

Assessing quality of care in the integrated tuberculosis control programme in Surkhet District

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The Department of Health Services adopted a policy of integration in 1987, and the previously vertical Tuberculosis Control Programme was integrated into the primary health services. One year after the practical application of service integration of the Control Programme in Surkhet District by the supporting NGO (International Nepal Fellowship Tuberculosis Project) a study was undertaken to evaluate the quality of programme activities at the health posts. An investigative framework was developed to assess the programme *structure, process* and *outcome*. Analysis was based on understanding the relationship between these different aspects. The *process* of care was assessed by structured observations of activities on 'TB clinic days'. 'Essential *patient care*' criteria were used to measure health worker performance. Structure and outcome indicators were measured with data collected through interviews with tuberculosis patients and health personnel, and from documentary sources. Outcome indicators showed decline in performance following integration. Case-finding at the health posts fell and there was an increase in default episodes. This reflected a decline in the quality of the process of care. Health workers performed well during observation of patient consultations but relatively poorly when dispensing drugs. Structural quality was sustained due to improved accessibility and availability of care. A framework based on assessing structure, process and outcome provided a composite measure of the quality of care and an understanding of the programme strengths and weaknesses. This approach may be particularly useful for evaluating tuberculosis programmes in Nepal during this period of change in organisational and technical policy.

Key words: quality of care, evaluation, tuberculosis control, integration.

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INTRODUCTION

Tuberculosis is a major disease burden in Nepal. With an estimated average annual risk of infection of 2.1%, it may be responsible for as many as 16,500 deaths per annum.^{1,2} Tuberculosis control was established through vertical programmes by the Ministry of Health and several non-governmental organisations in the 1960s. The programme is now coordinated by the National Tuberculosis Centre (NTC) and follows the globally accepted approach to control of case-finding and case-treatment with targets of 70% and 85% respectively.³ Following a change in government policy in 1987, vertical health programmes have gradually been integrated into the primary care services at peripheral health posts (HPs). In integrated programmes tuberculosis control activities are carried out by health post staff rather than specialist tuberculosis para-medical workers (PMWs), and district programmes become the responsibility of the District Health Office (DHO).

Under agreement with the Ministry of Health, the International Nepal Fellowship (INF) Tuberculosis Project has been a counterpart agency for tuberculosis control in the mid-western region of Nepal since 1986. In 1991, the existing vertical programme in Surkhet district was practically integrated at field level. There were nine integrated health posts in the district and most tuberculosis control activities took place there on 'TB clinic days' held once each month. Diagnosis was usually by sputum smear microscopy and treatment consisted of eight months chemotherapy. INF continued to run a referral clinic, located at the district centre but also serving five surrounding districts, mainly for the diagnosis of suspects and management of complicated cases.

A study was undertaken in 1992, one year after the integration training and implementation process was completed, to evaluate the integrated tuberculosis control activities in Surkhet district. Its purpose was to assess the quality of care at the health posts and whether it had changed since integration.

Assessing Quality of Care

*'But an honest concern about quality, however genuine, is not the same as methodological assessment based on reliable evidence.'*⁴

In the last decade increasing attention has been focused on quality of health care. The failure of expansion of basic health services to achieve expected gains in health impact has raised concerns about the quality of these services.⁵ Additionally, severe economic constraints have brought pressure to use scarce resources more efficiently and the donor community increasingly requires evaluations that can demonstrate value for money.⁶ Quality of care is now a key issue in debates about health sector reforms such as decentralisation and alternative mechanisms for financing health services.⁷

Debate about what to assess in the investigation of health care quality usually revolves around the classic triad of structure, process and outcome, and particularly the relative merits of process versus outcome measures.^{8,9} Evaluations have traditionally focused on outcomes because objectives for care are normally defined in these terms. However, the last decade has seen a substantial shift in emphasis towards process assessments.^{10,11} Guidelines have been developed for more comprehensive approaches but are not often used because of the large amounts of data and expertise required.¹² The use of multi-dimensional methodologies has typically only been reported in large evaluative studies using experienced consultants.^{13,14} There is still an unmet need for suitable tools and methods for comprehensive assessment of quality of care in developing countries. The expense and complexity of existing standard routine data collection methods has been identified as an additional reason for requiring such tools in tuberculosis control programmes.¹⁵ For this study a methodological framework was developed for assessing the Surkhet district tuberculosis programme comprehensively but also rapidly and with limited resources.

