IJRM
INTERNATIONAL JOURNAL OF RESEARCH METHODOLOGY
An Official Publication of Human Journals

Human Journals
Review Article
August 2016 Vol.:1, Issue:3

Directly Observed Treatment, Short Course (DOTS): An overview

IJRM
INTERNATIONAL JOURNAL OF RESEARCH METHODOLOGY
An Official Publication of Human Journals

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Submission: 25 July 2016
Accepted: 29 July 2016
Published: 15 August 2016

HUMAN JOURNALS

www.ijrm.humanjournals.com

Keywords: DOTS, Tuberculosis, DOTS-PLUS

ABSTRACT

Directly Observed Treatment Short-course (DOTS) strategy is the treatment that ensures effective diagnosis and treatment of infectious cases. DOTS which cures 8 out of 10 patients treated have now been implemented in more than 110 countries. The key strategy followed in the Revised National Tuberculosis Control Programme (RNTCP) in India is DOTS. There has been a steady global uptake of DOTS TB control services over the subsequent decades. Whereas less than 2% of infectious TB patients were being detected and cured, with DOTS treatment services in 1990 approximately 60% have been benefitted from this care. Since 1995, 41 million people have been successfully treated and up to 6 million lives saved through DOTS and the Stop TB Strategy. 5.8 million TB cases were notified through DOTS programs in 2009. The use of DOTS –PLUS strategies are important in the case of MDR-TB treatments.

INTRODUCTION

Directly Observed Treatment Short-course (DOTS) strategy is the treatment that ensures effective diagnosis and treatment of infectious cases. On March 24, 1997, the Director-General of the World Health Organization declared, "the DOTS strategy for TB control represents the most important public health breakthrough of the decade, in terms of lives which will be saved"(1).

DOTS (directly observed treatment, short-course.), is the name given to the tuberculosis control strategy recommended by the World Health Organization. According to WHO, "The most cost-effective way to stop the spread of TB in communities with a high incidence is by curing it. The best curative method for TB is known as DOTS''(1). DOTS which cures 8 out of 10 patients treated has now been implemented in more than 110 countries. The key strategy followed in the Revised National Tuberculosis Control Programme (RNTCP) in India is DOTS (2,5,6).

REASONS FOR DOTS:

The DOT strategy is actively promoted by the World Health Organization (WHO) for TB patients in an effort to control the global emergency of TB.DOT produces superior treatment completion rates to those achieved by non-supervised interventions. DOT also leads to reduced relapse rates and drug resistance rates (Weis *et al*1994; Chinese Tuberculosis Control Collaboration 1996; Cao *et al*1998).The World Bank considers DOT to be one of the 'most cost-effective of all health interventions'. DOT is more cost-effective than self-administered treatment (Moore *et al*1996; Floyd et al 1997). Favourable reports of the use of DOT in the United States have been published in Texas (Weis *et al*1996), Baltimore (Chaulk and Pope 1997), San Francisco (Schecter 1997), and New York City (Fujiwara *et al*1997). DOT is being successfully implemented in many other countries (WHO 2000) (3).

Components of DOTS:

- ✪ Government commitment (including political will at all levels, and the establishment of a centralized and prioritized system of TB monitoring, recording, and training).
- ✪ Case detection by sputum smear microscopy.

✪ Standardized treatment regimen directly of six to nine months observed by a healthcare worker or community health worker for at least the first two months.

✪ A drug supply.

✪ A standardized recording and reporting system that allows assessment of treatment results (1).

DOT is recommended for:

- all cases resistant to rifampicin.
- all multidrug-resistant cases (resistant to INH and rifampicin)
- all relapses/reactivations
- all cases that clearly demonstrate an inability or unwillingness to self-medicate.

People with tuberculosis should be considered for DOT when there is:

- extensive disease and/or a high degree of infectiousness
- weak or absent social support
- a complex treatment regimen (3).

