

# Compliance to TB outpatient treatment in the Hewu district of Ciskei

Is hospitalisation necessary?

— H H Conradie

## Summary

*A study was undertaken in Ciskei to determine whether newly diagnosed TB patients needed hospitalisation, or whether they could be treated as outpatients. Patient compliance, the costs involved and strategies used in this TB-service programme are some aspects dealt with.*

"The normal patient is the one who defaults. It is beyond the power of human beings to be always regular and obedient. One has to be particularly well-informed, over-anxious or coldly intellectual if one is to go on every day swallowing a drug or having an injection, unless this rite is performed with a little warmth or imagination, especially from the time when one is no longer called to order by one's symptoms."<sup>4</sup>

A. Rouillion

## Introduction

The aim of this study was to determine whether it is feasible to treat newly diagnosed tuberculosis (TB) patients in the Hewu district of Ciskei on a daily supervised, ambulatory short course regime.

Until the study was mounted, all newly diagnosed TB patients were hospitalised in a TB hospital, 200 km away, as there is no TB hospital in the Hewu district.

At that stage it was also the policy of the Ciskei Health Department not to allow clinics to stock Rifampicin. If the outcome of this study was favourable, it was hoped that the policy would be changed to allow outpatient treatment of TB patients, not only in the Hewu district, but also in the rest of Ciskei. In addition, an attempt was made to compare the cost of outpatient and inpatient treatment. The following target was set for this study, namely that 80% of patients started on the outpatient regime, should finish treatment as outpatients with an acceptable compliance.

The population of the Hewu district is approximately 100 000 and can be divided roughly into three groups, namely: an urban population of 40 000 with three clinics; a rural resettled population of 30 000 settled in 11 villages each with a clinic; and 30 000 original inhabitants of the district, scattered in many small villages of which 8 have permanent clinics.



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## Curriculum vitae

Dr HOFFIE Conradie het op Stellenbosch grootgeword en studeer aan die Universiteit aldaar waar hy die MB ChB ontvang in 1973. In 1976 word die Diploma in Kinder-gesondheid van die Kollege van Geneeskunde (SA) aan hom toegeken en in 1985 ontvang hy die M Prax Med by MEDUNSA.

Hy werk 2 jaar lank by Tygerberg Hospitaal (KP), daarna in die Reitvlei Hospitaal in Transkei (1976-1979) en word daarna aangestel by die Nompumelelo Hospitaal te Peddie (Ciskei 1979-1983). Sedert 1983 is hy werksaam in die Hewu-distrik in Ciskei, waar hy hierdie betrokke studie gedoen het. Dr Conradie is getroud met Annemarie, en hulle het 5 kinders.

**KEYWORDS:** Tuberculosis; Patient compliance; Outpatients; Hospitalisation; Comparative study

*I thank the Department of Health of Ciskei for permission to publish the findings of this study.*

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## Methods

A prospective study design was used. The study population was defined as all newly diagnosed TB patients eligible for outpatient treatment during the period 1st June 1983 to 15th August 1984. The diagnostic criteria used were sputum positive for adults and signs of progression of the primary complex in children e.g. X-ray signs of pulmonary involvement or enlarged glands. All newly diagnosed TB patients were screened for admission to the study at a weekly TB clinic. In the case of children the management of the child was discussed with the mother/guardian of the child. The following criteria for admission were used:

1. The patient (or the mother/guardian in the case of a child) must be within walking distance of the treatment point,  $\pm 2-3$  km. In the later stages of the study this criterium virtually fell away as we started using village health workers (VHWs) to issue drugs in villages where there were no clinics.
2. The patient's physical condition must allow him to attend a clinic daily. This was an absolute exclusion criterium and as the trial progressed, we learnt through experience to recognise those patients too sick to be allowed outpatient treatment.

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## *Establishing the regimen with and for a particular patient may take as much time and skill as does establishing the diagnosis*

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3. The patient (or the mother/guardian in the case of a child) was given the choice between hospitalisation and outpatient treatment.