METHODOLOGY

The study was carried out in eight weeks between June and August 1992 and addressed two study questions:

- What is the quality of tuberculosis control activities at the health posts in Surkhet district?

What change has occurred in the quality of tuberculosis control activities at these health posts since the programme was integrated?

A framework based on the 'structure-process-outcome' approach to health care evaluation was developed. The 'structure' included all things which must be in place for the tuberculosis programme to function at the health posts, i.e. facilities, trained staff, laboratory equipment, medical supplies, management and support systems. The 'process' consisted of the health post activities directly related to tuberculosis control, including any interaction between staff and patients. The 'outcome' was the effectiveness in achieving programme objectives.

Quality of care was interpreted more broadly than just the process of care so as to take account of the structural aspects which had changed with integration. All dimensions and interpretation was based on considering the relationship between them. Changes in outcome were better understood by considering them in relation to changes in structure and/or process. This relationship was defined in the framework as $\text{STRUCTURE} + \text{PROCESS} = \text{OUTCOME}$ (Figure 1). Data was collected by direct observation at health posts, interviews with health personnel and patients, and using secondary data. A sample of five health posts, which together treated over 90% of all patients in the district, was selected and these were studied on their monthly TB clinic days.

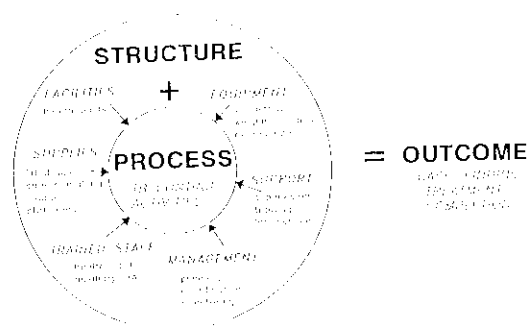


Figure 1. 'Structure, Process, Outcome' adapted to the tuberculosis control programme at health posts in Surkhet district.

Observation Data

Health worker performance was assessed using 'essential patient care criteria' as the standard and comparing actual performance level (APL) with expected performance level (EPL). The number of essential tasks which were performed was expressed as a percentage of the EPL which by definition was 100% of tasks. This provided a profile of overall performance for patient management, recording and dispensing activities.

The essential patient care criteria were developed by identifying the key activities necessary for case finding and case holding. Task analysis of each activity was undertaken using available training manuals, consultation with INF Project staff, and observation at the Surkhet tuberculosis referral clinic. From this the most critical tasks were identified and 'essential patient care criteria' established. These were then pre-tested and refined. Separate checklists were created for consultations with tuberculosis suspects, patients on treatment, and the dispensing of drugs as shown before.

Table I. Checklist for observation of drug dispensing to TB patients

| | |
|--|---|
| Health Post: _____ | Date: _____ |
| Name: _____ | Age: _____ (years) |
| TB registration no. _____ | Sex: _____ |
| Type of TB: | a) pulmonary sputum +ve: _____ |
| | b) pulmonary sputum -ve: _____ |
| | c) pulmonary sputum not examined: _____ |
| | d) extra-pulmonary: _____ |
| Stage of treatment: | |
| | a) starting intensive phase _____ |
| | b) continuing intensive phase _____ |
| | c) starting continuous phase _____ |
| | d) continuing continuous phase _____ |
| Advice and instruction given re treatment: | |
| a) treatment must continue for eight months | _____ (Y,N) |
| b) drugs must be taken every day | _____ (Y,N) |
| c) you must take drugs in AM before food | _____ (Y,N) |
| d) take drugs in evening after meal | _____ (Y,N) |
| e) urine, tears and sweat will become red | _____ (Y,N) |
| f) if you lose vision stop Rx and return to HP | _____ (Y,N) |
| g) if you develop jaundice stop Rx and return to HP | _____ (Y,N) |
| h) if serious skin redness occurs stop Rx and return to HP | _____ (Y,N) |
| i) if fever occurs stop Rx and return to HP | _____ (Y,N) |
| j) asks patient to repeat how s/he will take drugs | _____ (Y,N) |
| k) writes on wrapping how many tablets to take | _____ (Y,N) |
| l) tells patient when to return | _____ (Y,N) |

