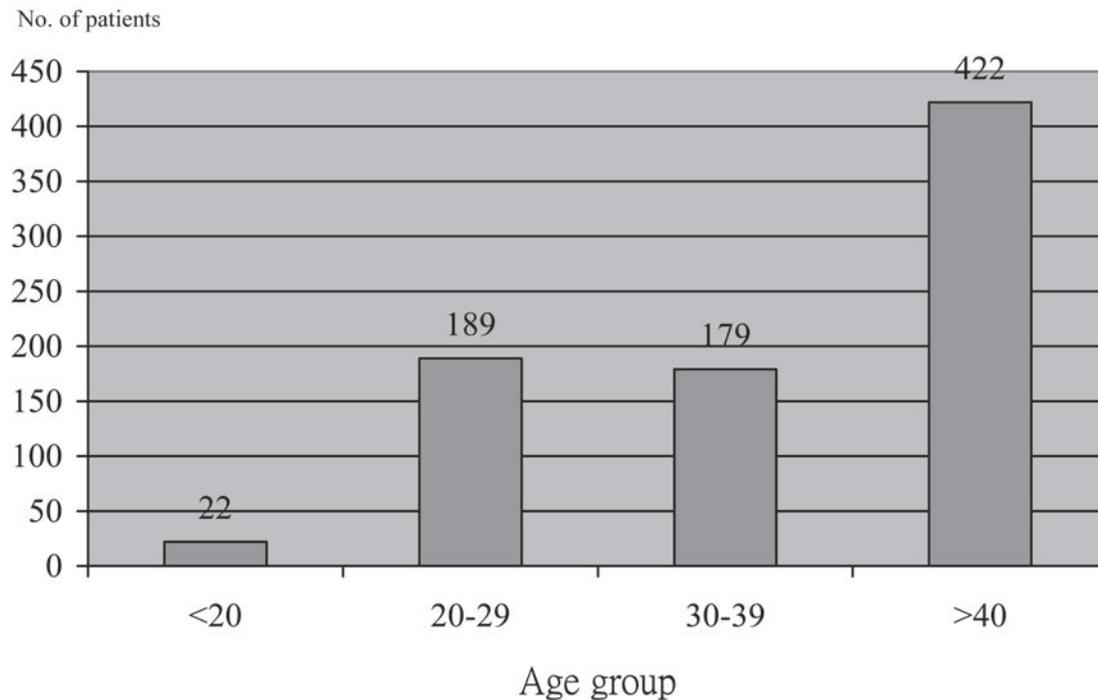


Figure 2. Age distribution of the 812 patients.

Outcome of partner notification

Figure 3 is a flowchart illustrating the outcome of PN in this study. All patients received counseling by health advisors and it was found that 384 patients (47.3%) had traceable partners while 428 (52.7%) did not have traceable partners.

For the patients with traceable partners, 152 (39.4%) of them rejected the PN notes and refused to provide information about their partners. One hundred and twenty-five patients (32.6%) accepted the PN notes. A further 107 patients (27.9%), who either had partners located outside Hong Kong or only agreed to inform their partners verbally to attend medical consultations, were given verbal advice (Figure 3).

Among the partners of the patients, 66 (28.4%) returned to SHCs for medical consultations and 47 (20.3%) attended general practitioner or other doctors. Eighty-one patients (34.9%)

defaulted follow-up and therefore it was not clear whether their partners were notified. Twelve patients (5.2%) no longer had contact with their partners.

Effectiveness indices

Table 1 shows the outcome of PN in patients with gonorrhoea. The proportion of outstanding contacts screened was 10.0%. The proportion of patient referral which resulted in verified contact attendance was 52.8%.

Regarding the partners' outcome of patients who received the PN notes, more than 50% of the partners of patients were diagnosed to have one or more of the five STDs (Table 2) and unsurprisingly, gonorrhoea accounted for 55.6% of the diagnoses. The proportion of elicited partners who were newly diagnosed was 30%. The brought-to-treatment index was 16%.