During the study period 230 patients were diagnosed as suffering from TB, fifty-one (51) were hospitalised and therefore excluded from the study, and 179 were started on outpatient treatment. A further 4 were excluded from the study, i.e. 2 died, one was admitted to hospital for a disease not related to his TB and one was referred to Johannesburg for completion of treatment. The remaining 175 patients were thus evaluated in this study.

An additional 23 patients from the Hewu district were referred directly to the TB hospital by other services. This gives a total of 253 patients diagnosed during the trial period. Recalculated for a 1-year period, this gives a yearly incidence of 200/100 000.

A 120 dose treatment regime consisting of INH, PZA, Rifampicin and Streptomycin or Ethambutol was used. The patient was given the choice between taking treatment 5 or 7 days per week. Clinics are

open 7 days per week. A successfully completed course was regarded as 120 doses of the above regime with a compliance of 80% or more. Percentage compliance was calculated as follows:

$$\frac{\text{number of doses taken}}{\text{total number of possible attendances (doses)}} \times 100$$

Treatment was initiated at a weekly TB clinic by the TB team consisting of a doctor, sister and TB health educator. Treatment was then commenced at the nearest health facility, i.e. permanent clinic, or village health worker (VHW) in villages where there is no clinic. One patient received treatment at her place of work. Attempts were made to practise

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## *The problem of non-compliance is rarely one of knowledge*

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continuity of care by ensuring that at clinics the same staff member issued treatment. In the busier clinics, this did not only ensure continuity of treatment but also avoided long delays. Taking of treatment was directly supervised at each treatment point, i.e. treatment was *seen* to be taken. In the case of children the mother or guardian brought the child for daily treatment. A daily attendance record was kept at each treatment point. Attendance was totalled on a monthly basis with the numerator indicating actual attendance and the denominator being maximum possible attendances.

Every patient received a weekly food supplement in the form of a 12,5 kg bag of mealie meal and the equivalent amount of a soybean stew. If a patient did not attend for three consecutive days, his/her home was visited. Compliance of below 80% was regarded as unacceptable and these patients were subsequently hospitalised wherever possible. The decision to use this cut-off point was arbitrary. It was also used in two similar studies<sup>1,2</sup>, and in one<sup>2</sup> a higher relapse rate was found in patients with a compliance below 80%. The TB team (sister and health educator) visited all treatment points on a fortnightly basis to supervise treatment, to duplicate records, to assist with tracing of non-attenders, and to ensure a constant drug supply. The TB team compiled a monthly summary of attendances of all TB patients to evaluate compliance on a regular basis.

## Results

The demographic and health care variables of the study are shown graphically in the following tables:

Table 1: Age distribution shows peaks for the 0-5 year age group and again for the 31-40 year age group. It also shows the age/sex distribution. The male predominance in 0-5 age group could not be explained. The total ratio is 4 males : 3 females.

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Table 2: Distribution according to occupation shows the extent of unemployment among the patients treated.

Table 3: Distribution according to type of village. The urban patients are in the majority, followed by resettled patients and then rural patients.

Table 4: Distribution according to treatment point. Only 5 patients were treated by VHWs, and one at work.

Of the 175 patients, 132 (75%) completed treatment as outpatients with an acceptable compliance of > 80%; 3 (2%) completed as outpatients but with an unacceptable compliance of < 80%; nineteen (19 or 11%) had to be hospitalised after commencing as outpatients because they were either too weak to attend daily (8 patients), or now preferred hospitalisation (4 patients) or had to be hospitalised due to poor compliance (7 patients). There were 21 (12%) who failed to complete the regime and could either not be traced or refused hospitalisation. (Diagram 1). The 19 patients hospitalised are known to have completed their treatment in hospital. These patients are excluded in Diagram 2, which shows the outcome of the remaining 156 patients. Table 5 compares the percentage completed

