

Tuberculosis registers in Africa: a review

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Introduction

Globally, there were an estimated 9.27 million incident cases of tuberculosis (TB) in 2007, of which 0.5 million were multi-drug resistant (MDR). Africa accounts for 31% of total incident cases of TB. By the end of 2008, 55 countries and territories had reported at least one case of extensively drug resistant TB (XDR-TB).¹ The DOTS (directly observed therapy short-course) strategy remains at the heart of the STOP TB partnership strategy. To achieve effective TB control, and nip the emergence and spread of drug-resistant TB bacilli, five key elements must be in place:

- political commitment;
- case detection by sputum smear microscopy;
- standardised appropriately administered treatment regimen of 6–8 months with first-line anti-TB drugs;
- uninterrupted supply of essential anti-TB drugs;
- a standardised recording and reporting system that allows for monitoring and evaluation of treatment outcomes.

An effective recording and reporting system incorporates the laboratory register, the patient treatment card, the TB patient register, and quarterly reports. These components should be cross-checked to evaluate completeness, accuracy, and promptness of record keeping, and programme audit. The TB patient register is maintained at local treatment units and comprises a list of all persons who have been diagnosed with TB. It contains entries for sex, date of birth, age, gender, address, phone, contact of both the patient and their treatment partner, type of TB, whether new or recurrent disease, HIV status and CD4 count if applicable, cotrimoxazole prophylaxis if indicated, anti-retroviral medications if required, status of follow-up smears, origin of patient, and treatment outcome. This register feeds into a district registry that enables monitoring of the TB situation at district level, as well as consolidating information about the overall epidemic. Data on all patients registered during a 3-month period comprise a quarterly cohort analysis that can be used to monitor treatment unit performance, identify local challenges, order correct quantities of drugs, and provide a snapshot of how local progress compares with national and World Health Organization (WHO) goals.² This review sought to assess the quality of TB registers and their utility in monitoring treatment outcomes in Africa.

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Methods

Between October 15th and November 15th 2009, a literature search was done using the PUBMED database with the keywords: Tuberculosis REGISTER AFRICA. ('tuberculosis'[MeSH Terms] OR 'tuberculosis'[All Fields]) AND ('Regist Ky Hist Soc'[Journal] OR 'register'[All Fields]) AND ('africa'[MeSH Terms] OR 'africa'[All Fields]). The abstracts of the listed articles were printed out and reviewed over the study period. Only articles commenting on the quality and utility of TB registers with regard to treatment outcomes were selected. The full articles were then accessed online and printed out for review.

Results

Out of 82 articles that met the search criteria, 8 articles were relevant. Table 1 summarises the objectives and findings of the studies included in the review.

Discussion

WHO estimates of TB incidence and prevalence, including drug-resistant forms and HIV-TB co-infection, are drawn from data collected by National Tuberculosis Programs (NTPs) globally. These data are compiled from TB registers maintained at local reporting units. Good quality registers provide reliable and accurate estimates of the epidemiology of tuberculosis. From such estimates, TB control efforts can be better designed and implemented.

Kenya is one of the countries that has met WHO targets of 70% case detection and 85% treatment success.¹ However, Chakaya et al found TB registration records to be incomplete at the country's main treatment centre with no outcome data available for 25% of cases studied.³

Ethiopia currently ranks 15th among nations with the highest burden of MDR tuberculosis with a total of 5979 estimated cases in 2007.¹ In Addis Ababa, the majority of private practitioners did not keep TB registers.⁴ The lack of adequate registration and follow-up selects for drug resistance.