Impact of DOTS treatment:

There has been a steady global uptake of DOTS TB control services over the subsequent decades. Whereas less than 2% of infectious TB patients were being detected and cured, with DOTS treatment services in 1990 approximately 60% have been benefitted from this care. Since 1995, 41 million people have been successfully treated and up to 6 million lives saved through DOTS and the Stop TB Strategy. 5.8 million TB cases were notified through DOTS programs in 2009. A systematic review of randomized clinical trials found no difference in cure rates as well as the treatment completion rates between directly observed therapy (DOT) and self-administered drug therapy. A 2013 meta-analysis of both clinical trials and observational studies too did not find any difference between DOTS and self-administered therapy, however, the WHO and all other TB programs continue to use DOTS as an important strategy for TB delivery for fear of drug resistance. DOTS-Plus is for multi-drug-resistant tuberculosis (MDR-TB). Systemic review does not show that DOTS is more efficacious than self-administered treatment (1).

IMPORTANCE OF DOTS

Studies have shown that about one-third of patients receiving self-administered treatment do not adhere to treatment. It is impossible to predict which patient will take the medicines regularly. Directly Observed Treatment (DOT) is necessary at least in the initial phase of treatment to ensure adherence and achieve sputum smear conversion. The other advantage is that if a patient misses a dose can be traced immediately and treatment resumed (2).

DOTS and HIV

It has been demonstrated that DOTS can prolong the life of HIV-infected individuals and improve their quality of life and can stop the spread of TB by making them non-infectious in a short time. It can prevent the emergence and also reverse the trend of MDRTB. On the other hand, failure to use DOTS in the face of HIV can lead to the explosive spread of TB, with cases tripling and drug resistance increasing rapidly (2,7-9).

Advantages of DOTS strategy

- ❖ helps in alleviating poverty by saving lives, reducing the duration of illness and preventing new infectious cases.
- ❖ More than doubles the accuracy of TB diagnosis.
- ❖ results in success rates of up to 95%cut down TB deaths by seven fold.
- ❖ prevents treatment failure and the emergence of MDRTB.
- ❖ doubles the cure rate.
- ❖ reduces the incidence and prevalence of TB.
- ❖ improves the quality of care and overcomes stigma(4).

DOTS-Plus

It has been observed that in areas of minimal or no MDR-TB, DOTS achieves cure rates of up to 95%; results in a dramatic reduction in the TB burden and will be able to prevent the emergence of drug-resistant TB. However, standard short-course chemotherapy has been found to be an inadequate treatment for some patients with drug-resistant TB. These observations suggest that although the DOTS strategy is good for TB control, it requires being modified in some settings.

In 1998, WHO and several partners around the world conceived a DOTS-Plus strategy for the management of MDR-TB (4,10-17).

DOTS FOR CHEMOPROPHYLAXIS

Chemoprophylaxis for TB infection requires a long course of treatment in a good person. DOT has been shown to be cost effective for chemoprophylaxis in drug users at high risk of TB (Gourevitch *et al* 1998). It may be inappropriate to use DOT for everyone on chemoprophylaxis. However, using DOT for chemoprophylaxis should be considered if the client has risk factors for non-adherence and presents with one or more of the following:

• can be given DOT at the same time as a related case who is on full treatment by DOT in the same household or neighbourhood.
• has recently converted their Mantoux test following exposure to an infectious case.
- is under five years of age.
- has risk factors for progression from infection to disease.

• is a contact of a multidrug-resistant case.

Non-adherent cases on full treatment should have priority for DOT resources ahead of infected people requiring DOT chemoprophylaxis (3).

CONCLUSION

By referencing the sources mentioned below and reviewing papers, we come to across to the fact that the use of DOTS for TB treatment is still increasing at the very medium rate. Although the DOTS strategy has been widely accepted, many developing countries have been unable to expand coverage as rapidly as required and have failed to achieve the global targets of 70% case detection and 85% cure by the year 2000. The use of DOTS –PLUS strategies are important in the case of MDR-TB treatments.

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