The Tuberculosis Register - An evaluation of its use and impact under epidemic conditions in the Western Cape Province of South Africa.

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Abstract

Study objective:
To evaluate whether the Tuberculosis Register, as part of the South African National Tuberculosis Control Programme, is achieving its objectives of monitoring the programme and decentralising the use of information for planning and action to the facility level.

Design
Quantitative and qualitative research methods were used to evaluate the effectiveness of the Tuberculosis Register. The design included self-administered questionnaires and focus group discussions with clinic staff, direct observations of the Register and semi-structured interviews with managers of the Tuberculosis Programme.

Setting
A purposefully selected sample of 17 facilities in 7 of the 25 districts in the Western Cape Province of South Africa.

Results
The 2-month sputum result was completed in 75% and the discharge sputum result in 67% of Registers, demonstrating poor data collection for the calculation of treatment outcomes. Several categories of data were seldom collected such as the identity number in 25% and adherence in 22% of Registers. Only 43% of facilities calculated the indicators for treatment outcome demonstrating a failure to analyse the data at this level. Only 40% of facilities received written feedback on performance from higher levels. The focus groups found little evidence that information was used for planning or action at the facility level.

Conclusions
The Tuberculosis Register has not fulfilled its objectives of improving local planning and management of the Tuberculosis programme through the collation, analysing and interpretation of data at a facility level. A number of recommendations to improve the performance of the Tuberculosis Register are made.

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Introduction

In South Africa Tuberculosis (TB) remains the commonest notifiable disease and 158 689 cases were notified in 1996 with an overall incidence rate of 362 per 100 000. The Western Cape region is at the centre of the South African epidemic with an incidence rate of 559 per 100 000 in 1996.[1]

In 1995 the South African government launched the revised National TB Control Programme (NTBCP) based on the World Health Organisation

(WHO) guidelines. Central to the programme is the Tuberculosis Register which aims to focus attention on the effective management of smear positive pulmonary TB patients; to monitor the TB programme at district, provincial and national levels; and to devolve responsibility for TB control to the facility level by encouraging staff to measure their own performance and develop targeted intervention strategies.

The Register is kept in all health facilities that manage patients with TB and records information for 10 patients on each page. For each patient there are 19 pieces of information that should be completed and 17 of these are compulsory. Standard definitions to assist with completing the Register are given at the foot of each page and in an accompanying manual.[3] Data from the Register is collated by clinic staff in the form of a standardised "Quarterly Report" and key case finding and treatment outcome indicators can be calculated immediately by the clinic staff using a standardised "Indicator Calculation Sheet". The underlying rationale is that the TB programme will be more likely to succeed if indicators are regularly calculated locally and corrective action taken at the facility or district level. Information from the quarterly reports should be collated at the regional level or by the local municipality and feedback on performance given to the facilities as well as reports sent to the province and national levels.

We present the findings of research commissioned by the Provincial Administration of the Western Cape (PAWC) Health Department and the TB Alliance Dot Support Association (TADSA). The aim was to evaluate whether the TB Register is achieving its objectives as outlined above and to make recommendations for improving the TB Register system.

Methods

The study was carried out using a purposefully selected sample of 17 facilities located in 7 different districts in the Western Cape Province representing a variety of rural, peri-urban and urban communities. The Province consists of 4 Regions with a total of 25 districts. The districts of Ravensmead and Guguletu are TB Demonstration Districts where the staff has received additional training and evaluation. Two of the districts, Mitchell's Plain and Khayelitsha, are pilot sites for the Health Information Systems Pilot Project where staff had received training on health information systems. (Table 1). The research staff consisted of 3 investigators and one research co-ordinator (SP). In addition 3 nurses were trained to assist the co-ordinator with fieldwork in their own districts. The research methods were developed in a participatory process with health workers from the TB Programme and clinics.

