An improved record system for tracing outcome of "transferred-out" DOTS patients

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نظام تسجيل محسَّن من أجل تتبع نتائج «المحالين خارجياً» من مرضى السل الخاضعين للمعالجة القصيرة الأمد تحت الإشراف المباشر.

عفَّت شبير، رضوان إقبال، محمد أنور، إعجاز قدير، نور أحمد

الخلاصة: تهدف هذه الدراسة التي أجريت في باكستان إلى وضع آلية محسنة للمحافظة على السجلات في نطاق برنامج المعالجة القصيرة الأمَد تحت الإشراف المباشر DOTS وذلك من أجل إرساء الوضع النهائي للمعالجة في المرضى الذين سُجِّلوا على أنهم «أحيلوا خارجياً». وفي دراسة تدخُّلية أجراها الباحثون في أربعين مركزاً لتشخيص حالات السل ومعالجته تحت الإشراف المباشر في إقليم البنجاب، أدخلت تعديلات على السجل الحالي رقم 3 لمرضى السل. فقد دُرِّب القائمون بتسهيل المعالجة القصيرة الأمد تحت الإشراف المباشر، على المحافظة على سجلات صحيحة للمرضى المحالين خارجياً والمحالين داخلياً. فمن إجمالي 4442 حالة مسجلة، أحيل 104 مريضاً (2.3٪) إلى الخارج من المراكز التي سجلوا فيها. وكان هناك تطابق في 74 مريضاً (71.2٪) من المحالين «خارجياً وداخليا»، أما باقي المرضى وعددهم 30 مريضاً (28.8٪) فلم يمكن اقتفاء أثرهم. علماً بأن تتبُّع الحالات التي أحيلت إلى الخارج قد أدّى إلى زيادة المعدلات المصحَّحة للحصائل الناجحة خلال فترة التدخُّل من 89.6٪ إلى 90.9٪.

ABSTRACT This study in Pakistan aimed to develop an improved record-keeping mechanism for the DOTS programme to establish the final treatment status of patients recorded as "transferred-out". In an intervention study in 40 DOTS diagnostics centres in Punjab province, a modification was made to the existing TB03 register. DOTS facilitators were trained to keep proper records of patients who transferred-out and transferred-in. Among 4442 registered cases, 104 patients (2.3%) transferred out of reporting centres. Correct matching of "-out and -in" patients was achieved for 74 (71.2%) patients; the remaining 30 (28.8%) were untraced. By tracing transferred-out cases, the adjusted outcome success rate increased in the intervention period from 89.6% to 90.9%.

Système d'enregistrement amélioré pour suivre l'évolution des patients ayant quitté leur centre de traitement DOTS d'origine

RÉSUMÉ La présente étude, conduite au Pakistan, visait à élaborer un mécanisme d'enregistrement amélioré pour le programme de traitement de brève durée sous surveillance directe (DOTS) afin d'établir le statut thérapeutique final des patients enregistrés comme ayant quitté leur centre de traitement d'origine. Au cours d'une étude d'intervention réalisée dans 40 centres de diagnostic DOTS de la province du Pendjab, une modification a été apportée au registre TB03 existant. Les animateurs DOTS ont appris à tenir des registres adéquats pour les catégories de patients qui ont quitté leur centre d'origine et ceux qui ont intégré un nouveau centre de traitement. Sur 4442 cas enregistrés, 104 patients (2,3 %) avaient quitté leur centre de notification d'origine. Un appariement exact des patients entre les deux catégories a été obtenu pour 74 patients (71,2 %) ; les 30 autres (28,8 %) ont été perdus de vue. En recherchant les cas de patients ayant quitté leur centre d'origine, le taux de rétention ajusté des patients est passé de 89,6 % à 90,9 % durant la période d'intervention.

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Introduction

Tuberculosis (TB) is a worldwide problem with 8 million new cases and 3 million deaths every year. In 1994 the World Health Organization (WHO) declared TB as a global emergency [1]. There are 22 high-disease-burden countries in the world, and Pakistan ranks 6th with an incidence of 177 per 100 000 population [2].

The implementation of an effective TB control programme is an important health priority. DOTS is 5-point treatment strategy that is efficient and cost-effective for the control of TB and has been successfully implemented in many countries [3,4]. Despite the DOTS programme achieving 100% coverage throughout Pakistan by June 2005 [5], certain challenges remain; these include noncompliance with treatment (with the risk of developing multidrug resistant TB), low case detection rates and deficient recording and reporting.

One of the cornerstones of the WHO strategy for global TB control is a standardized recording and reporting system. The outcomes of patients with DOTS therapy are recorded as cure, treatment completed, treatment failure, defaulted, died and transferred-out. A "transferred-out" case is a patient who transfers from one reporting unit to another and for whom treatment outcome is unknown [6]. The proportion of patients reported as transferred-out varies from one TB control programme to other. The transferred-out rate in Pakistan during 2004 was 4.9% [7]. In Norway the transferred-out rate was 4% among patients registered during 1996–2002 [8]. In Malawi, where 13% of cases were reported as transferred-out, efforts to keep proper records of cases were unsuccessful [9].

