

Public health**High-compliance tuberculosis treatment programme in a rural community**

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Summary

The global tuberculosis epidemic is being fuelled by dual infection with human immunodeficiency virus type 1. Short-course chemotherapy is effective but usually fails for operational reasons. A community-based treatment programme of twice-weekly fully-supervised treatment is described in which 89% of surviving patients completed treatment under programme conditions. Half the patients were successfully supervised by non-health workers. New approaches are needed to combat the global tuberculosis epidemic.

Lancet 1994 **343**: 647-48**Introduction**

Tuberculosis (TB) has been declared a global public health emergency by the World Health Organization (WHO).¹ 4000 000 people are dually infected with the human immunodeficiency virus type 1 (HIV-1) and the tubercle bacillus, and their cumulative lifetime risk of developing TB is 30% or more.² The rising incidence of TB due to the effect of HIV in both developed and developing countries is well recognised.²

Case-finding and treatment is the only method that can be expected to have any short-term impact on transmission of TB; improvements in socio-economic conditions are a long term solution.³ Short course chemotherapy is known to be successful with cure rates of well over 90% and relapse rates of less than 5%, if at least 3 drugs are used for 6 months.⁴ However, failure of treatment and relapse rates are high if supervision is not maintained⁵ or treatment directly observed.⁶ There is a need for further operational research to explore ways of achieving high rates of completion of treatment.⁷ This paper describes high compliance rates achieved in a supervised intermittent ambulatory treatment (SIAT) programme for TB in Zululand, South Africa.

Methods

Hlabisa Hospital is a 450-bed rural hospital in Zululand, South Africa, serving an area of approximately 3000 square km and 200 000 people who live in scattered kraals. TB admissions to the hospital doubled during 1992 to 52 per month, and increased to 63 per month in 1993. In 1993, 36% of 307 consecutive adult patients with TB were HIV-1 positive (unpublished data).

Adult SIAT patients received isoniazid 900 mg, rifampicin 600 mg, pyrazinamide 3 g, and ethambutol 2 g, twice weekly. SIAT

child patients (aged < 14 yrs) received isoniazid, rifampicin, and pyrazinamide on a per-weight basis, according to KwaZulu Department of Health TB Policy. Each dose of SIAT was prepacked in the hospital pharmacy.

SIAT points were designated, starting with clinics and community health workers, and involving stores and other non-health care sites as need arose (table). Within 6 months, 60% of patients were being managed at SIAT points, and within a year the SIAT programme was functioning across the area. All patients, including children, were offered SIAT and the only indication for hospital admission was severe illness.

Each patient was allocated to a supervisor. The choice of supervisor was the patient's and the emphasis was on convenience for the patient, not the TB service. All patients were transported to their supervisor who was given a supply of treatment to enable the patient to complete 6 months treatment. Verbal and written instructions were given to all supervisors, who were asked to watch the patient take the medication and then sign the TB card (the card being held by the supervisor). The TB health worker visited each supervisor monthly and checked compliance. Patients themselves were only visited if there was a problem with compliance. Attempts were made to trace defaulters after visiting their supervisor. Most of the patients who absconded and were not traced had left the area in search of work. Over the study period, only 1 store refused to supervise a patient, and over 60 different stores were used. Non-health worker supervisors were unpaid.

"Complete" was defined as documented fully-supervised completion of 6 months treatment (including patients who absconded but were traced or returned and restarted on treatment, and subsequently completed 6 months treatment); "absconded" was any patient who missed more than one month's treatment; "lost" referred to any patient who absconded and could not be traced and restarted on treatment; "died" referred to death from any cause while on treatment; and "transferred" referred to any patient transferred to another district. Data presented is taken from the TB register and reports the results of audit of the TB service in the area.

Results

Between June 1, 1991 and December 31, 1992, 903 consecutive adult and child patients with TB were admitted to hospital. Children accounted for 22%; of the adults 85% had pulmonary TB (76% of these sputum-smear positive), and 15% extra-pulmonary TB. 89 (10%) patients were transferred. Of the remaining 814, 661 (81%) were managed in the community on SIAT and 153 (19%) were treated on the ward. The 814 consecutive patients were analysed as a cohort: 60 (7%) died on treatment, 82 (10%) were lost and the remaining 672 (83%) completed treatment. 672 (89%) of the 754 surviving patients completed treatment. 124 (15%) patients absconded from treatment: 82 (66%) were lost, 20 (16%) returned of their own accord at a later stage and 22 (18%) were traced. Ten different types of supervision site were employed (table). Only 36% of SIAT patients were supervised by nurses in clinics and 12% by

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Site	Number (%)
Store/tea room	216 (33)
Hospital-run clinic	176 (27)
Community Health Worker	77 (12)
Work	59 (9)
Lay person	44 (7)
Non-hospital-run clinic	39 (6)
School	19 (3)
Ward	19 (3)
Tribal authority	6 (1)
Induna	6 (1)
Total	661 (100)

Ward = local patients collected treatment from the ward twice weekly. Induna = local headman.

Table: Type of supervision site and number (%) of SIAT patients supervised at each site

community health workers (CHW). The rest (52%) were supervised by non-health workers. Equal proportions (11%) of patients were lost from health worker supervision (clinic nurses and CHWs) and from non-health worker supervision.

Discussion

Before June 1991, the TB service in the area was not well organised and patients received unsupervised outpatient treatment with no tracing of absconders. Retrospective analysis of 200 consecutive patients showed that only 18% had definitely completed treatment (personal observation). A departmental TB policy was introduced and staff attended an update course. At this stage a further TB health worker was employed and trained by existing staff. The basic principles of TB management in the community are well known.⁷ However, completion-of-treatment rates are very low in many parts of the world: in Bangladesh only about 25% of patients completed treatment, although this improved to 60% with use of an incentive scheme and village based health workers.⁹ The critical aspect of management is ensuring compliance with a full course of chemotherapy.^{10,11}

This analysis shows that high levels of completion of treatment rates are achievable within the context of a routine service. Regular audit of the work was done and allowed rapid identification of problems. Thus, one clinic initially had very high rates of absconders; this was noticed during audit, basic misunderstandings were rectified and the situation rapidly improved. Results of audit were shared with all staff: the whole team was proud of the results achieved and was motivated to improve them. A service was provided that was acceptable to the patient, compliance was thus ensured and high rates of completion of treatment achieved. Non-health workers were able to provide this service as well as trained and paid health workers.

Cure (negative sputum smear at completion of treatment) was not routinely assessed: patients were invited to return for check-up if they were coughing at the end of treatment or felt unwell at any time. Available resources were put into strengthening and extending the SIAT programme and ensuring high compliance rates, in the knowledge that under these circumstances most patients will be cured.⁵ This report shows that high completion-of-treatment rates are possible if services are well structured, use an intermittent regime, utilise all available community resources to ensure full supervision of treatment, and are regularly audited. Most of all, the service must actively involve and be fully acceptable to the patient.

Community-based TB treatment is the only effective way to manage the increasing numbers of patients, but this management must be effective otherwise there is the risk of actually increasing transmission and the development of drug resistance.¹²

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