Fifty percent of all consultations and 25% of all dispensing episodes at each health post were observed followed by observation of drug dispensing. Structured and opportunistic observations were also made of other variables relevant to the process of care, including the presence of trained staff, staff attitude,

organisation of the clinic, availability of medical and administrative supplies, and drug logistics.

Interviews with Health Personnel and Patients

Health personnel from the District Health Office, National Tuberculosis Centre, INF, and the health posts were interviewed. In addition, 25% of tuberculosis patients who attended on study days were interviewed. Questions covered their satisfaction with treatment, perception of health workers' attitude, and knowledge of their treatment course (how to take the drugs, side-effects, course duration, return date). This data complemented the observation findings and helped overcome observer bias as patients interviewed were different from those observed in the clinic. Patients' knowledge of treatment was compared with the observations.

Study of Secondary Data

Secondary data was gathered from Ministry of Health, NTC and INF documentation outlining the structural characteristics of the programme and the nature of the integration process in relation to tuberculosis services. Effectiveness of control activities was measured using routinely collected treatment centre data (table II).

RESULTS

Quality of Structure

Accessibility to care improved following integration as a result of the extension of services from five to all nine integrated health posts in the district and the proportion of patients receiving treatment at the health posts (rather than the referral centre) increased from 52% to 92%. However, accessibility remained poor in absolute terms as the nearest health post is up to two days walk from some villages. All patients interviewed expressed a preference to be treated at their local health post because it was nearer. This suggested that social stigma and patient's desire to conceal their diagnosis and treatment of tuberculosis is a lesser concern than access to care. All health posts had staff recently trained in tuberculosis, indicating improved availability of care. Only four out of

nine interviewees felt their training was adequate and most expressed a need for refresher courses.

Limited integration of management and support functions had actually occurred due to the limited capacity of the DHO. Supervision was still done by District Health Office based INF staff, whose capacity may have been weakened by lack of delegated authority. Monitoring of health posts remained relatively weak, mainly because there was no formal monitoring system. INF had provided basic and refresher training to at least two senior staff at all health posts, though several of them had since been transferred to another district. Laboratory analysis of sputum smears had been integrated into the work of the DHO and quality of testing had not deteriorated significantly. INF continued to provide all tuberculosis drugs and supplies. The number of INF para-medical workers attending the health posts on TB clinic days had not changed though their role was now a supportive one.

Table II Indicators of effectiveness of tuberculosis control activities

| Case-finding indicators |
|--|
| <ul style="list-style-type: none"> • Number of sputum smears examined at health posts • Number of positive sputum smears • Quality of reading of sputum smears from health posts • Reported incidence of smear +ve tuberculosis • Estimated case finding rate |
| Case treatment indicators |
| <ul style="list-style-type: none"> • Treatment regularity of patients at health posts • Percentage of patients having default episodes • Proportion of late patients contacted by letter • Proportion of late patients receiving home visits |

Quality of Process

Tuberculosis clinics were well organised with registration consultation and dispensing of drugs being carried out separately from the general patients. Activities were performed by appropriately trained persons except in two clinics where drugs were dispensed by a health worker with no tuberculosis training. One INF para-medical worker (PMW) was present during all consultations and sometimes a second assisted with dispensing of drugs. Their participation varied between the health posts. The consultation was usually initiated by the health post staff who did most of the recording. However, they frequently exhibited uncertainty in decision making about patient management and relied on the INF PMW for guidance. The PMW played the greater role in ensuring that sputum was checked when indicated, advice was given about treatment, and recording was completed correctly. There was little indication that the health post staff

would perform effectively without the existing level of support from INF.