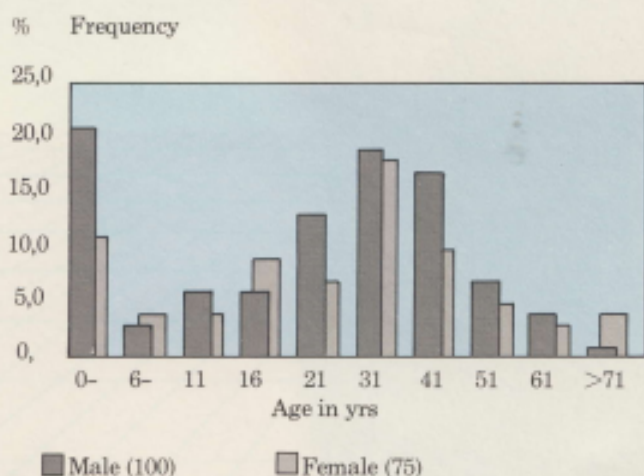


Table 1: Age: Sex Distribution

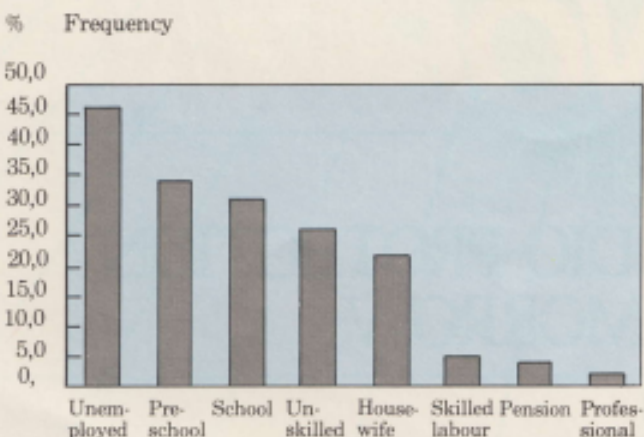


Table 2: Occupational Groups

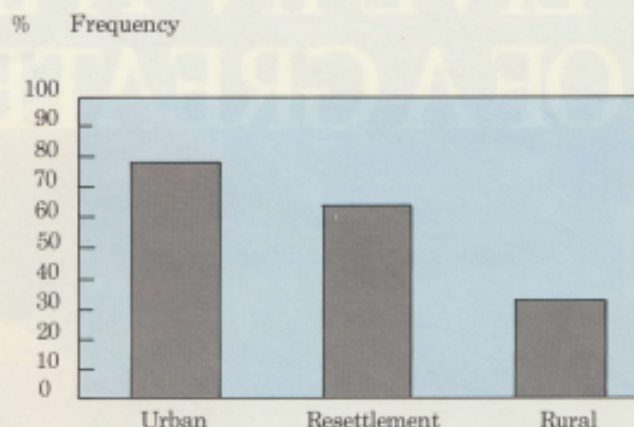


Table 3: Type of Village

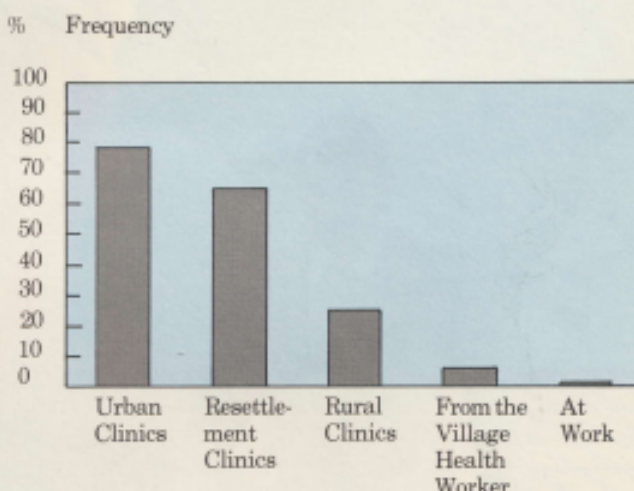


Table 4: Treatment point

in the employable age group (18-60) in the following categories: male/female and employed/unemployed. The unemployed males had a much poorer outcome than the other three groups. Table 6 compares the outcome of the under-16 group with the over-16 age group with the former showing a better compliance.