Table 1: Characteristics of the facilities in the study and baseline data for January-March 1997 as reported by the local municipalities

District	Number of Facilities	Setting	Number of Registrations	Bacteriological Coverage*	New smear positive cure rate**
Ravensmead	2	Urban	41	96%	75%
Hexriver	2	Rural	72	100%	89%
Guguletu	2	Urban	137	96%	76%
Paarl	2	Rural	113	87%	77%
Mitchell's Plain	3	Urban	87	99%	88%
Khayelitsha	4	Periurban	138	90%	48%
Saldhana	2	Rural	43	100%	40%

* Bacteriological Coverage = The proportion of the patients with pulmonary TB receiving pre-treatment bacteriology

** New smear positive cure rate = The proportion of new smear positive pulmonary TB patients who were cured.

Quantitative Methods

A self-administered questionnaire was designed to assess current knowledge of, use of and training on the TB Register as well as the ability to complete a sample register and to calculate basic indicators. Thirty questionnaires were distributed to the 17 nurses responsible for TB in all 17 clinics, 8 Chief Professional Nurses in charge of facilities and 5 Chief Professional Nurses or TB co-ordinators at the district level. The questionnaire was piloted at a TB clinic that was not included in the study.

Completeness of the Register was assessed for the quarter January-March 1997 by recording omissions in any of the 19 columns in the Register. Accuracy was assessed by sequentially sampling 10 records from each of the 17 clinics in the quarter April-June 1997. Accuracy was judged by comparing the information recorded in the Register with that in the patient folder and was considered inaccurate if the information in the Register and patient folder did not correspond. The quarterly reports for the year Jan-Dec1997 were assessed for completeness, accuracy and timeliness. Completeness was assessed by recording the number of case finding and treatment outcome reports submitted in that year. Accuracy was tested by using the cross-checking system recommended in the TB Register Manual which uses selected sub-totals to crosscheck that all data is entered correctly.[3] Reports were categorised as being late if they were submitted more than 2 weeks after the end of each quarter. Quantitative data was coded, checked, entered and cleaned in Epi-info 6.

Qualitative Methods

Nurses from all the clinics were split into four focus groups each consisting of 4-8 people. The researcher enquired about the perceived usefulness and purpose of the Register as well as any actions taken as a result of local analysis or feedback of information. Qualitative data from the focus groups was audiotaped, transcribed and examined by all 4 researchers for key themes.

Eight semi-structured interviews were conducted with TB Programme Co-ordinators and Informatics Personnel at the Provincial, Regional, Local Municipality and District levels. The interviews obtained information relating to the flow of information between facility and national levels; the usefulness of the TB Register as part of the NTBCP; and the integration of TB information with other health information. Notes taken during the semi-structured interviews were analysed for key points.

Table II: Observed current practice in completeness of the Register for the quarter January - March 1997 and in accuracy for the quarter April - June 1997 in all 17 facilities.

Category in Register	Completeness % (n=17)	Accuracy % (n=17)
Name	100	99
Address	100	98
Date treatment started	100	90
Registration number	99	98
Registration date	99	85
Race and Sex	96	85
Treatment point	95	86
Patient Category	94	93
Basis of decision to treat	94	93
Code for disease	93	96
Notification date	93	92
Age	93	88
Treatment outcome	91	84
Patient origin	88	89
Date treatment stopped	87	85
Pre-treatment sputum	82	90
2 month sputum	75	79
No. of doses recieved	73	77
Discharge sputum	67	75
ID number	25	59
Adherence	22	80

Results

The completeness and accuracy with which the individual fields in the Register were completed is shown in Table II.

From the questionnaire 23 (77%) of the health workers were able to correctly complete a sample register when given the relevant patient information. Fourteen (56%) of the TB nurses reported that they had enough time for completing the Register and that during the last week this task had taken them a median of 1 hour (range 0.2 – 5.0). Twenty-one (84%) of the TB nurses felt that the amount of information recorded was not too much and 22 (88%) felt that it was easy to complete the Register and classify TB cases.

The focus groups found the Register to be useful as a means of keeping information together, responding to inquiries, monitoring the number and progress of patients and preparing statistics.

