Delay and attrition before treatment initiation among MDR-TB patients in five districts of Gujarat, India

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<http://dx.doi.org/10.5588/pha.18.0003>

Setting: Gujarat, a state in west India.

Background: Although treatment initiation has been improving among patients diagnosed with multidrug-resistant tuberculosis (MDR-TB) in programme settings, it has still not reached 100%.

Objectives: To determine pre-treatment attrition (not initiated on treatment within 6 months of diagnosis), delay in treatment initiation (>7 days from diagnosis) and associated factors among MDR-TB patients diagnosed in 2014 in five selected districts served by two genotypic drug susceptibility testing (DST) facilities and a drug-resistant TB centre in Gujarat.

Design: This was a retrospective cohort study involving record review.

Results: Among 257 MDR-TB patients, pre-treatment attrition was seen in 20 (8%, 95%CI 5–12). Patients with 'follow-up sputum-positive' as their DST criterion and sputum smear microscopy status 'unknown' at the time of referral for DST were less likely to be initiated on treatment. The median delay to treatment initiation was 8 days (interquartile range 6–13). Patients referred for DST from medical colleges were more likely to face delays in treatment initiation.

Conclusion: The Gujarat TB programme is performing well in initiating laboratory-confirmed MDR-TB patients on treatment. However, there is further scope for reducing delay.

Tuberculosis (TB) is a major public health problem worldwide. The main challenge facing TB elimination is the increase in rifampicin (RMP) resistant and multidrug-resistant TB (MDR-TB; defined as resistance to at least isoniazid and RMP).^{1,2}

In recent times, access to genotypic drug susceptibility testing (DST) for patients with TB has increased.² However, many studies worldwide have raised concerns about the high attrition rate and/or delays in the diagnostic and treatment pathway for MDR-TB.^{3–14} In 2016, of an estimated 600 000 MDR/RR-TB patients worldwide, 153 119 (26%) were reported to be diagnosed, 129 689 (85%) of whom were initiated on treatment.² Reduction in attrition after diagnosis (pre-treatment attrition) through prompt initiation of treatment for MDR-TB patients is crucial to prevent the transmission of disease and reduce related morbidity and mortality.¹⁵

India has the world's highest TB and MDR-TB burden, and accounts for more than a quarter of the global TB burden.² One fifth of all TB patients in India

are 'lost', despite reaching government health facilities, either during the diagnostic process or after diagnosis. The latter is important, because these are patients who accessed public services and received a diagnosis, but still got 'lost', and they represent a key opportunity for ending TB.¹⁶ Pre-treatment loss to follow-up among MDR-TB patients was 23% in 2013.¹⁶ This rate appears to have decreased over the years, however, and in 2016, of 37 528 patients detected, 32 914 (88%) were placed on treatment.^{2,16}

India's Revised National Tuberculosis Control Programme (RNTCP) adopted the World Health Organization (WHO) recommended programmatic management of drug-resistant TB (PMDT) for effective delivery of drug-resistant TB (DR-TB) services in 2006.^{15,17} The RNTCP has been consistently challenged with a treatment initiation gap among patients diagnosed with MDR-TB. There is limited published literature on risk factors for pre-treatment attrition and delay in treatment initiation among MDR-TB patients from India, mostly due to limited sample size for a risk factor analysis.^{10,12,13,18,19} Understanding the risk factors will help programme managers working at national and local levels to strengthen their PMDT services and bridge the diagnosis–treatment gap.

Although treatment initiation in Gujarat, West India, has been improving over the years (from 84.2% in 2013 to 91% in 2014–2015), initiation of treatment has still not reached 100%. We conducted an operational research (OR) study among patients diagnosed with MDR-TB in 2014 across five selected districts served by the DR-TB centre, Vadodara, India. We aimed to determine pre-treatment attrition (those not initiated on treatment at the designated DR-TB centre within 6 months of diagnosis) and delays (>7 days from diagnosis) in treatment initiation and associated risk factors (demographic, programmatic and clinical).

MATERIAL AND METHODS

Study design

This was a cohort study involving record review.

