ORIGINAL ARTICLE

Surveillance, Evaluation of Programmatic Management of Drug Resistant Tuberculosis (PMDT) at DR-TB Centre, NITRD, New Delhi

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Citation

Padda P, Singla N, Sarin R. Surveillance, Evaluation of Programmatic Management of Drug Resistant Tuberculosis (PMDT) at DR-TB Centre, NITRD, New Delhi. Indian J Comm Health. 2018; 30, 1: 76-81.
Source of Funding: Nil **Conflict of Interest:** None declared

Article Cycle

Received: 11/11/2017; **Revision:** 30/01/2018; **Accepted:** 07/03/2018; **Published:** 31/03/2018

Abstract

Background: PMDT was launched in 2007 in our country but drug resistant TB remains to be a public health problem. Effective surveillance is the backbone for success of any programme and true stands for PMDT. **Aim & Objectives:** To identify the strengths and constraints of the surveillance evaluation system. **Material & Methods:** A cross sectional study was conducted in January 2015 at DR-TB Centre of NITRD, New Delhi which caters to a population of 29 lacs. PMDT surveillance system was evaluated using attributes like simplicity, data quality, acceptability, positive predictive value, representativeness and timeliness defined by CDC, USA guidelines. Relevant information was collected using data abstraction form and interview with stakeholders. Data was analysed using EpiInfo 07 version. **Results**: Nodal officer and District TB officer are responsible for surveillance system activities of PMDT at DR-TB centre and district level, respectively. All the reports (100%) were submitted on time and all the districts were reporting to DR-TB centre. 75% of TB-HIV coordinators found reporting formats to be simple but all the quarterly reports were found to be complete. Data quality was not found to be optimal. **Conclusion**: Private sector needs to be taken on board as they have no to minimal involvement in PMDT. For data quality improvement time to time training of medical officers and health workers should be organized.

Keywords

Surveillance; Evaluation; PMDT; DR-TB.

Introduction

Revised National Tuberculosis Programme (RNTCP) covered the whole country in year 2006 which led to introduction of Programmatic management of Drug resistant Tuberculosis (PMDT) in year 2007 (pilot project), since then PMDT services have expanded rapidly (1). Even after ten years of start of PMDT, India has highest burden of Multi drug resistant tuberculosis (MDR-TB) in the world (2,3). To prevent development of drug resistance early detection and enrolment along with completion of treatment is of paramount importance (4,5).

Surveillance of MDR TB is critical for monitoring trends in incidence over time, assessing the effectiveness of RNTCP and its policies, allocating resources and identifying research priorities, which is being implemented through drug resistant TB (DR-TB) centres in our country (6,7).

The utility of data from PMDT depends greatly on the completeness and accuracy of the information that is collected. Periodic evaluation of a PMDT helps to ascertain the validity of data and is considered vital for quality control (8,9). The PMDT in the National Institute of Tuberculosis & Respiratory Diseases New Delhi, is functioning since 2009 and collects data from four districts. The DR-TB Centre at NITRD is contributing significantly to national and international X/MDR TB statistics. However, the completeness and validity of PMDT have never been formally evaluated or documented.

Aim & Objective

To identify the strengths and constraints of the evaluation of surveillance system.

Material & Methods

Study setting: The study was conducted at DR-TB centre established in year 2009, situated at NITRD, Delhi which caters to a total population of 29 lacs from four chest clinics (Malviya nagar, Bijwasan, RTRM and LRS).

Study design: A cross sectional survey was conducted in January 2015. A combination of quantitative and qualitative methods will be used for evaluation of the PMDT in DR-TB centre at NITRD, New Delhi.

Methodology: We evaluated the PMDT surveillance system using the following attributes as defined by US Centres for Disease Control and Prevention guidelines (10) (Table 1).

1. Simplicity: It refers to the structure and ease of operation of a PMDT surveillance system.
2. Flexibility: It is the capacity of the to adapt to changing information needs or operating conditions of MDR-TB and XDR-TB cases with little additional time, personnel or allocated funds.
3. Data Quality: This is reflected by completeness & validity of data recorded in the PMDT surveillance system.
4. Acceptability: Acceptability reflects the willingness of persons & organization to participate in the PMDT surveillance system.
5. Positive Predictive Value: It is the probability that the reported cases of MDR TB captured by the system are actually “true” cases.
6. Representativeness: It is reflected by how accurately the system describes the distribution of m/XDR TB patients by time, place and person.
7. Timeliness: It is reflected by the speed and the rapidity of response of the PMDT surveillance system.
8. Stability: It is the ability of PMDT surveillance system to collect, manage and provide data properly without failure.

For data collection we reviewed the records and the reporting formats at DR-TB Centre and four chest clinics using data abstraction form to extract the data required to evaluate timeliness of the reporting, representativeness, positive predictive value (PPV), acceptability and usefulness of the system. We interviewed the nodal officer of DR-TB centre, medical officer, DR-TB supervisors using face to face questionnaires for collecting the data related to the simplicity and acceptability of the system. We reviewed the health facility records and laboratory reports to evaluate the PPV of the system.