The cost of treating one patient with 120 doses as an outpatient was calculated as R598,28, while the cost of treating one inpatient was R1 743,60. The cost of outpatient treatment was therefore approximately one third of inpatient treatment.

## Discussion

The result of this study is compared with a similar study undertaken by the Cape Divisional Council (CDC) (1978-1980) in Table 7. Treatment in the CDC was directly supervised and consisted of 60 doses of INH, PZA, streptomycin and rifampicin, followed by 40 doses of INH and PZA. Six patients were initially hospitalised before outpatient treatment was commenced. The CDC study excluded patients under 16 years of age and the comparison excludes the Hewu patients under 16.

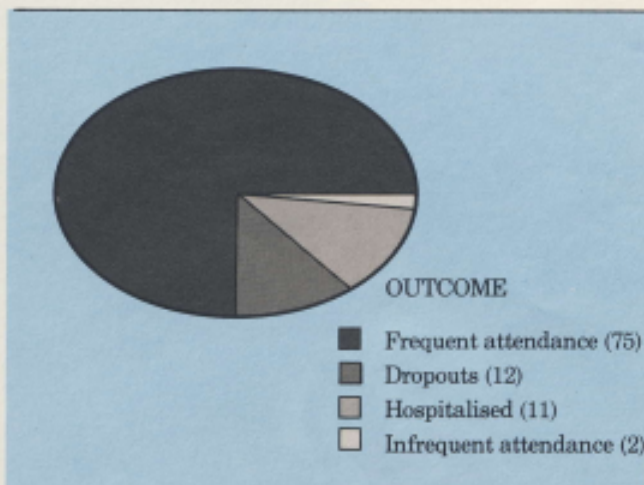


Diagram 1: Outcome of 175 patients (percentage)

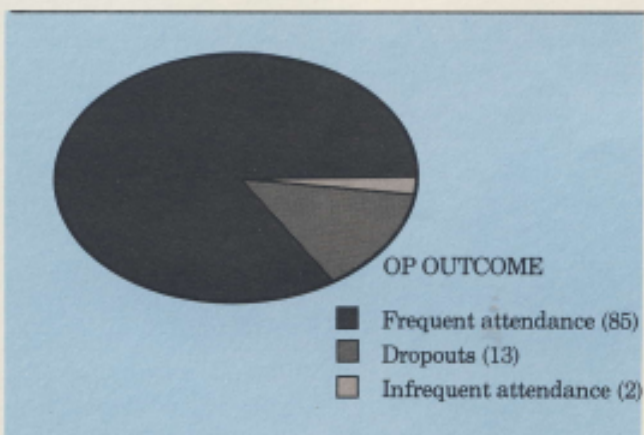


Diagram 2: Outpatient outcome of 156 patients (percentage)

The foundation of an effective TB control programme is case-finding and treatment<sup>3</sup>. Patient non-compliance is the most important cause of treatment failure and relapse in TB programmes<sup>4</sup>. Strategies to improve compliance in TB-programmes are therefore of utmost importance.

Sackett and Haynes<sup>5</sup>, in their excellent literature review and discussion of determinants of compliance, stress the following:

In comparing educational, behavioural and combined strategies for improving compliance, they found the latter two to be consistently better than the educational strategies. They conclude: "The problem of non-compliance is rarely one of knowledge!"

They suggest the following strategies to improve compliance. These will be discussed with reference to the factors postulated in this study, to have contributed to the relatively favourable outcome:

1. Identify factors which are likely to impede compliance. We have identified patients who were too weak to attend daily or lived too far from a treatment facility to attend daily. These patients were hospitalised from the start. Once treatment

has commenced, a home visit was done to identify local circumstances unfavourable to compliance, e.g. family instability.