"I think we've got only one Register and a lot of folders and we can easily lose them, so I think this way that we have is a good way, if you phone me and you want to know about the patient then I could quickly just check the Register."

The focus groups suggested that time was wasted by duplicating the recording of information as the same information was entered into the Register, the patient's folder and the patient retained record. The Register was found to be confusing when trying to record information about patients temporarily transferred to another clinic or hospital and when having to enter sputum results repeated again at 3 months during treatment. There was also confusion in understanding the difference between the Register and notification systems. It was thought that some of the information collected was unnecessary such as the treatment point, identity number, type of treatment regimen, number of doses taken and adherence. There was overall agreement that the Register was an accepted part of their jobs as nurses.

From the semi-structured interviews it was perceived that the Register is a good tool for data collection, is more reliable than notification data and allows information to be kept in one place. On the negative side the amount of data collected was thought to be too much and duplicated elsewhere making the Register too complicated and time consuming and was not used for planning at the facility level.

The completeness of quarterly reporting and the percentage of districts that calculated the indicators from their quarterly reports are shown in Table III. Data for the accuracy of the quarterly reports cannot be presented as the nurse researchers had difficulty in using the cross-checking method outlined in the Register manual.

From the questionnaire 15 (50%) staff were able to calculate the bacteriological coverage when provided with the necessary data and 9 (30%) knew the national target for this indicator. For the new smear positive cure rate 14 (46%) were able to calculate the indicator and 17 (57%) knew the national target for this indicator. In the focus groups the quarterly report was viewed with widely mixed feelings ranging from hate and dread to the excitement of seeing your own performance.

Table III: Percentage of districts completing quarterly reports and calculating indicators.

District		Completion of Quarterly Reports		Calculation of Indicators	
	Number of expected reports	Case finding	Treatment Outcome	Case finding	Treatment outcome
Hexriver	8	8	8	8	2
Guguletu	8	8	8	8	8
Paarl	8	4	2	4	2
Mitchell's Plain	12	9	9	4	7
Saldhana	8	4	4	0	0
TOTAL	44	33(75%)	31(70%)	24(55%)	19(43%)

This table excludes Ravensmead and Khayelitsha where the municipality is collecting data by alternative means and facilities do not submit quarterly reports or calculate indicators locally.

At the facility level 50% of quarterly reports were completed on time, 16 (53%) of TB nurses had seen the most recent quarterly report and 12 (40%) had received written feedback on their performance. Of the 12 nurses who received written feedback only 5 found this to be clear and only 3 had received it every quarter.

The semi-structured interviews with managers focused on the flow of information between the facility and higher levels as shown in Table IV. Managers all agreed that there was no integration of information from the TB programme with other routine health information. The focus group discussions highlighted the lack of proper feedback and found that information from head office was sometimes different to their own information. Even if facilities calculated their own indicators they felt that feedback was essential so that they could compare their own performance with other facilities or districts and the most useful format was seen as simple graphs.

Twenty-five of the clinic staff (83%) had received some form of training in using the Register (median duration being 6 hours (range 2 –12)). The focus groups found that training was not synchronised with actual use of the Register and a need was expressed for the training to be more ongoing and comprehensive,

Table IV: Percieved flow of information between facility and national levels from semi-structured interviews.

Level	Reporting	Feedback
National - Province	Incomplete data is sent from province to national.	"TB Talk" sent out by national level is received intermittently, is too complex, incomprehensible, uses old magisterial boundaries and poor presentation of information.
Province - Region	Incomplete data is sent from region to province.	Feedback is slow, too complex, unclear and uses old magisterial boundaries.
Region - Local Municipality	Good transfer of data following the introduction of quarterly meetings. Region has different indicators to national.	Quarterly meetings allow effective feedback and interpretation of information. Municipalities via region recieve some of the information sent from province.
Local Municipality - Facility	Different municipalities collate data in different ways. One area completes reports on time with assistance of a TB co-ordinator. Other areas are always late or inaccurate. One area submits raw data that is analysed / collated centrally.	Feedback varies, some facilities recieve no feedback, and others in tabular form, only a few recieve graphs. The Region hopes that the municipalities pass on information.

including aspects such as communication and patient-centredness. Training that was provided was at times inaccurate and out of date leading to further unnecessary confusion. The presence of a district TB co-ordinator was seen as a positive support for the TB register system and a source of information when queries arose.

