# A Study of Deaths Due To Tuberculosis in Hospitalised Patients
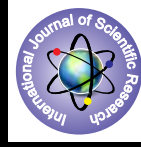
| | |
|---|---|
| **Dr Sanjivani J. Keny** | MD TB and Chest Diseases. Assistant Professor , Department of Pulmonary medicine, Goa Medical College. |
| **Dr A.L. Da Costa** | MD TB and Chest Diseases. Ex- Associate Professor, Department of Pulmonary medicine, Goa Medical College |
| **Dr Durga J. Lawande** | MD TB and Chest Diseases. Professor ,Department of Pulmonary medicine, Goa Medical College. |

**ABSTRACT**

*Background: According to World Health Organization although number of deaths due to TB has decreased over a period of time, the mortality rate still remains unacceptably high. Most of these deaths are preventable.*
*Objectives: 1.To analyse deaths due to TB.*
*2.To evaluate whether these deaths were preventable.*
*Materials and Methods: Retrospective descriptive study for a period of one year from 1 Jan 2014 to 31 Dec 2014. Deaths due to TB in patients admitted in pulmonary medicine wards were analysed.*
*Results: Fifty-three deaths occurred due to pulmonary tuberculosis of which in 22 patients there was delay in diagnosis, 14 were defaulters , six were DR TB, eleven had HIV-TB co-infection.*
*Delay in diagnosis was due to either lack of awareness or negligence by the patient, family or society in general and also failure to diagnose early at peripheral level despite patient reporting to the health system. Second commonest cause was default from treatment.*
*Conclusions: Most of these deaths could have been prevented by adequate measures.*

## Introduction

Globally Tuberculosis (TB) ranks as the second leading cause of death from a single infectious agent after HIV. In 2013, 1.5 million people died from TB which included 3,60,000 HIV infected individuals. Although number of deaths due to TB has decreased over a period of time, the mortality rate still remains unacceptably high. Most of these deaths are preventable.[1]

This study aims to analyse causes of deaths due to TB and to evaluate whether these deaths were preventable.

## Materials and methods

This is a retrospective descriptive study conducted over a period of one year from January 2014 to December 2014. Deaths due to TB amongst patients admitted in pulmonary medicine wards of Goa Medical College were analysed.

In our setting, patients of TB are treated as per Revised National Tuberculosis Control Programme (RNTCP) guidelines. Ours being a tertiary care hospital, patients of TB needing hospitalization are referred to us from periphery.

## Results

Total number of deaths due to TB among hospitalised patients over a study period of one year was 53. (Table 1)

Out of 53 deaths 22 died due to delay in diagnosis. All 22 patients at admission had far advanced Pulmonary TB. 16 deaths occurred due to delay by patients or family in particular or society in general.

Out of these 16, eight were totally unaware about the disease due to illiteracy. Eight were neglected by family or society amongst which three were road-side beggars, three were chronic alcoholics and two had psychiatric illness.

Six deaths occurred due to delay in diagnosis at peripheral health centres. Out of these, four patients were not diagnosed as TB although their chest x-ray showed minimal lesions as sputum smear for AFB was negative. These patients worsened progressively and died of far advanced PTB. Two deaths occurred in patients who were sputum smear for AFB positive at end of DOTS therapy but were not investigated for drug resistance and eventually worsened.

Deaths occurred in 14 defaulters out of which two were initial defaulters and 12 defaulted during course of treatment. Among these 12 there were six chronic alcoholics who were retrieved but defaulted repeatedly. All the defaulters died of far advanced PTB.

Six patients died of Drug Resistant (DR) TB out of which five had Multidrug resistant (MDR) TB, one Extensively Drug Resistant (XDR) TB.

HIV-TB co-infection was responsible for eleven deaths. Out of these five had disseminated TB, five PTB and one Extra Pulmonary TB(EPTB).Out of these, seven were diagnosed to have HIV infection during this admission, two ART defaulters, two were already on ART at the time of admission.CD4 count of five patients was available of which three had extremely low count that was less than thirty and it was below 100 in two patients.

## Discussion

India is the world's second most populous country and a quarter of the world's annual incidence of TB occurs in India. In India TB kills more adults than any other infectious disease.[2] According to census of mortality, TB was responsible for 6% of total number of deaths in India.[3] Thus although mortality due to TB has reduced substantially, the rate still remains high. Most of these deaths are preventable.[1]

In this study we observed that maximum number of deaths occurred due to delay in diagnosis. So, by the time patients were diagnosed, they had far advanced disease. This could have been prevented with early diagnosis. However due to lack of awareness about the disease or due to neglect by the patients, family or society, the diagnosis was delayed. Also some deaths occurred due to missed diagnosis at the peripheral health centres due to lack of awareness of the

health services personnel. Repeated visits to the same level of health care system also did not help in making a diagnosis. Instead such patients should have been referred to higher centre for investigations. Similar observation was made in a review by Storla DG et al.[4]

If not diagnosed early, these patients remain source for transmission of disease in the community and therefore are responsible for the increase in incidence of disease. Secondly with the disease progression, likelihood of worsening of general condition due to other reasons like loss of appetite and weight, toxaemia of TB, worsening of other comorbidities like diabetes mellitus and HIV infection in turn will lead to increase in deaths. Therefore it is essential to diagnose TB early so that early treatment can be initiated and deaths prevented. This can be achieved by extensive health education and TB awareness programmes in the community. This can help in changing patients perception regarding TB and decrease fear of discrimination and stigmatization.[5] Tendency of chest symptomatics in seeking health care is inadequate as observed in many studies.[6] Therefore improving case finding by active process like targeting contacts of TB, house to house search of symptomatics may help in early diagnosis. These methods may help in diagnosing 10 percent more cases as compared to current passive case-finding in DOTS.[7]