Study setting

Study sites

Five RNTCP districts—Panchmahal, Vadodara Municipal Corporation, Chota Udaipur, Bharuch and Narmada—in Gujarat State, India, were purposefully selected (Figure 1).

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KEY WORDS

multidrug-resistant tuberculosis; prevention and control; operational research; India; initial loss to follow-up

Received 13 January 2018
Accepted 24 March 2018

PHA 2018; 8(2): 59–65
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FIGURE 1 Five districts from Gujarat, India, that were included in the study.* District boundaries are as for 2011; Mahisagar District was carved out of Panchmahal in 2013. However, during the study period, Mahisagar was being managed as part of the RNTCP district of Panchmahal. RNTCP = Revised National Tuberculosis Control Programme.

General setting

Gujarat has a population of 60 million, with 43% of its inhabitants residing in urban areas, and a literacy rate of 79%. The prevalence of human immunodeficiency virus (HIV) infection among registered TB patients is 3%.²⁰ MDR-TB prevalence among presumptive DR-TB patients undergoing DST in the state is 6.7%.²⁰ The RNTCP infrastructure in a district includes one District TB Centre (DTC), subdistrict level programme management units (Tuberculosis Units, TUs) and designated microscopic centres (DMCs) for sputum smear examination. The demographic details and RNTCP infrastructure of the study districts in 2014 are shown in Table 1.²¹

PMDT services

The diagnosis and treatment pathway for MDR-TB is given in Figure 2. In 2014, genotypic DST services (cartridge-based nucleic-acid amplification test [CbNAAT]) for all study districts were provided by the CbNAAT site at the Vadodara-rural DTC (40–130 km), except for Panchmahal District, which sent specimens to an intermediate reference laboratory in Ahmedabad, the capital of Gujarat, 120 km away. Patients with presumptive MDR-TB, who were eligible for DST, included all patients with previously treated TB, TB patients who were smear-positive during routine follow-up sputum microscopy, new pulmonary TB patients who were contacts of

ACKNOWLEDGEMENTS

The authors thank the RNTCP programme staff of Gujarat, India, who assisted in data collection; the Head of Department, Preventive and Social Medicine and the Dean, Medical College, Vadodara; and the District TB officer, Vadodara (rural) for their constant support in conducting the study; and the Department for International Development (DFID), London, UK, for funding the Global Operational Research Fellowship Programme at the International Union Against Tuberculosis and Lung Disease (The Union), Paris, France, where HDS works as a senior operational research fellow, and for funding the open access. Additional support for open access publication was provided by La Fondation Veuve Emile Metz-Tesch (Luxembourg). The study was conducted as operational research under programme conditions using programme staff. However, support for data entry (US\$310) was provided through DFID funds. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Disclaimer: The contents of this paper do not necessarily reflect the views of the Government of India, Medical College Vadodara, India, World Health Organization Country Office for India, Gujarat Medical Education & Research Society (GMERS) Medical College and Hospital, Gandhinagar, India or The Union, Paris, France. Conflicts of interest: none declared.

TABLE 1 Demographic details* and RNTCP infrastructure in the study districts ($n = 5$) in Gujarat, India, 2014²¹

	Panchmahal %	Vadodara Municipal Corporation %	Narmada %	Bharuch %	Chota Udaipur %
Population, million	2.3	1.8	0.6	1.6	1.1
Population as proportion of state population	4	3	1	3	2
Literacy	71	79 [†]	72	82	46
Urban population	14	100	10	34	47
Tuberculosis units, n	7	8	5	9	6
Designated microscopy centres, n	41	13	18	27	24
Facility for DST within the district [‡]	No	No	No	No	No
DR-TB centre within the district [‡]	No	Yes	No	No	No

*Per 2011 census.

[†]Literacy rate for Vadodara District per 2011 census (in 2011, this included Vadodara Municipal Corporation, Vadodara Rural and Chota Udaipur).

[‡]Specimens for DST had to be sent from Panchmahal to the intermediate reference laboratory at Ahmedabad, and from the four other districts to the DTC of Vadodara-Rural; patients diagnosed with MDR-TB were linked to the Government Medical College, Vadodara, for DR-TB treatment.