For the analysis of data we entered the data into Microsoft Excel and analyze using Epi-info 7 version. We calculated each of the indicators as proportions for the above mentioned attributes and describes the qualitative attributes as per details given in table 1.

Results

Description of the surveillance system:

The system considers case definitions as MDR-TB suspects and X/MDR TB cases as per PMDT guidelines (6). The nodal officer takes the overall charge of the surveillance system activities of PMDT at the DR-TB centre and district tuberculosis officer (DTO) is in charge at the district level. There is a quarterly reporting system on a fixed format. The DR TB supervisors at the district level are the core component of this surveillance system. They collect the data of the MDR TB suspects and MDR TB patients during field visits and tours at their respective DMCs and report them to the district. After collecting the data they update the information on treatment cards of individual patients and later compile data in prescribed formats and report them to their respective districts. From the district these forms are sent to the DR-TB centre every quarter. The statistical assistant at the DR-TB centre compiles all the reports from the distrcits and sends it to the State TB officer (STO). STO further compiles the reports of all the DR-TB centre and sends it to the Central TB division (CTD). Feedback on reports is given at almost every level (Figure 1).

Analysis of the surveillance system (Table 2):

Timeliness: All the quarterly reports submitted by the DR-TB centre were checked for the date of submission and 100% of these were submitted within 15 days of end of quarter. There was no delay in disseminating the quarterly report.

Representativeness: All the districts (4/4) which fall under DR-TB centre at NITRD are reporting. No private practitioners are involved in the surveillance system.

Positive Predictive Value: Out of 4360 MDR TB suspects since 2009-2014, 508 were Laboratory confirmed to be MDR-TB cases giving us a detection rate of 11.7% of true positives.

Simplicity: Of the four TB-HIV co-ordinators, 3 (75%) felt that filling the reporting format was simple. Whereas when interviewed correct knowledge about case definition one medical officer and one TB-HIV coordinator did not have correct knowledge about it especially the treatment outcomes.,

Acceptability: Out of the 24 quarterly reports submitted, all (100%) were complete. Among the TB-HV coordinators, only one out of four (25%) felt that filling the reporting format was time consuming.

Data Quality: We independently made the quarterly reports for year 2014 out of which 25% (1/4) did not match with the reports submitted. Sixty treatment cards were checked and 32% of them were found in to incomplete. Along with this MDR-TB register was also checked and 16.5% entries were found to be missing.

Discussion

DR-TB centre at NITRD Delhi is established in year 2009 and since then it is very actively involved in the PMDT surveillance activities. It caters to a total population of 29 lacs distributed over four districts of south Delhi. Timeliness is an important attribute of the any surveillance and 100% of quarterly reports were submitted to the STO within 15 days of end a quarter. All the four constituent districts were reporting but no involvement of the private sector is seen which leads to loss of large number of patients suffering from MDR TB as most people prefer going to the private health facilities in this part of the state. Involvement of the private sector will help in making the surveillance system more representative of overall population. The surveillance system has a low detection rates of true positives and it was found to be only 11.7% in this study. The main reason for low detection rates is a wide case definition of MDR suspects. State of Delhi uses all the three criteria's (A, B, & C) but to improve this we have to increase the specificity of case definition of MDR suspects which would instead decrease our case finding (11). If we have good coordination between the reporting health facilities and the receiving units number of lost suspects will decrease. Although majority of the TB-HV coordinators found the reporting format simple yet the level of knowledge regarding case definitions especially that of treatment outcomes was not satisfactory though they have been working with the programme for a two to three years. This fact lays stress on the need of repeated sensitization of health workers working for the programme. Simplicity of the reporting format is closely related to the timeliness and acceptability of the reporting format. Our evaluation of the surveillance system found that acceptability of the reporting format was good as all the TB-HV coordinators were submitting completed formats but this was only achieved because of the efforts of DR-TB nodal officer and the statistical assistant. All the treatment cards of patients whose outcomes are due are cross checked and corrected by them after completion by TB-HV coordinators and only after that the quarterly report formats are filled.

As far as data quality is concerned, 75% of the quarterly reports were correct which was due to lack of knowledge of statistical assistant as he was new and he had limited knowledge about the programme as he did not receive a formal training after appointment. As he gained experience the compiling of quarterly report became more streamlined. This lays emphasis on the need of formal training of all the fresh appointments at various posts in the programme. Out of treatment cards checked 32% were incomplete as entries of sputum culture follow up, retrieval action of defaulters and adverse drug reaction histories were missing. The drug administration chart was also found to be incomplete. The reasons gave by health workers for the same was that they were overburdened as there is no pharmacist and counsellor for PMDT and TB-HV coordinators have to perform their duties too. There is an urgent need to fill up the vacant posts for improving the data quality.

Overall the PMDT surveillance is strong but with slight improvements it can be taken to a higher level. Presently, programme is undergoing transition from category IV and V regimens to individualized treatment regimens based on culture and drug sensitivity testing there is even a stronger need to

establish a reliable monitoring and evaluation system within the programme which shall focus on key process and outcome indicators. NIKSHAY/ e-NIKSHAY launched in June 2012, is a web enabled application, which facilitates monitoring of universal access to TB patients data by all concerned. It will also include the database of all MDR-TB cases across the country which enables the use of database for monitoring and research purposes at all levels so that India can become TB free (12).