Eighty six consultations were observed (table III). Performance in recording activities was good with 99% of essential activities being carried out. Patient management tasks were less well completed. In more than one third of consultations no enquiry was made about the patient's wellbeing and in 10% of cases health workers omitted to arrange scheduled follow up sputum tests. While clear delineation of general responsibilities was observed, it was not always apparent which tasks were part of the consultation and which of dispensing. Advice about how to take drugs, their side-effects, and when to return were done variably during either, both or sometimes neither activity. Health education about behaviour to prevent spreading infection was never given at the expense of more important advice about how to correctly take treatment.

Table III. Observations of patient consultations and drug dispensing

| Essential Care Criteria | No. of Observations (= EPL)* | No. of Tasks Performed (%) (= APL)* |
|--|------------------------------------|---|
| ● <i>Management</i> (N = 86) | | |
| enquires about patient well-being | 85 | 52 (61.2%) |
| prescribes correct drug regimen | 86 | 86 (100.0%) |
| arranges sputum smear if indicated (due this or next month) | 42 | 38 (90.5%) |
| refers patient if indicated (relapse/treatment failure/reactions) | 1 | 1 (100.0%) |
| advises patient to return if problems (completed treatment) | 8 | 8 (100.0%) |
| TOTAL | 222 | 185 (83.3%) |
| ● <i>Recording</i> (N = 86) | | |
| records in TB treatment card | 86 | 85 (98.8%) |
| records in patient take-away card | 85 | 85 (100.0%) |
| records in patient medicine book | 79 | 79 (100.0%) |
| records in TB register (starting or completing treatment) | 11 | 10 (90.9%) |
| TOTAL | 241 | 239 (99.2%) |
| ● <i>Dispensing</i> (N = 41) | | |
| advises time of day to take drugs | 41 | 30 (73.2%) |
| advises of drug side-effects (if starting new drug) | 14 | 8 (57.1%) |
| checks if patient knows how to take drugs (if patient during intensive phase) | 16 | 9 (56.3%) |
| tells patient date to return | 41 | 28 (68.3%) |
| TOTAL | 112 | 75 (67.0%) |

* EPI/APL = Expected/Actual Performance Level

Dispensing of drugs to forty one patients was observed. Staff dispensed drugs without the help of INF PMWs at two health posts. One staff distributed drugs without giving any instruction whatsoever. Performance scores were lower than for the consultations, with only two thirds of essential tasks carried out (Figure 2). However, of thirty six patients interviewed, over 90% correctly

knew how to take their drugs and all of the 12 patients taking 3 or 4 different drugs during the intensive phase of treatment knew how many of each to take (table IV).

Three patients (8%) did not know at what time of day to take their drugs. Knowledge of side-effects was relatively poor and only 57% knew about important side-effects.