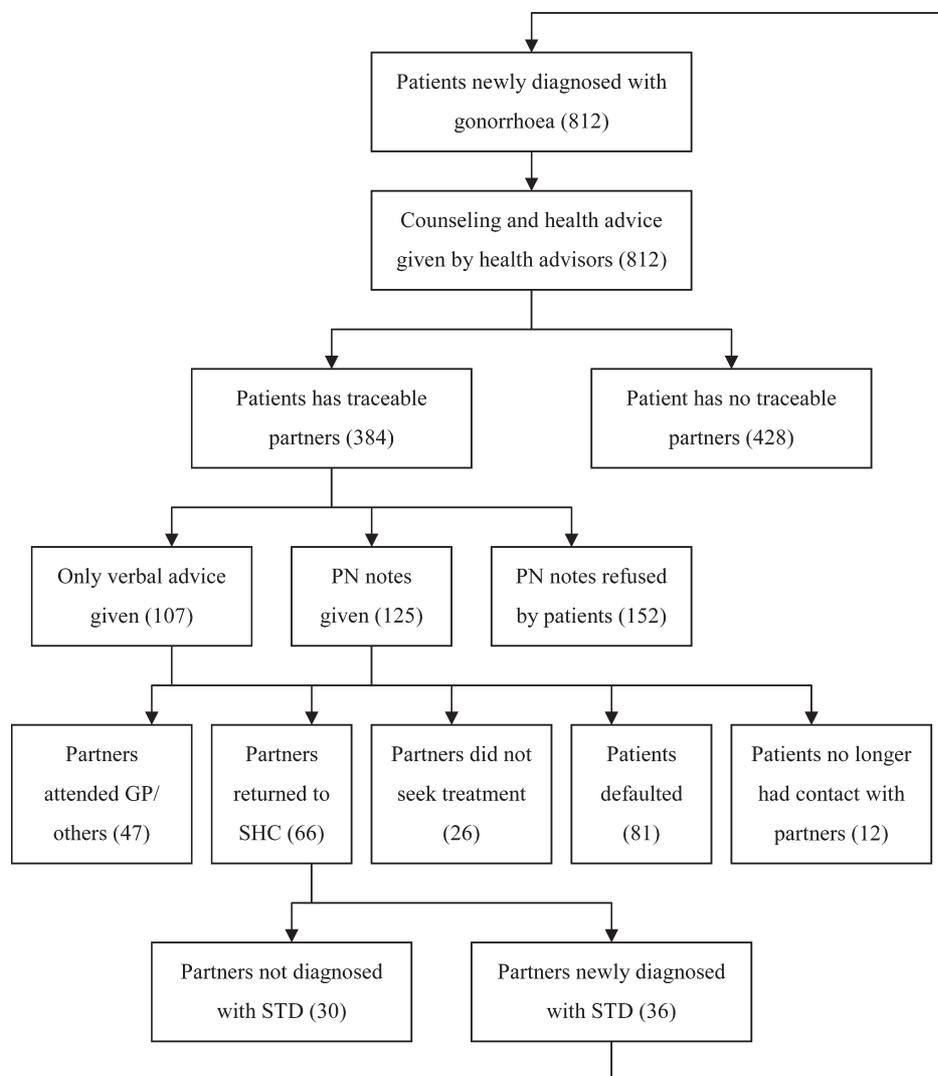


Figure 3. Flowchart showing the outcome of partner notification in this study.

Discussion

According to the statistics published by the Social Hygiene Services, 1759 patients were newly diagnosed with gonorrhoea in the 6 months between 1st July 2000 and 31st December 2000. For the same period in 2005, 812 patients were diagnosed with gonorrhoea, representing a 53.8% decrease as compared with the 2000 data. This decrease from 2000 to 2005 may be due to a number of reasons, including migration of sexually active labour force to Mainland China and a change in the population's health-seeking

behaviour. For instance, some patients may use over-the-counter remedies for self-treatment of STDs or visit the traditional Chinese practitioners.³ Furthermore, around 80% of Hong Kong's STD patients sought treatment from the private sector.⁴ Consequently, the statistics may merely represent the attendance of patients at the SHCs, rather than the actual disease burden in Hong Kong.

In the present study, around 15.4% (125 out of 812) of patients diagnosed with gonorrhoea received PN notes. This study showed that the proportion of un-traceable partners was high, at

Table 1. Table showing (i) the proportion of outstanding contacts screened and (ii) the proportion of patient referral which resulted in verified contact attendance

	No. of gonorrhoea patients/partners
PN notes given	125
Only verbal advice given	107
PN note refused by patients	152
Patients had no traceable partners	428
Partners returned to SHC	66
Partners attended GP/others	47
Partners did not seek treatment	26
Patients no longer had contact with partners	12
Patients defaulted	81
Proportion of outstanding contacts screened	$66/(428+125+107)$ =10.0%
Proportion of patient referral which resulted in verified contact attendance	$66/125$ =52.8%
Partners seek medical treatment/total partners referred	48.7%

Table 2. Table showing (i) partners outcome, (ii) proportion of elicited partners who were newly diagnosed and (iii) brought-to-treatment index

	No. of gonorrhoea partners	
Partners Outcome	Syphilis	0
	Gonorrhoea	20
	Non-specific genital tract infection/ Non-gonococcal urethritis	16
	Genital wart	0
	Genital herpes	0
	Partners newly diagnosed with STDs/notes back ratio	$36/66$ =0.55
	Proportion of elicited partners who were newly diagnosed=Partners' diagnoses/indices' diagnoses match	$20/66$ =0.30
	Brought to treatment index	$20/125$ =0.16

52.7% (428/812). This is similar to the scenario in UK, whereby one study showed that the proportion of un-traceable partners among gonorrhoea patients was as high as 79.35%.⁵ The high proportion of un-traceable partners is a severe impediment to the PN system and poses great difficulty in controlling the spread of STDs, because those who may be affected cannot be

identified and treated. As a result, studies should be done to investigate what sub-groups these un-traceable partners fall into, such as the proportion that the commercial sex workers account for. In this study, around 13.2% of the patients received verbal advice. This group consists of patients whose partners are outside Hong Kong and those who refuse to receive the PN note but promise to

inform his/her partners to seek medical consultation. Unfortunately, there are no comparable data in UK or US. However for Hong Kong, this group is significant. Such information is therefore important in the formulation of Hong Kong's long-term strategic plan for the control of STDs.