Conclusion

Private sector needs to be taken on board as they have no to minimal involvement in PMDT. For improvement in data quality time to time training of medical officers and health workers should be undertaken and given due importance on routine basis.

Recommendation

- Improved co-ordination with private and public health facilities to ensure that reporting is regular and complete.
- Increase the awareness level of the disease among the general population.
- Regular training of all the medical officers and health workers on case definition, recording and reporting of cases.

Limitation of the study

The present study was conducted in one of the oldest DR-TB centers implementing PMDT but the scenario could be different at centres established lately where surveillance maybe facing initial hiccups.

Relevance of the study

Surveillance evaluation of PMDT to identify its strengths and constraints has never been conducted in the country. The policy makers can identify the various issues related to surveillance of MDR-TB and taken care of at the earliest when TB control is the priority of the country's health system.

Authors Contribution

1. Dr. Preeti Padda made substantial contributions to conception and design, acquisition of data or analysis and interpretation of data as well as drafting the article or revising it critically for important intellectual content
2. Dr. Neeta Singla: drafted the article and revising it critically for important intellectual content along with final approval of the version to be published
3. Dr. Rohit Sarin: gave final approval of the version to be published

Acknowledgement

We would like to thank Dr. Samir V. Sodha and Dr. Kyala Laserson for their continuous support and guidance during the study.

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Tables

TABLE 1 ATTRIBUTES FOR EVALUATING PMDT SURVEILLANCE SYSTEM IN DR-TB CENTRE, NITRD, NEW DELHI.

ATTRIBUTES	INDICATORS	DATA NEEDED	SOURCE OF DATA	STUDY DESIGN
1. Timeliness	Proportion of quarterly reports submitted within 15 days.	No. of reports submitted within 15 days / Total no. of reports submitted since '09	1.Reports of DR-TB centre	Review of records
2.Representativeness	Proportion of districts reporting to DR-TB centre.	No. of districts reporting Total no. of districts under DR-TB centre.	Quarterly Report at DR-TB centre.	Review of records
3. Positive Predictive Value (PPV) for Confirmed cases	B. Proportion of confirmed MDR-TB cases captured by the system	Total no.of confirmed MDR TB cases Total no.of MDR-TB suspects.	Quarterly Report at DR-TB centre.	Review of records
4.Simplicity	A. Proportion of health workers who felt filling the formats was simple.	No of DR-TB supervisors who felt filling the forms was simple Total no of DR-TB supervisors interviewed	Interview of DR-TB supervisors of each district.	Interview by questionnaire.
	B. Proportion of reporting persons having correct knowledge of case definition.	No of reporting persons (MO/Supervisor) having correct knowledge of case definition Total no of persons interviewed		Cross sectional survey.
5.Acceptability	A. Proportion of completed formats sent.	No. Of completed quarterly reports sent. Total no. of quaterly reports sent.	DR-TB centre records	Review of records.
	B. Proportion of health workers who found the reporting format time consuming.	No. of DR-TB supervisor who found the reporting format time consuming Total No. of supervisors interviewed	Interview of the DR-TB supervisors	Interview by questionnaire
6.Data Quality	A. Proportion mismatched quarterly reports	No of mismatched quarterly report Total no of quarterly reports checked	Reports of DR-TB centre	Review of records.
	B. Proportion of incomplete treatment cards	No.of treatment cards with incomplete enteries Total no.of treatment cards checked	DR-TB centre records	Review of records

TABLE 2 SELECTED INDICATORS FOR EVALUATION OF PMDT SURVEILLANCE AT DR-TB CENTRE, NITRD, DELHI.

Attributes	Indicators	n/N	Percentage
Timeliness	No. of reports submitted within 15 days / Total no. of reports submitted since '09	24/24	100
Representativeness	No. of districts reporting / Total no. of districts under DR-TB centre	4/4	100
PPV (Detection rates of true positives)	Total no.of confirmed MDR TB cases / Total no.of MDR-TB suspects.	508/4360	11.7%
Simplicity	No of DR-TB supervisors who felt filling the forms was simple / Total no of DR-TB supervisors interviewed	3/4	75
	No of reporting persons (MO/Supervisor) having correct knowledge of case definition / Total no of persons interviewed	3/5	60
Acceptability	No. Of completed quarterly reports sent / Total no. of quaterly reports sent.	24/24	100
	No. of DR-TB supervisor who found the reporting format time consuming / Total No. of supervisors interviewed	3/ 4	75
Data Quality	No of mismatched quarterly report / Total no of quarterly reports checked	1/ 4	25
	No.of treatment cards with incomplete entries / Total no.of treatment cards checked	19/60	32

Figures

FIGURE 1 FLOW CHART OF PMDT SURVEILLANCE SYSTEM IN DR-TB CENTRE AT NITRD, NEW DELHI.