Incorrect registration leads to wrong estimates of TB incidence. In Malawi, Harris et al, found that 7.5% of 'new' cases represented wrong classification of relapsed/recurrent cases.⁹ In the same country, the quality of data for patients transferred between treatment units was poor. Such data did not reach WHO surveillance and accounted for 'missing cases'.⁷

In Botswana, laboratory data on smear status were not recorded onto the TB register.¹⁰ The laboratory register was found to be incomplete in two African countries studied.⁴

Table 1 Objectives and findings of articles reviewed

Author, date of publication	Study population	Objective	Findings
Chakaya et al (2002) ³	Patients on re-treatment regime (n=593), Kenya	Treatment outcome	Up to 25% of records did not document treatment outcome. Incomplete registration may lead to emergence and spread of drug-resistant TB
Mabeera et al (2008) ⁴	Patient records in four countries: Moldova, Mongolia, Uganda, and Zimbabwe (n=128 808)	Determine whether laboratory TB records can help improve microscopy performance and case management	Up to 7% of records in two African countries lacked information on gender, and 7.4% lacked reason for examination
Shimeles et al, (2006) ⁵	Survey of private practitioners in Addis Ababa, Ethiopia (n=120)	To assess the knowledge of private practitioners with regard to TB control and their practice of TB diagnosis, treatment, and monitoring	80% of private practitioners did not keep a TB register
Meijnen et al, (2002) ⁶	Patients on TB treatment transferred between reporting units in Malawi (n=3249)	Compare outcome results between the main TB register and the transfer-in register	Quality of data is poor for patients transferring between units
Salaniponi et al, (2004) ⁷	Patients registered at 44 treatment units in Malawi	Missing TB cases in Malawi	Failure of transfer of data from cross-border registers to NTP registers accounted for 1% of missing cases nationally
Vranken et al, (2002) ⁸	Five TB treatment units in Botswana	Pilot study of electronic TB register (ETR)	ETR was successfully implemented at all sites . User acceptability was high
Harries et al (2000) ⁹	'New' cases of TB, Malawi (n=1254)	Documenting wrong registration of re-treatment cases as new cases	7.5% of patients incorrectly registered as new
Alpers et al (2000) ¹⁰	Patients with pulmonary TB, Botswana (n=374)	To determine the proportion of patients with reportedly missing pre-treatment sputum smear results in 1997 who had smears examined, and to identify stages in the system where results were lost	60% of 'missing smear' patients had submitted a sample to the laboratory. Results not transcribed from laboratory records to TB register

The optimum system for managing data is a relational database management system (RDBMS). 'This allows a large amount of data to be entered or uploaded, validated, stored, edited and updated, with access by multiple users. It also allows the production of standard and customised analyses and reports.'¹ RDBMSs are

utilised by fewer than 50% of countries and only about a quarter have web-based systems. Management of TB data in spreadsheet-based systems is difficult, and time consuming with the potential that errors can be introduced and data lost.¹

In southern Africa the Electronic Tuberculosis Register,

an Epi-info based system that uses WHO/IUATLD (International Union Against TB and Lung Disease) format of recording and reporting has been successfully integrated into TB control programmes. Factors critical for success include a functioning paper-based system, involvement of staff from the TB programme, health information systems and health facilities, ongoing training, and backup support.⁸ Myanmar is an example of a country that recognised the need for an electronic-based TB recording system. In July 2008 following close collaborative efforts with WHO, Myanmar was able to adopt a tailor-made District Health Information System (DHIS), which has dramatically reduced the workload associated with data management and analysis.

A strong commitment from the NTP, sufficient funding, external expertise, and appropriate training are required for successful integration of the DHIS by high-burden TB countries. The flexibility of the software allows for rapid and low-cost customisation to the needs of a particular country.¹

Conclusion

The main targets for global TB control are that:

1. the incidence of TB should be falling by 2015;
2. TB prevalence and death rates should be halved by 2015 compared with their level in 1990;
3. at least 70% of incident smear-positive cases should be detected and treated in DOTS programmes;
4. at least 85% of incident smear-positive cases should be successfully treated.¹

The introduction of RDBMSs in high-burden countries

may be the key towards a realisation of such goals. Through collaborative efforts between NTPs, treatment units, WHO, and other stake-holders, every effort must be directed towards early and prompt identification of defaulters through accurate and complete TB registration records.

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