The proportion of outstanding contacts screened for gonorrhoea patients was 10.0%. In 1999, Bell et al published a study comparing the PN outcome at a provincial clinic (Sheffield Genitourinary Medicine Clinic, Sheffield) and a city clinic (Jefferriss Wing Centre for Sexual Health at the St. Mary's Hospital, London) in UK.⁵ This study revealed that the proportion of outstanding contacts screened for gonorrhoea patients was significantly greater in Sheffield than in St. Mary's (19.6% vs 4.5%, $p < 0.001$). They attributed the difference to two main factors. Firstly, there was no alternative medical service within a 10 mile radius of the Sheffield clinic, whereas there were 15 alternative services around St. Mary's. Secondly, there were more resources for PN in Sheffield as evidenced by the smaller number of cases per health adviser. Hong Kong SHCs, being city clinics with heavy patient loads and with alternative medical service providers easily

accessible, are probably more similar to St. Mary's than Sheffield. The proportion of outstanding contacts screened for gonorrhoea patients in Hong Kong is considerably higher than that of St. Mary's. 52.8 percent of the patient referral in the present resulted in verified contact attendance, which is higher than that of St. Mary's (13%),⁵ reflecting the high quality of PN program in Hong Kong (Table 3).

In another UK study, Low et al, through reviewing published and unpublished UK studies on gonorrhoea and chlamydia management, proposed national standards for measuring PN outcome for gonorrhoea patients.⁶ The team proposed evidence based outcome standards of 0.4 contacts per case (40%) in patients with gonorrhoea infection in London or other large cities and 0.6 contacts per case (60%) for patients in small cities. Since Hong Kong is a large city characterised by heavy clinic workload, the standard of 0.4 contacts per cases should be more appropriate. Therefore, it can be seen that the standard of Hong Kong's PN program for gonorrhoea patients (a proportion of patient referral which resulted in verified contact attendance of 52.8%) is comparable to the proposed standard suggested in UK (Table 4).

Table 3. Table showing the proportion of outstanding contacts screened among gonorrhoea patients in different studies

Place	Outstanding contacts	Contacts screened	Proportion of outstanding contacts screened	Study period (months)
Sheffield ⁵	659	129	19.6%	18
St. Mary's ⁵	2176	98	4.5%	18
Hong Kong	660	60	10.0%	6

Table 4. Table showing the proportion of patient referral which resulted in verified contact attendance in gonorrhoea patients

Place	Proportion of patient referral which resulted in verified contact attendance	Study period (months)
Sheffield ⁵	60.0%	18
St. Mary's ⁵	13.0%	18
Hong Kong	52.8%	6

The proportion of elicited partners for gonorrhoea patients was 30%. Comparing these figures with studies worldwide, it can be seen that the performance of PN system in Hong Kong compares favourably with those in developed countries such as US.⁷ For example in 2005, Brewer published a review paper covering PN studies dated between 1975 and 2004.⁷ It was found that the median proportion of elicited partners of gonorrhoea cases was 18% (Table 5). The higher proportion of elicited partners in Hong Kong means that approximately one out of three partners screened also has the same STD as the index case. This highlights the importance of PN in limiting the spread of STDs and the effectiveness of case finding of the PN program in Hong Kong. However, care must be taken when comparing the results of Brewer to that of Hong Kong. Most of the studies reviewed in Brewer were from the US, where STDs were managed predominantly in the private sector but the present study was carried out in public SHCs in Hong Kong.

The brought-to-treatment index was 0.16. This means that one in 6-7 interviewed index cases would result in a new STD diagnosis. This was within the range of the PN studies reviewed in Brewer's paper⁷, though it was below the median (Table 5). This shows the importance of PN in

tracing contacts and providing early medical treatments.

In conclusion, this study showed that the PN system for gonorrhoea patients adopted by SHS performed well compared to the international standard using the 4 efficiency indices aforementioned. Our findings have provided some evidence-based data for the PN program in Hong Kong.

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Table 5. Table showing the proportion of elicited partners who were newly diagnosed, the brought-to-treatment index and summary of findings reviewed by Brewer

	Present study		Review by Brewer⁷
Proportion of elicited partners who were newly diagnosed	30%	Median elicited partners who were newly diagnosed (Range)	18% (8 – 34)
Brought-to-treatment index	0.16	Median brought-to-treatment index (Range)	0.25 (0.09 – 0.58)