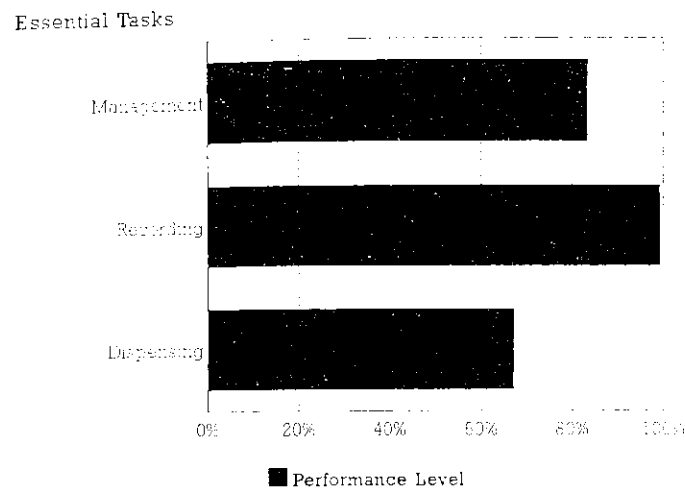


Figure 2. Performance profile for tuberculosis control activities

Table IV: Knowledge of patients about their treatment

| Patient Knowledge Variables | No. of responses | No. of correct responses (%) |
|--|------------------|------------------------------|
| Time of day to take drugs | 36 | 33 (91.7%) |
| How many of each tablet to take | 36 | 36 (100.0%) |
| Side-effects of drugs (if in first 4 months of course) | 21 | 12 (57.1%) |
| What to do if side-effects occur | 21 | 14 (66.7%) |
| Duration of total course of treatment | 32 | 27 (84.4%) |
| What date to return to health post | 34 | 33 (97.1%) |
| TOTAL | 180 | 155 (86.1%) |

There was a good attitude towards tuberculosis patients and an apparent willingness to treat them. Nonetheless, health post staff were noticeably less enthusiastic than the INF PMWs who showed greater interest in their work, took more initiative and paid more attention to detail in carrying out tasks. All staff mentioned the general dissatisfaction among health workers with high workload and low remuneration. Only one patient out of 26 expressed dissatisfaction with the attitude of the health workers.

Patient flow was efficient at all clinics and tuberculosis patients were handled at least as quickly as the general patients. Clinic duration

ranged between 2.5 and 4 hours and throughput of patients averaged ten per hour. Tuberculosis drugs were in stock at all health posts and stored securely. Materials for making sputum smears were available at all clinics. Smears were prepared by the health post staff and sent to the DHO. The time taken to receive results ranged between one and three weeks compared with one month before integration.

QUALITY OF OUTCOME

Case-Finding

One hundred and eighty three new cases of smear +ve tuberculosis were diagnosed in

Surkhet district in the twelve months following integration. This represents a case-finding rate of 119% of the estimated annual incidence (a result of greater than 100% is possible because prevalence is greater than incidence). This was the highest level achieved since the programme started and was well above the target of 70%. However, only 7% of these new cases were diagnosed at the health posts, the rest at the referral clinic. This low level of case-finding at health posts is particularly important because it is the major tuberculosis control activity carried out in the absence of support and supervision by the INF PMWs. It is due to two factors, a low amount of sputum sampling of suspects (193 patients) and a low proportion (7%) of positive sputum results (Figure 3).

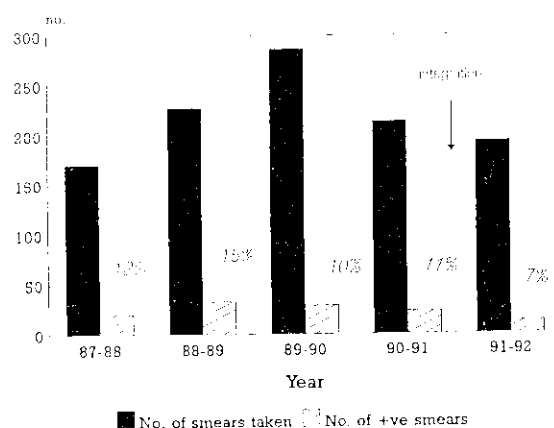


Fig 3: Case finding of smear positive tuberculosis at health posts.

One reason suggested for the former is that the staff do not like the "dirty work" of handling sputum. The low percentage of positive results is unlikely to be due to an over-cautious approach in investigating tuberculosis suspects because the overall number of smears prepared was low. The likelihood of many of the results being false negatives was also excluded by the quality control carried out at the DHO laboratory. A more probable explanation is that sputum smears prepared by the health workers are of poor quality, a view supported by the DHO laboratory assistant.