" if there are any problems she simply liases and advises telephonically, also there is unity"

"maybe we could have someone responsible, perhaps a co-ordinator for Khayelitsha, it would be ideal, so that person is easily contactable and can visit our clinics."

Discussion

The results were presented to and discussed with the managers of the TB programme in the metropolitan region and a number of recommendations were adopted.

The programme managers had a common perception that the amount of data collected was too much and too complex but only 16% of clinic nurses agreed with them. However objective assessment of the completeness and accuracy of the Register found that a few categories of data were seldom collected, such as the identity number and percentage adherence, and other essential categories were of poor quality, such as the 2 month and discharge sputums. Only 7 items of data are currently required for calculating the indicators and within this core data the completeness of pre-treatment bacteriology (82%) and the accuracy of the treatment outcome (84%) scored the lowest. These results were decreased considerably by the poor performance of one district where the TB Register system was not in active use. These relatively poor results are a cause for concern as the TB Programme relies on examination of sputum for both diagnosis of pulmonary TB and determination of outcome and they may reflect a problem in the programme as a whole and not just the inadequate use of the Register. Overall the nurses did not perceive a problem with using the Register, although the quality of data collected for determining treatment outcomes was poor. The quality of data could be improved by only collecting fewer data items as listed in Table V.

The TB Register is not being sufficiently analysed at the local level as only 43% of facilities calculated the indicators for

Table V: Data required for simplified TB register

1. Registration Date
2. Registration Number
3. Name
4. Address
5. Race and Sex
6. Age
7. Patient Origin
8. Patient Category
9. Code of Disease
10. Bacteriology
11. Outcome
12. Blank/ Remarks

treatment outcome and this finding is supported by a WHO assessment of the NTBCP.[4, 5] Further training in the calculation of indicators is required, as 36% of TB nurses were unable to calculate the smear positive cure rate when presented with the necessary data. In addition the flow of information is a problem as only 50% of reports were completed on time and only 40% received written feedback from higher levels. Feedback from higher levels needs to be regular, relevant, clearly presented and allow meaningful comparisons between facilities and districts. The lack of integration of information on the TB programme with other health information leads to a fragmented view of the health services and attempts should be made to correct this. The failure to analyse the data at a local level as well as the poor feedback of information makes it unrealistic to expect the information to be used for planning and corrective action at a local level. This is supported by the focus groups which showed little evidence of information being used and where clinic staff had made significant initiatives it appeared that this was more related to the presence of committed individuals or to better support structures; particularly a district TB co-ordinator. Training in use of the Register was not adequate and in future training should be offered as people rotate to the TB Clinic and should be ongoing by people who are up to date with developments in the TB programme.

In view of the poor performance of the TB Register system the TB programme must develop better methods of training and supporting the TB nurses. One recommendation that is supported by the focus groups is the appointment of an enthusiastic part-time TB co-ordinator in each district. Another suggestion arising from the semi-structured interviews is for quarterly district workshops where TB nurses from each clinic could support and mentor each other in the process of collating and analysing data. The workshop would also enable immediate feedback of information, discussion of appropriate action and continuing training.

The clinics were purposively chosen to represent a wide range of districts in the Western Cape Province. If a larger randomly selected sample of clinics and districts had been included there may have been a wider variation in findings. Although all questionnaires were answered the final percentages are based on a small number of replies and this may effect their reliability. Although research nurses were thoroughly trained in recording the completeness and accuracy of the Register we did not test the reliability of their measurements; however the consistency of results in the different clinics suggest this was not a serious problem.

The TB Register system has not fulfilled its objectives of improving local planning and management of the TB programme through the collation, analysing and interpretation of data at a facility level.

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