This study in Pakistan aimed to develop an improved record-keeping mechanism for the DOTS programme in order to establish the final treatment status of patients recorded as transferred-out. It was hoped that the system would help in identifying the gaps in the current mechanism of recording the outcome of treatment, thus strengthening the DOTS system further.

Methods

Study design

This was an intervention study carried out in 3 out of 35 districts in Punjab province of Pakistan from April to September 2005. The 3 districts (Bahawalnagar, Gujranwala and Toba Tek Singh) have 40 diagnostic centres and were selected based on having the highest transferred-out numbers in the province.

Data collection

A new register was created which was a modification of the TB03 standard DOTS reporting form to allow for proper recording of transferred-out and transferred-in patients. All registered TB patients who were reported as transferred-out and -in from various diagnostic centres within these 3 districts were recorded in the modified register alongside the original TB03. This allowed patients who moved from one treatment centre to another treatment or diagnostic centre to be followed up until completion of their treatment through their district TB number and also by matching their personal profile.

Training workshops for DOTS facilitators were carried out in all the districts to ensure proper recording and reporting of transferred-out and transferred-in patients. District TB coordinators were also trained to guide and supervise the modified TB03 register project according to the study design.

The transferred-out and -in records of all patients were studied. Matching was done for the patients reported as transferred-out and -in within different diagnostic centres of the district. A patient who was not matched in the modified register was declared as "lost". Several constraints were encountered while conducting this study such as patients who transferred-out not giving the correct address where he or she wanted to be transferred-in. Patients who were not traced properly or were transferred to other districts were considered as lost.

The study was conducted over 6 months from April 2005 to September 2005. Data collected in the 3 months after introduction of the new register (intervention period) were analysed and compared with data for the 3 months before the intervention started (pre-intervention period).

Data analysis

The treatment outcomes of the matched patients were noted and the treatment success rate was calculated. These results were then incorporated into the original TB03 cohort register to see the adjusted treatment success rate. The correct transferred-out data of the pre-intervention period was compared with those of the intervention period using the chi-squared test.

Results

Table 1 shows that during the intervention period 104 patients transferred-out from the total 4442 registered cases, i.e. a transferred-out rate of 2.3%. Correct matching was achieved for 74 out of 104 patients (71.2%) who were logged as transferred-in to another location, while 30 (28.8%) were not traced and their treatment outcome remained missing to the system. Thus the transferred-out rate decreased significantly during the intervention from 2.3% (104/4442) to 0.7% (30/4442) ($P < 0.001$).

Table 2 shows the treatment outcome of the 74 transferred-out patients who were correctly logged as transferred-in during the intervention period. Of these, 17 patients were cured, 43 completed treatment successfully, 14 did not respond to treatment and

Table 1 Recording of transferred-out and transferred-in data of all tuberculosis patients registered at DOTS treatment centres in 3 districts of Punjab during the intervention quarter

District	Total registered	Total transferred-out		Traced[a]		Transferred-out (adjusted)	
	No.	No.	%	No.	%	No.	%
Bahawalnagar	1850	42	2.2	34	1.8	8	0.4
Toba Tek Singh	977	47	4.8	31	3.2	16	1.6
Gujranwala	1615	15	0.9	9	0.6	6	0.4
Total	4442	104	2.3	74	1.7	30	0.7

[a] *i.e. Transferred-in.*

hence were labelled as treatment failures as they might have been cases of multi-drug resistance, and 30 patients were not traced and were placed in the category of defaulted patients.

Table 3 compares the recording of treatment outcome success in the pre-intervention and intervention quarters. In the pre-intervention period 170 out of 3512 registered patients transferred-out and as they were not traced, their treatment outcome success was unknown and therefore recorded as 0%. This is because there was no proper column in the TB03 register for transferred-out and transferred-in patients. We modified the TB03 register so that all the entries about TB patients whose treatment started were made this enabled us in locating transferred out patients. In the intervention period, treatment outcome success was recorded for all 74 transferred-out patients who were traced, giving a final recorded treatment success rate of 71.2% for transferred-out patients who were successfully traced ($P < 0.001$).

Table 4 shows the treatment outcome and success rate of all registered cases in the pre-intervention and intervention periods in the 3 districts combined. The treatment success rate was 80.2% during the pre-intervention and 90.9% in the intervention period. By tracing transferred-out cases, the outcome success rate during the intervention period increased by 1.3% during the intervention period from 89.6% (unadjusted) to 90.9% (adjusted).

Discussion

This intervention study was carried out in 3 districts of Punjab as a pilot project, to establish the outcome of the patients who are recorded as transferred-out of the DOTS programme. With the intervention of the modified TB03 register in which patients were followed until completion of their treatment through the district TB number and also matching their personal profile, the transferred-out rate in the intervention period decreased from 2.3% to 0.7%. This later group of patients ($n = 30$) consisted of either patients transferred-out to other districts but not properly registered or defaulters.