RNTCP = Revised National Tuberculosis Control Programme; DST = drug susceptibility testing; DR-TB = drug-resistant tuberculosis; DTC = district TB centre; MDR-TB = multi-drug-resistant TB.

FIGURE 2 Diagnosis and treatment pathway for MDR-TB patients in Gujarat, India, 2014. DMC = designated microscopy centre; CBNAAT = cartridge-based nucleic acid amplification test; IRL = intermediate reference laboratory; DTC = district TB centre; DR-TB = drug-resistant tuberculosis; MDR-TB = multidrug-resistant TB; DST = drug susceptibility testing; RR-TB = rifampicin-resistant TB.

known MDR-TB patients and all HIV-TB co-infected patients at diagnosis. Patients with presumptive MDR-TB were to be identified, and their specimens collected and couriered to a DST facility (along with a request for culture and DST form, a copy of which was maintained at the DMC) by the DMC laboratory technician.¹⁵

All results were sent to the respective DTC and DR-TB centre by e-mail. Personnel at district level maintained a list of these patients in the 'referral for culture-DST' register, and coordinated the treatment initiation of patients with laboratory-confirmed MDR-TB at the DR-TB centre. Treatment was initiated in accordance with RNTCP guidelines at the DR-TB centre in the Government Medical College, Vadodara, after completing baseline investigations and pre-treatment evaluation.¹⁵ Treatment details of patients started on treatment were entered in the PMDT register at the DR-TB centre. Initial hospitalisation for a short duration was followed by ambulatory care and scheduled follow-up visits for all patients. The distance between the DR-TB centre and the four other study districts ranged between 40 km and 130 km. Patients with RMP resistance were also treated with the standard MDR-TB regimen. MDR-TB therefore included RR-TB as well.¹⁵

For patients residing in districts other than Vadodara Municipal Corporation, those who were not too unwell underwent investigations on an out-patient basis and treatment was initiated at the district hospital after communication of the diagnosis to the patient's district DTC. There were no admissions. This was done to ensure minimal disruption to patients' daily routine that might result from travelling to and staying at the DR-TB centre for a week and the resultant loss of wages.

Study population

All patients diagnosed with MDR/RR-TB between 1 January 2014 and 31 December 2014 and residing in the study districts were included.

Data variables, sources of data and data collection

Data were collected between November 2015 and March 2016. A list of study participants was prepared based on the information obtained from the culture-DST register at the DST facilities. Vari-

ables collected were name, age, sex, date of test, name of DMC from which the patient was referred and type of facility in which the DMC was located (primary or secondary/district level/medical college/others). Criteria for presumptive MDR-TB (reason for offering DST), site of TB and baseline sputum smear microscopy status from the referring DMC were reviewed by checking the referral for DST form or the TB register at the TU level or the DMC laboratory register. Each eligible patient was traced using name, age and sex for up to 6 months after the date of diagnosis in the PMDT register at the DR-TB centre. Variables collected at this stage were whether the patient was initiated on treatment, and if so, the date of treatment initiation.

Data management and statistical analysis

Data collected in a structured form were double-entered, validated and analysed (unadjusted analysis) using EpiData (v 3.1 for entry and v 2.2.2.183 for analysis; EpiData Association, Odense, Denmark). Adjusted analysis was done using STATA v 12.1 (StataCorp, College Station, TX, USA). Real-time data capture was enabled through data entry in a shared Dropbox folder (www.dropbox.com).²² The South-East Asia Office of the International Union Against Tuberculosis and Lung Disease (The Union) coordinated this process.

Key outcome indicators were number (proportion) of study participants with pre-treatment attrition (diagnosed but not initiated on treatment within 6 months at the designated DR-TB centre). The cut-off of 6 months was arbitrary, as there is no prescribed cut-off, but the 6-month cut-off has been used previously.^{18,23} Among those initiated on treatment, we calculated the median (interquartile range [IQR]) time in days to initiate treatment (from date of diagnosis). Log-binomial regression (enter method) and modified Poisson regression using robust variance estimates (enter method) were used for adjusted analysis of risk factors for pre-treatment attrition and delay (>7 days) in initiating treatment, respectively. Associations were summarised and inferred using relative risk [RR] (unadjusted and adjusted [aRR]) and 95% confidence intervals (CIs), respectively.

STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines were followed for the conduct and reporting of this OR.²⁴

Ethical considerations

Ethical approval for the study protocol was obtained from the Ethics Advisory Group of The Union, Paris, France, and the Institutional Ethics Committee for Human Research, Medical College and Shree Sir Sayaji General Hospital, Vadodara, India. Permission and support was sought from the State RNTCP programme managers before initiating the OR. As the OR involved retrospective review of RNTCP records, a waiver for the need for informed consent was obtained from the ethics committees.

RESULTS

The mean age of the 257 patients diagnosed with MDR-TB was 37 years (standard deviation $\pm$ 12); 179 (70%) were males. More than 90% (n = 239) were referred from DMCs located in primary/secondary-level health facilities. The criteria for eligibility for DST were previously treated TB cases (n = 230, 89%), follow-up smear-positive cases (n = 15, 6%) and TB-HIV coinfection cases (n = 10, 4%) (Table 2).

Pre-treatment attrition had occurred in 20 patients (8%, 95%CI 5–12). Compared with MDR-TB patients diagnosed among previously treated TB patients, those with sputum-positive follow-up as their DST criterion had a six-fold higher risk of pre-treatment attrition (aRR 6.0, 95%CI 2.3–15.2). Compared with patients with sputum smear-positive pulmonary TB, those with unknown sputum smear microscopy status had a higher risk of pre-treatment attrition (aRR 17.1, 95%CI 7.7–39.3) (Table 3).

Among the cohort initiated on treatment (n = 237), dates for calculating time to treatment initiation were available in 230 patients. The median number of days to initiation of treatment was 8 (IQR 6–13). Delays (>7 days) in initiating treatment were observed in >50% of patients across all subgroups. Compared with patients referred from DMCs in a primary/secondary-level health facility, patients referred from DMCs in medical colleges had a 1.6-fold greater risk of delay in treatment initiation (aRR 1.6, 95%CI 1.3–2.1) (Table 4).

DISCUSSION

Summary of key findings

Pre-treatment attrition among diagnosed MDR-TB patients in selected districts of Gujarat was low. However, there was a delay of >7 days in starting treatment in about half of the patients.

Strengths and limitations

Our study had some strengths. Double entry and validation ensured that data were quality-assured. We used a robust methodology with pre-defined operational definitions and a uniform follow-up period.

There were some limitations. The study findings were not representative of the whole of Gujarat State. We do not know what happened to the patients who did not start treatment. Studies have shown that approximately 40% of patients who were recorded as 'did not initiate treatment' at the treatment centres were identified as out-migration to other areas or could not be traced due to an incorrect address, and about 10% due to death.^{25,26} Other patient-level data (extent of sickness, diabetes status, socio-economic and educational status) and programmatic/health system-level factors were not available in the re-

TABLE 2 Clinical and demographic profile of patients diagnosed with presumptive MDR-TB, Gujarat, India, 2014*

Variable	Patient with presumptive MDR-TB n (%) [†]
Total	257 (100)
Age, years	
<15	2 (1)
15–44	183 (71)
45–64	63 (24)
$\geq$ 65	9 (4)
Sex	
Male	179 (70)
Female	78 (30)
Health facility	
Primary/secondary level	239 (93)
District level	4 (2)
Medical college	14 (5)
Presumptive MDR-TB criteria	
Previously treated	230 (89)
Recurrent TB	204 (79)
Treatment after loss to follow-up	8 (3)
Treatment after failure	14 (5)
Other	4 (2)
Follow-up smear-positive	15 (6)
New patient with TB-HIV	10 (4)
New pulmonary TB with known MDR-TB contact	2 (<1)
Site of TB	
Extra-pulmonary	1 (<1)
Pulmonary, smear-negative	3 (1)
Pulmonary, smear-positive	226 (88)
Pulmonary, smear missing	27 (11)

* Districts from Gujarat State included in the study: Bharuch, Chota Udaipur, Narmada, Panchmahal and Vadodara Municipal Corporation.