Case-holding/treatment

Regularity of monthly attendance for treatment was high (87%) and had not changed since integration. However the number of default episodes, (patients who had not collected treatment for two months following last return date), had increased from 19% of patients per year to 26%. Patients who fail to attend the clinic are classed as 'late' and are followed up either by home visit or by sending a letter. The number of follow-up actions fell as a proportion of the patients attending the health posts. More importantly there was a shift in method of follow-up from home visiting to sending letters. This occurred because follow-up was no longer the responsibility of INF and health post staff had not arranged for village health workers to visit homes of late patients.

Overall Quality of Health Post Activities

Quality of structural aspects of the programme either remained constant or improved following integration (table V).

Table V: Summary of Quality of Structure, Process and Outcome of tuberculosis activities at health posts

| Quality Indicators | Result | Change Since Integration* |
|---------------------------|---|---------------------------|
| Structural Quality | | |
| Availability of care | TB trained health workers at all HPs | ▲ |
| | Adequate physical facilities | |
| | Adequate equipment and supplies | |
| | Most effective treatment available (SCC) | |
| Physical Accessibility | Poor but similar to other basic services | ▲ |
| | Care provided at all HPs | |
| Economic Accessibility | Services free to patients | ▲ |
| | Travel costs less to HP than referral clinic | |
| Acceptability | Ambulatory care available at local HP | ▲ |
| Sustainability | HP staff trained in case finding and treatment | ▲ |
| | Dependent on present level of NGO support | ▲ |
| Adequacy of Management | Adequate budget and management personnel | ▲ |
| | Monitoring weak | ▲ |
| Adequacy of Support | Good level of supervision | ▲ |
| | Reliable supply system | ▲ |
| | Good laboratory service | ▲ |
| Process Quality | | |
| Health worker performance | Good performance <u>when PMWs present at HP</u> | ▲ |
| | Good organisation of TB clinics | |
| | Efficient handling of TB patients | |
| Health worker Motivation | HP staff feel overworked and poorly paid | ▼ |
| | Good attitude to patients observed | |
| Patient satisfaction | Good level of satisfaction with care | ▲ |
| | Patients prefer to be treated at HP | |
| Outcome Quality | | |
| Case finding | Low case finding <u>at HPs</u> | ▼ |
| | Case-finding rate in district 80/100,000 (119% of estimated annual incidence) | |
| | | |
| Case-holding/treatment | 87% regularity of monthly attendance HP | ▼ |
| | 26% of patients have default episodes | |
| | Follow up by letter instead of home visits | |

▲ = quality improved; ▼ = quality disimproved; ▲ = quality unchanged

This reflects the benefits of integration for service accessibility and availability, coupled with the fact that INF continued to carry out many of the management and support functions. Despite this, outcome indicators show

that while overall district performance has been maintained it has deteriorated at the health posts. The implication is that decline in performance is a function of changes in the process of care. Observation findings indicate

that adequate technical performance can be achieved as long as INF provides supervisory support. Case-finding and patient follow-up were identified as weak areas. It is significant that these activities were mainly done on non-TB clinic days when INF PMWs were not present. Neither activity requires much technical expertise and poor performance points to lack of motivation rather than lack of skill as the primary cause. An important contributory factor appeared to be the increased staff workload without extra remuneration which has followed integration of vertical programmes.

DISCUSSION

Integration was found to have some benefits for the programme but outcome measures suggested an overall decline in quality of care. It was clear that INF needs to monitor the process cautiously and to sustain a high level of support. Improving motivation among health workers at the health posts is a priority for maintaining and improving quality of care. In the absence of any realistic possibility of improving financial incentives to health workers, the scope for improvement may be limited to supportive supervision, refresher training which emphasises the technical essentials, and a system for programme monitoring which includes a mechanism for giving feedback to health posts. There is also a need for clearer assignment of tasks at the health posts.