There are variations in the transferred-out rates reported in different TB control programmes. In sub-Saharan Africa the transferred-out rate ranged from 1% to 26% [6]. In Pakistan the TB control programme reported an overall transferred-out rate of 4.9% [7], which was similar to the pre-intervention period in our 3 districts (4.8%) but higher than the (unadjusted) rate in the intervention period (2.3%).A study conducted in Norway reported a 4% transferred-out rate [8]. Another study carried out in Rio de Janeiro in Brazil reported transferred-out rates of 4.9% and 7.1% for directly-observed versus self-administered therapy [10]. A study in north India reported a transferred-out rate of 0.2% [11].

In all the above-mentioned studies, the final outcomes of transferred-out patients were not reported. We were unable to find many other studies about the outcome of transferred-out

Table 2 Recording of treatment outcomes of transferred-out patients at DOTS treatment centres in 3 districts of Punjab during the intervention quarter

District	Total transferred-out	Cured		Treatment completed		Treatment failure		Died	Defaulted[a]	
	No.	No.	%	No.	%	No.	%	No.	No.	%
Bahawalnagar	42	7	47.6	20	16.7	7	19.0	0	8	19.0
Toba Tek Singh	47	8	17.0	18	38.3	5	10.6	0	16	30.0
Gujranwala	15	2	13.3	5	33.3	2	13.3	0	6	40.0
Total	104	17	16.3	43	41.3	14	13.5	0	30	28.8

[a] *i.e.Transferred-out (adjusted).*

Table 3 **Recording of treatment outcome success of transferred-out patients during the pre-intervention and intervention quarter at DOTS treatment centres in 3 districts of Punjab**

District	Pre-intervention quarter (*n* = 3512)			Intervention quarter (*n* = 4442)			
	Total transferred-out	Treatment success		Total transferred-out	Transferred-out (adjusted)	Treatment success (tracing transferred-out patients)	
	No.	No.	%	No.	No.	No.	%
Bahawalnagar	126	0	0	42	8	34	81.0
Toba Tek Sing	36	0	0	47	16	31	66.0
Gujranwala	8	0	0	15	6	9	60.0
Total	170	0	0	104	30	74	71.2

n = total number of registered patients.

patients in the literature. Only 1 similar study carried out in Malawi analysed registers of transferred "-out and -in" and reported a transferred-out rate of 13.4% (3249/24 908) which is quite high compared with the present study. However, its main TB register showed 10.3% (2586/24 908) of patients as transferred-out. Only 196/2586 (7.5%) patients were traced to the final outcome, indicating a deficient recording and reporting system [9]. Another study carried out in Morocco in which treatment outcomes of patients who moved between TB units as transferred-out showed, using a simple method, that the outcomes of these patients, notified as transferred-in cases, can easily be taken into account [12]. In the present study using a modified version of the TB03 record, 74 out of 104 transferred-out patients were traced (71.2%) and their treatment outcome was recorded.

Conclusion and Recommendations

Although there were still gaps in the recording of DOTS patients after the intervention, the outcome of 74 out of 104 transferred-out patients being traced and recording of actual treatment outcome was improved when compared with the pre-intervention period, which was nil. The gap identified during the study is that DOTS facilitators did not make entries correctly in the registers because no columns for transferred-out and transferred-in patients were present in the registers, which leads to inadequate compiling of the final results; motivation at this level is required.

We recommend as a first step a computerized system of data entries of all TB patients, at least at district level, to achieve more accurate information about these patients. As a second step, all diagnostic centres should be linked through this electronic surveillance system.

We also recommend that the recording and reporting of transferred-out patients could be improved by modifying the current TBO3 register to include 3 columns. One column can be labelled as "concerned diagnostic centre" to log information about where the patient was initially diagnosed and treatment started, along with the district TB number. The other 2 columns of "transferred-out" and "transferred-in" will log information about patients who move from one treatment centre to another for continuation of treatment. This will assist in properly tracing patients until completion of treatment and hence to know the final outcome of their DOTS therapy.

Table 4 **Treatment outcomes of all registered patients during the pre-intervention and intervention quarters at DOTS treatment centres (combined data for 3 districts of Punjab)**

Treatment outcome	Pre-intervention quarter		Intervention quarter	
	No.	%	No.	%
Total registered	3512	100.0	4442	100.0
Cured	741	21.0	1082	24.3
Treatment completed	2079	59.1	2959	66.6
Treatment failure	39	1.1	28	0.6
Died	74	2.1	48	1.0
Defaulted	409	11.6	295	6.6
Transferred-out (unadjusted)	170	4.8	104	2.3
Transferred-out (adjusted)	n/a	n/a	30	0.6
Treatment success (unadjusted)	2820	80.2	4041	90.9
Treatment success (adjusted)	n/a	n/a	3981	89.6

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World TB Day, 24 March 2011

World TB Day raises awareness about the global epidemic of tuberculosis (TB) and efforts to eliminate the disease. One-third of the world's population is currently infected with TB. The Stop TB Partnership, a network of organizations and countries fighting TB, organizes the Day to highlight the scope of the disease and how to prevent and cure it.

The annual event on 24 March marks the day in 1882 when Dr Robert Koch detected the cause of tuberculosis, the TB bacillus. This was a first step towards diagnosing and curing tuberculosis. WHO is working to cut TB prevalence rates and deaths by half by 2015.