Second commonest cause of death in our study was default from treatment. Fault was both at patient level as well as at the health system. Non-retrieval was most important cause of worsening of patient's condition and death. Also there were chronic alcoholics who defaulted several times after retrieval. However one cannot blame the patient as well as the system entirely in this regard. TB treatment is of long duration ie of at least six months and more and it takes a lot of perseverance to adhere to it. Longer the treatment there is always possibility of interruption and default. A high default rate has been observed in many studies in India.[8] Health education and motivation of the patients are crucial methods which need to be strengthened to reduce default rates. In our study two initial defaulters remained untraced and ultimately died of TB. There are limited studies of initial defaults in India. One such study in TB Research centre, Chennai recommends improving ability of health services providers in motivating patients and initiating sputum positive patients on treatment as early as possible. This is possible by training the health personnel emphatically in this regard. It also recommends to use initial defaulter as a yardstick to monitor success of RNTCP.[9]

DR TB was responsible for six deaths in our study. Studies have demonstrated that mortality is higher in MDR TB cases as compared to Drug susceptible TB.[10] It implies that deaths can be prevented by preventing MDR and XDR TB. Successful implementation of DOTS is necessary for prevention of MDR TB in most of the cases.

Eleven patients died of HIV-TB co-infection. According to World Health Organization HIV TB Facts 2013,TB is the leading cause of death among people living with HIV, accounting for one in five HIV-related deaths. In order to reduce the burden of TB among people living with HIV the Three I's for HIV/TB (Intensified case finding for TB, Isoniazid preventive therapy (IPT), and Infection control)should be implemented by all health facilities offering HIV care services.

Early diagnosis and treatment of active TB disease in people living with HIV is needed to reduce mortality. Use of Xpert MTB/RIF rapid test available now under RNTCP will be a major diagnostic tool for early initial diagnosis o TB in people living with HIV who have suspected TB.[11]

## Conclusions

In this study we evaluated deaths in TB patients and came to the conclusion that most of the deaths were preventable. Early diagnosis of TB, compliance to therapy with DOT and intensive case finding among people living with HIV are required for decreasing deaths due to TB. This can be achieved by increasing health education and awareness about TB in the community, imparting training to the health workers ,proper motivation and counselling of patients as well as family members, case detection by active case finding methods and screening of patients living with HIV at every visit to ART centre for symptoms and signs of active TB.

| Delay in diagnosis | Defaulters | DR TB | HIV-TB Co-infected |
|---|---|---|---|
| 22 | 14 | 6 | 11 |
| Health sector responsible 6 | Initial defaulters 2 | MDR TB 5 | PTB 5 |
| Patient/family/society responsible 16 | Other Defaulters 12 | XDR TB 1 | Disseminated TB 5 |
| | | | EPTB 1 |

**Table no.1 showing number of deaths due to various reasons in hospitalised TB patients.**

References:

1    WHO Global TB report 2014

2    RNTCP training module for medical practitioners,CTD,DGHS,MHFW, ND Dec 2010 page no. 1.

3.   Summary-Report on causes of death:2001-2003 in India. Available at:censusindia.gov.in. Last accessed on 16th Jan 2016.

4    Storla dg, Yimer S, Bjune GA. A systematic review of delay in the diagnosis and treatment of tuberculosis. BMC PublicHealth2008;8:15.

5    Yadav SP, Mathur ML, Dixit AK. Knowledge and attitude towards tuberculosis among sandstone quarry workers in desert parts of Rajasthan. Indian J Tuberc 2006;53:187-95.

6    Enwuru CA, Idigbe EO, Ezeobi NV, Otegbeye AF. Care-seeking behavioural patterns, awareness and diagnostic processes in patients with smear negative and culture positive pulmonary tuberculosis in Lagos, Nigeria. Trans R Soc Trop Med Hyg 2002;96:614-6.

7    Heller RF, Gemmel IL, Edwards R, Buchan I, Awassthi S, Volmink JA. Prioritising between direct observation of therapy and case-finding interventions for tuberculosis: use of population impact measures. BMC Med 2006;4:35.

8    Jaggarajamma K, Sudha G, Chandrasekaran V. Nirupa C, Thomas A, Santha T, et al. Reasons for non-compliance among patients treated under Revised National Tuberculosis Control Programme (RNTCP), Tiruvallur district, South India. Indian J Tuberc 2007;54:130-5.

9    Gopi PG, **Chandrasekaran V, Subramani R, Narayanan PR. Failure to initiate treatment for tuberculosis patients diagnosed in a community survey and at health facilities under a DOTS programme in a district of South India. Indian J Tuberc 2005;52:153-6.**

10   Chung-Delgado K, Guillen-Bravo S, Revilla-Montag A, Bernabe-Ortiz A. Mortality among MDR-TB Cases: Comparison with Drug-Susceptible Tuberculosis and Associated Factors. PLoS ONE 10(3): e0119332.

11   HIV associated TB Facts 2013 World Health Organization.    Available at www.who.int/tb/challenges/hiv/tbhiv_factsheet_2013.pdf Last accessed on 13th March 2016.