[†] Column percentages.

MDR-TB = multidrug-resistant TB; HIV = human immunodeficiency virus.

cords. There may have been some measurement errors that are inherent to OR.

Interpretation of key findings

Our study has reported low time to treatment from diagnosis (median 8 days) and low pre-treatment attrition (<10%) relative to studies from other parts of the world.^{14,26–28}

Given the absence of a testing facility in all the study districts and the absence of a DR-TB centre in four of the five study districts, the low pre-treatment attrition rate (8%) in our setting is commendable, given the global and Indian estimates in 2016 (respectively 15% and 12%).² According to a recently published systematic review of studies published between 2000 and 2015, the average pre-treatment attrition rate was 24%.¹⁴ Attrition in other settings with a genotypic DST facility were 21% in Bangladesh (2012–2014); respectively 12%, 13% and 38% in New Delhi (2011–2012), Bhopal (2014) and Chennai (2014), India; and 37% in South Africa (2011 and 2013).^{10,18,23,26,29,30}

While we are not sure of the reasons for this excellent performance, we speculate that it might be due to the decentralised initiation of MDR-TB treatment in the district hospital, instead of referring them for treatment to the DR-TB centre in accordance with RNTCP guidelines, particularly in the case of patients who were not severely ill.

TABLE 3 Association of clinical and sociodemographic factors with pre-treatment attrition among patients diagnosed with MDR-TB, Gujarat, India, 2014*

Variable	Total <i>n</i>	Attrition <i>n</i> (%) [†]	RR (95%CI)	aRR (95%CI) [‡]
Total	257	20 (8)		
Age, years				
<15	2	0	—	—
15–44	183	14 (8)	Reference	Reference
45–64	63	5 (8)	1.0 (0.4–2.8)	1.5 (0.7–3.4)
≥65	9	1 (11)	1.5 (0.2–9.9)	2.4 (0.3–17.4)
Sex				
Male	179	13 (7)	Reference	Reference
Female	78	7 (9)	1.2 (0.5–3.0)	1.2 (0.6–2.8)
Health facility				
Primary/secondary level	239	17 (7)	Reference	Reference
District level	4	1 (25)	—	—
Medical college	14	2 (14)	2.0 (0.5–7.8)	0.7 (0.3–1.5)
Presumptive MDR-TB criteria				
Retreatment	230	15 (7)	Reference	Reference
Follow-up smear-positive	15	5 (33)	5.1 (2.1–12.2) ^{§¶}	6.0 (2.3–15.2) ^{§¶}
New patient with TB-HIV	10	0 (0)	—	—
Pulmonary TB with MDR-TB contact	2	0 (0)	—	—
Site of TB				
Extra-pulmonary	1	0 (0)	—	—
Pulmonary, smear-negative	3	2 (67)	—	—
Pulmonary, smear-positive	226	13 (6)	Reference	Reference
Pulmonary, smear missing	27	5 (19)	3.2 (1.2–8.3) ^{§¶}	17.1 (7.7–39.3) ^{§¶}

* Districts from Gujarat State included in the study: Bharuch, Chota Udaipur, Narmada, Panchmahal and Vadodara Municipal Corporation.

[†] Row percentages.

[‡] Log-binomial regression (enter method).

[§] $P < 0.05$.

[¶] Statistically significant.

MDR-TB = multidrug-resistant TB; RR = relative risk; CI = confidence interval; aRR = adjusted RR; HIV = human immunodeficiency virus.

Patients with a criterion for presumptive MDR-TB (i.e., follow-up sputum-positive, indicating an unsatisfactory outcome) probably lost hope with treatment in the government sector and may have visited the private sector. Unknown pulmonary TB sputum smear microscopy status (probably a recording-related issue) was also a risk factor for attrition. We do not know the reasons for this, and further study is required.