2. Patient involvement in the management plan, the so-called patient contract. The doctor negotiates a management plan with the patient and the patient is fully involved in the decisions made. In this study the patient was given the choice between hospitalisation and outpatient treatment as well as between 5 or 7 days treatment per week. At the initiation of treatment the individual circumstances of each patient, e.g. home and work conditions that could impede compliance, were discussed.
3. Education must form part of the total management involving the patient in the decision-making process. The patient not only needs to know what and how, but also why, what if, and what if not. At the onset of treatment the behaviour expected of the patient was explained, as well as the consequences of non-compliance e.g. hospitalisation to complete treatment, or relapse of the disease.
4. Behavioural strategies to facilitate compliant behaviour:
  - 4.1 *Accessibility of treatment.* The nearer the patient is to the clinic, the more likely he is to comply. Only patients near clinics were selected for outpatient treatment. In the urban area additional treatment points were established. Treatment at place of work was made possible. In rural areas where there are no clinics, use was made of village health workers to issue daily treatment. Under exceptional circumstances, treatment was delivered daily at home. In urban clinics where waiting time for treatment posed a problem, one staff member was allocated to give TB treatment.

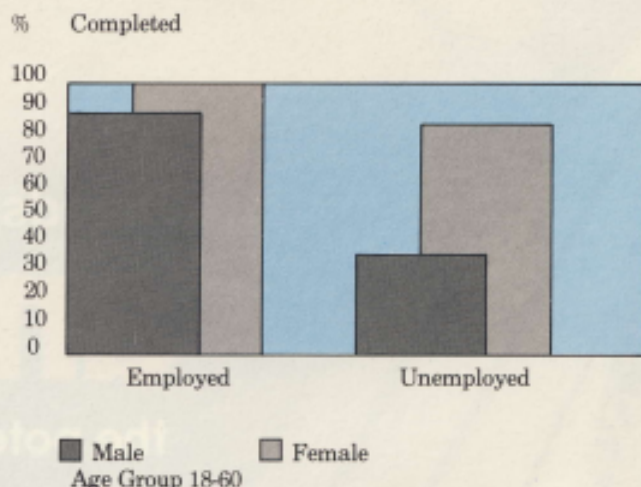
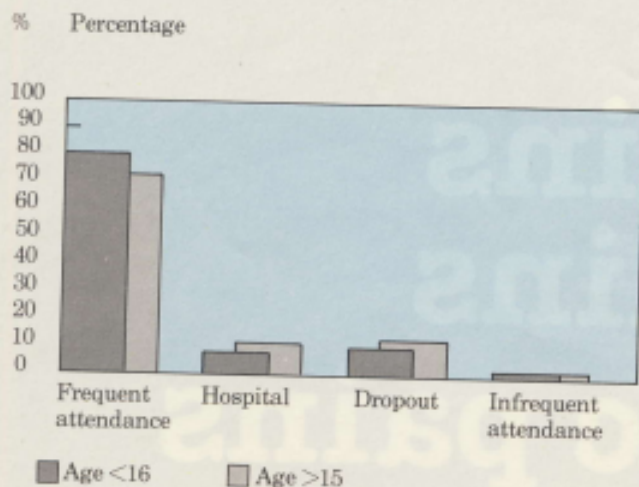
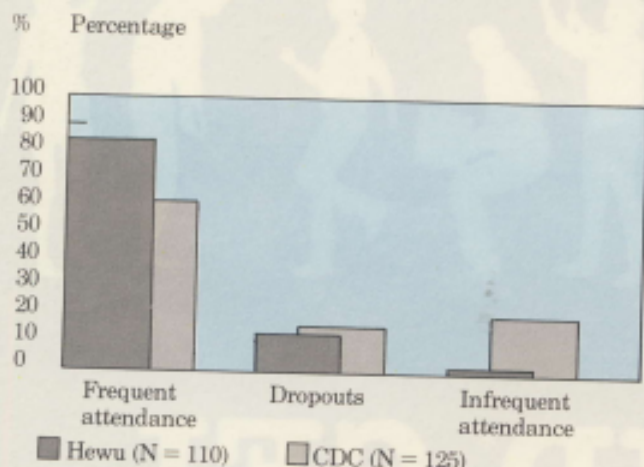