Important issues have been raised pertaining to the effect of integration on the quality of tuberculosis control and the continuing role of the NGO. An earlier study in Dhading and Chitawan districts was somewhat more optimistic in concluding that targets could be achieved in an integrated control programme with short course therapy.¹⁶ However, these district health programmes were unable to provide the level of close patient supervision which was identified as vitally important to achieving high cure rate. The participation of an international organisation (Japanese Advisory Team) was important but that makes it difficult,

as in this study, to generalise findings to non-NGO supported districts. Community participation, especially by local NGOs, may be an alternative means of providing adequate supervision. Whatever the context we need to develop appropriate models of integration that address the key issues of health worker motivation through supportive supervision and concern for human relationships.¹⁷

The limitations and pitfalls of adopting a narrow approach to assessing quality of care can be seen from this study. An evaluation based on measurement of outcome alone would have been inadequate. Some outcome measures were misleading, such as the high district case-finding rate which masked the poor performance at the health posts. Secondly, it was not enough to know that case-finding or case-treatment had deteriorated at the health posts without also knowing something of why it happened. The outcome measures failed to convey an understanding of how integration had affected the delivery of care, what were the reasons for changes in performance, or what could be expected of future performance. It has further been shown that using outcomes as indicators of overall quality may not always be valid, and the dangers of management by targets have been reported.¹⁸ This is the case particularly where the interventions are organisational rather than technical, as with integration of the national tuberculosis programme in Nepal. Although often put forward as such, a standardised system of recording and reporting which focuses on outcome is not a sufficient means for quality assurance in tuberculosis programmes.¹⁹

These limitations of outcomes have stimulated much of the recent change of emphasis in health care evaluations. Most of the recently published studies of quality of health care in developing countries have focused on process and/or structural dimensions.^{20,21,22} Such approaches assume that elements of structure or process can be identified that are determinants of successful outcome.²³ However, demonstrated correlations are lacking and restricting quality assessment to

these dimensions fails to give a complete picture.²⁴ In this tuberculosis programme study, analysis of programme structure alone would have led to the misleading conclusion that integration was overall beneficial to tuberculosis control in Surkhet. Many of the process findings would have been similarly misleading if interpreted in isolation. A good level of technical performance was observed and patients were satisfied with their treatment. Yet important weaknesses of case-finding and follow-up were present which would have been overlooked without a broader assessment.

Having identified the need for a holistic approach the challenge was to develop a suitable methodology without compromising feasibility. This study demonstrates that a comprehensive approach can be feasible and useful for a tuberculosis control programme where time and expertise are limited. The structure-process-outcome framework that was used is simple conceptually and need not be difficult to implement. The first step is to broadly identify what is contained in each of these dimensions. Programme managers can then decide what needs to be assessed from each dimension in their particular context and develop appropriate measures and indicators. The planning process is a valuable part of the evaluation and can give a sense of ownership which will encourage future use of the results. In selecting and developing indicators it may help to refer to commonly used attributes of structure, process and outcome such as those used in this study. Such comprehensive assessment can be built into the routine information system by incorporating structural and process data collection into supervision tools.²⁵ In this way quality of care can be monitored without having to resort to special surveys.

The emphasis on process within the framework is appropriate as it has been found by others to be the most relevant component for planning purposes.²⁶ This is the most difficult dimension to assess because it is essentially qualitative. Direct observation using checklists is now widely proposed, especially for

measuring clinical and managerial performance.^{27,28} A good degree of validity and reliability can be achieved by selecting criteria which are measurable using a straightforward checklist of whether or not tasks are carried out. A performance profile can then be constructed which shows the pattern of performance and highlights the areas of deficiency.²⁹ The difficulty of weighting different tasks was solved by focusing exclusively on essential tasks, and establishing 'essential patient care criteria', a method which has been used previously in developing countries.³⁰

CONCLUSION

The structure-process-outcome framework developed and applied to the tuberculosis control project in Surkhet district provided valuable insights into the quality of care after integration of the programme. The main lesson from this study is that quality assessment needs to be comprehensive and should not be confined to measurement of outcome indicators of case-finding and case-holding.

The work was carried out in 1992 by the principal author (David Weakliam) in partial fulfilment of the degree of Master of Community Health at the University of Liverpool (School of Tropical Medicine) in the United Kingdom.)

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