Around three quarters of the patients were initiated on treatment within 13 days. The median time to treatment initiation from testing (8 days in our study) is lower than the global median, 59 days.¹⁴ In other settings with genotypic DST, the median time to treatment was as follows: 5–10 days in Bangladesh (2012–2014); respectively 7, 18 and 18–24 days in Bhopal (2014), Chennai (2014) and New Delhi (2011–2012), India; 10 (2011) and 22 days (2013) in South Africa; and 9–17 days in Russia (2011–2012).^{10,23,29–33}

Patients referred from DMCs in medical colleges had a higher risk of delay: this indicates that linkages between the medical colleges and the DTC in the patient's district were not optimal and needed to be addressed. This is an actionable point, but may not significantly affect the overall rate of delay, as DMC-referred patients accounted for only 5% of the total. The majority of patients were referred for DST from primary/secondary-level DMCs ($n = 215$), more than half of whom experienced delays (>7 days) in treatment initiation (Table 4). Similar findings were identified in antiretroviral therapy (ART) centres located in Gujarat's medical

colleges (2014–2015), where 16% of PLHIV eligible for ART were not started on ART within 2 months of registration.³⁴

Implications for public health practice

A systematic qualitative survey is required to understand what the RNTCP in these selected districts is doing to ensure high levels of treatment initiation from the patients' and providers' perspective. This would help programme managers in other parts of the country to learn and implement corrective measures. The baseline investigations and initiation of treatment on an out-patient basis in district hospitals for patients who are not too unwell seem to be working. This, along with improving the technical capacity of the district hospitals/DTCs in MDR-TB management, may also be considered in other parts of the country. In addition, there is scope for improving treatment initiation among diagnosed patients by using follow-up sputum positivity as a reason for DST. Furthermore, as the country embarks on universal DST, establishment of DR-TB centres that are decentralised at the district level to match the CbNAAT laboratories in every district will reduce delays in treatment initiation and, potentially, pre-treatment attrition.³⁵

CONCLUSION

In a setting that provides genotypic DST, we assessed gaps in treatment initiation among patients diagnosed with MDR-TB in

TABLE 4 Association of clinical and sociodemographic factors with delay in treatment initiation (≥ 8 days) among patients with MDR-TB initiated on treatment, Gujarat, India, 2014*

Variable	Total <i>n</i>	Delay <i>n</i> (%) [†]	RR (95%CI)	aRR (95%CI) [‡]
Total	230 [§]	122 (53)		
Age, years				
<15	1	0	—	—
15–44	164	83 (51)	Reference	Reference
45–64	57	33 (58)	1.1 (0.9–1.5)	1.1 (0.8–1.4)
≥ 65	8	6 (75)	1.5 (0.9–2.3)	1.3 (0.8–2.0)
Sex				
Male	159	86 (54)	Reference	Reference
Female	71	36 (51)	1.1 (0.8–1.4)	0.9 (0.7–1.3)
Health facility				
Primary/secondary level	215	110 (51)	Reference	Reference
District level	3	2 (67)	—	—
Medical college	12	10 (83)	3.7 (2.3–6.0) [¶]	1.6 (1.3–2.1) [¶]
Presumptive MDR-TB criteria				
Retreatment	208	109 (52)	Reference	Reference
Follow-up smear-positive	10	7 (70)	1.3 (0.9–2.1)	1.3 (0.9–2.1)
New patient with TB-HIV	10	6 (60)	1.1 (0.7–1.9)	1.0 (0.6–1.7)
Pulmonary TB with MDR-TB contact	2	0	—	—
Site of TB				
Pulmonary, smear-negative	1	0	—	—
Pulmonary, smear-positive	207	109 (53)	Reference	Reference
Pulmonary, smear missing	22	13 (59)	1.1 (0.8–1.6)	— [#]

*Districts from Gujarat State included in the study: Bharuch, Chota Udaipur, Narmada, Panchmahal and Vadodara Municipal Corporation.

[†]Row percentages.

[‡]Poisson regression with robust variance estimates.

[§]Of the 237 patients with MDR-TB who were initiated on treatment, date of diagnosis/treatment initiation was not recorded for seven patients.

[¶] $P < 0.05$.

[#]Omitted because of collinearity.