Table 5: Outcome: Employment/Sex

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**Table 6:** Outcome by age



**Table 7:** Comparative compliance (Hewu and Cape Divisional Council)

4.2 *Supervision.* Daily treatment was seen to be taken. A record of daily attendance was kept. Home visits were done if the patient did not attend.

4.3 *Duration of treatment.* The shorter the duration of treatment, the more likely the patient is to comply. A 120-dose treatment regime was used.

4.4 *Token rewards.* Patients were supplied weekly with a 12,5kg bag of mealiemeal and the equivalent amount of a soybean stew.

4.5 *Continuity of care.* In this study continuity of care was practised on two levels. Firstly, one team consisting of the same doctor, TB sister and health educator initiated treatment at a weekly TB clinic. The same staff members saw the patient at subsequent follow-up visits. Secondly, at clinic level, treatment could be given by the same staff members as most clinics have a small staff complement. In the

busier clinics, one staff member was allocated to TB treatment in order to facilitate continuity of care.

I will also postulate two additional factors which contributed to the favourable outcome of this study, namely:

- (i) Integration of the TB programme with the primary health care (PHC) system, but with a specialist TB team responsible for certain functions. The PHC facility was responsible for the daily supervision of treatment, daily recording of attendance and tracing of non-attenders and contacts. The TB team was responsible for

*To treat a hospitalised patient cost R1 743; to treat him successfully as an outpatient cost R598*

the initiation of treatment as well as the follow-up visits to ensure sputum conversion and the final discontinuation of treatment. In addition this team visited peripheral treatment points fortnightly, to supervise treatment and to ensure an adequate drug supply. A duplicate record of all patient attendances with monthly compliance figures, was kept by the TB team to evaluate the efficiency of the program.

- (ii) The availability of transport for the TB team is of crucial importance to the success of such a TB control programme.

## Conclusion

In this study 75% of 175 newly diagnosed TB patients in the Hewu district of Ciskei, treated on a daily supervised ambulatory short course TB regimen, completed treatment with an acceptable compliance. Another 11%, subsequently hospitalised, completed their treatment. Thus 86% of patients who started as outpatients completed treatment satisfactorily. Emphasis was placed on strategies in the TB service programme to facilitate patient compliance rather than educational strategies. Outpatient treatment cost was approximately one third that of inpatient treatment. Although the initial target of 80% was not reached, it was concluded that ambulatory treatment in the Hewu district is feasible and cheaper than inpatient treatment.

The following strategies, used in this study to improve compliance, can be postulated to have contributed to the relatively favourable outcome of this study:

- careful selection of patients
- involvement of patient in the management plan

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- supervised treatment (drugs *seen* to be taken)
- short duration of treatment
- accessibility of treatment
- home visits to non-attenders
- recording of attendances
- food rations
- continuity of care
- integration of TB management program, but with certain specialised functions performed by a specialised TB team
- availability of transport.

To conclude, a few remarks on doctors' attitudes to compliance. Attitudes such as: non-compliance is "bad" behaviour, or compliance is the "expected behaviour", need to be changed to a non-judgemental approach to compliance. Doctors need to develop:

- skills of communication and negotiation
- the ability to approach non-compliant behaviour with differential diagnostic skills to find alternative solutions.

It is important to remember that establishing the regime with and for a particular patient may take at least as much time and skill as does establishing the

diagnosis. Finally, perhaps the most important determinant of compliant behaviour is a doctor-patient relationship which allows for mutual participation and trust.

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