MDR-TB = multidrug-resistant TB; RR = relative risk; CI = confidence interval; aRR = adjusted RR; HIV = human immunodeficiency virus.

five selected districts of Gujarat, India. The districts were doing well in initiating patients on treatment by decentralising some services to the district level and providing complete ambulatory care for those who were not seriously ill; however, there is further scope for reducing delays in treatment initiation where further decentralisation and capacity building of districts would be critical. Treatment initiation among all eligible patients is essential if we are to ensure survival for all patients diagnosed with MDR-TB, prevent transmission and end the epidemic of TB by 2030, in line with the recently launched Sustainable Development Goals.³⁶

Data availability statement

The data set and codebook used in this study are available in MS Excel (Microsoft, Redmond, WA, USA) format (dataset.xlsx).

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Contexte : Dans le Gujarat, un état de l'ouest de l'Inde, même si la mise en route du traitement a été améliorée pour les patients ayant eu un diagnostic de tuberculose multirésistante (TB-MDR) dans le contexte des programmes, elle n'a pas encore atteint 100%.

Objectif : Déterminer l'attrition avant traitement (c'est-à-dire un traitement pas mis en route dans les 6 mois suivant le diagnostic), le retard à la mise en route (>7 jours du diagnostic) et les facteurs associés parmi des patients TB-MDR diagnostiqués en 2014 dans cinq districts sélectionnés servis par deux structures de test génotypique de pharmacosensibilité (DST) et un centre de TB résistante au Gujarat.

Schéma : Ceci a été une étude rétrospective de cohorte basée sur une revue de dossiers.

Marco de referencia: Gujarat es un estado del occidente de la India donde se han logrado avances en la iniciación del tratamiento de los pacientes con diagnóstico de tuberculosis multirresistente (TB-MDR) en el marco programático, pero aún no se ha alcanzado el 100%.

Objetivos: Determinar la tasa de abandono anterior al tratamiento (no haber iniciado tratamiento en un lapso de 6 meses después del diagnóstico), el retraso en la iniciación del tratamiento (>7 días después del diagnóstico) y los factores asociados en los pacientes diagnosticados con TB-MDR de cinco distritos escogidos de Gujarat atendidos por dos centros de pruebas genotípicas de sensibilidad a los medicamentos (DST) y un centro de tuberculosis resistente en el 2014.

Método: Fue este un estudio de cohortes retrospectivo con examen de las historias clínicas.

Résultats : Sur 257 patients TB-MDR, l'attrition avant traitement a été constatée chez 20 patients (8% ; IC95% 5–12). Les patients ayant un « crachat de suivi positif » comme critère de DST et un statut de microscopie de frottis de crachats « inconnu » lors de la référence pour DST ont été moins susceptibles d'être mis sous traitement. Le délai médian de mise en route du traitement a été de 8 jours (intervalle interquartile 6–13). Les patients référés pour DST de centres hospitalières universitaires sont plus susceptibles de rencontrer des retards à la mise en route du traitement.

Conclusion : Le programme TB du Gujarat est performant en mettant en route le traitement de TB-MDR confirmé par le laboratoire. Il reste cependant une marge d'amélioration en matière de réduction des délais.

Resultados: De los 257 pacientes con diagnóstico de TB-MDR, se observó un abandono anterior al tratamiento en 20 casos (8%; IC95% 5–12). La probabilidad de iniciar el tratamiento era menor en los pacientes cuyo criterio para practicar las DST era 'seguimiento a la positividad del esputo' y su situación de la baciloscopia del esputo era desconocida en el momento de la remisión para las pruebas. La mediana del retraso en la iniciación del tratamiento fue 8 días (amplitud intercuartil 6–13). Los pacientes remitidos de las facultades de medicina para realizar las DST presentaban con mayor frecuencia retrasos en la iniciación del tratamiento.

Conclusión: El desempeño del programa contra la TB de Gujarat es adecuado con respecto a la iniciación del tratamiento de los pacientes con TB-MDR confirmada por el laboratorio. Sin embargo, aún son necesarios progresos en esta esfera con el fin de acortar los retrasos.