Tuberculosis and health sector reform: experience of integrating tuberculosis services into the district health system in rural South Africa

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SUMMARY

SETTING: Hlabisa health district, South Africa.
OBJECTIVE: To describe the integration of a ‘vertical’ tuberculosis control programme into an emerging ‘horizontal’ district health system, within the context of health sector reform.
DESIGN: Descriptive account of the process of integration of the programme into the health system.
RESULTS: A highly ‘vertical’ system of delivering tuberculosis treatment (with poor programme outcomes) was converted into a ‘horizontal’ team, integrated within the district health system, that used available resources such as village clinics and community health workers, with improved programme outcomes.
CONCLUSIONS: In some settings at least, integration of tuberculosis ‘programmes’ into the district health system as tuberculosis ‘teams’ is feasible, and may produce highly cost-effective outcomes.
KEY WORDS: tuberculosis; health sector reform; district health system; community

HEALTH SECTOR REFORM is a major force driving change in health systems throughout the developed and the developing worlds.¹ Health sector reform may be difficult to define precisely, and different people interpret it in different ways. However, its broad goal is to improve the cost-effectiveness of health care delivery—better outcomes within constrained costs.¹

In low income countries the establishment of functioning district health systems (DHS) is recognised as being critical to the delivery of effective, integrated, cost-effective health care.² The DHS typically serves a geographically defined population and should aim to provide a prioritised and integrated package of clinical and public health services at primary (e.g., village clinic) and secondary (e.g., district hospital) levels.

Tuberculosis treatment services in such settings have typically been delivered in a highly ‘vertical’ manner.³ Features of this structure include being donor-driven and donor-dependent, with separate staff establishments, separate vehicles, separate drug procurement procedures, and separate data reporting systems. While programmes such as the expanded programme on immunisation (EPI) and the smallpox eradication campaign have enjoyed considerable success through such ‘vertical’ organisation, other vertical programmes such as the malaria eradication efforts of the 1970s have failed. Proponents of health sector reform believe services are more likely to be cost-effective and sustainable if they are integrated into and delivered through a comprehensive DHS. Here the successful integration of tuberculosis treatment services into an emerging district health system in rural South Africa is reported.

SETTING

South Africa has a population of 38 million, approximately 50% of whom are urbanised. The nine provinces vary from heavily urban to sparsely populated rural. South Africa’s health services have been fragmented for decades.⁴ Until recently the fragmentation was generated largely by apartheid policies which created separate health departments on the basis of colour, but also provided for administrative units on the basis of geography (e.g., different provincial and regional administrations). Prior to the elections in 1994, there were 14 health departments, and further fragmentation occurred in urban areas where local authorities had responsibility for different health functions.⁴

For tuberculosis control, there has only recently been a national control programme, and more than 110,000 cases were reported in 1997.⁵ Previously, responsibility for tuberculosis control rested with the individual health departments, and many recom-

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mended different treatment regimens and treatment practices. The actual diagnosis and the delivery of tuberculosis treatment was highly disorganised. Although largely a public sector responsibility, the (large) private medical sector and charities were also involved. Tuberculosis treatment services tended to be highly vertical in nature, usually separated from other primary and secondary care services.

More recently, the policies behind this fragmentation have changed: the national health department decentralises responsibility for delivery of health care to the provinces, and actual delivery is to occur through district health systems (DHS). Of course, it is taking much time and much effort to create functioning district systems. Perhaps paradoxically, the ex-black ‘homelands’ are in a somewhat advantaged position, as historically they tended to be run on a system of ‘health wards’, with a district hospital and several primary health care clinics trying to operate as a functional unit.

HLABISA

Prior to 1994 the Hlabisa district was a health ward; more recently, however, its boundaries have changed substantially, with a much increased area and population (250,000) of responsibility. Much of the district is sparsely populated across hilly terrain. Most people rely on pensions, migrant worker remittances and subsistence farming. The district hospital has 450 beds and a medical staff establishment of 12. There are 12 primary care clinics scattered across the district, and approximately 130 community health workers (CHW) unequally distributed through the district. Mobile clinic services serve the more remote areas. In the two large towns in the district, private medical practitioners provide care on a fee-for-service basis.

Prior to 1991 tuberculosis treatment was delivered either in hospital or (unsupervised) through the network of village clinics. In 1991 the caseload was 300 per year, and the 8-month drug regimen used included rifampicin for the first 4 months only. Caseload had increased to 1300 in 1998, secondary to the human immunodeficiency virus (HIV) epidemic, and from 1991 a 6-month rifampicin-containing regimen was used. Many patients were consigned to a sanatorium 150 km away, and others were institutionalised near Durban (300 km away) under the care of a charity. Perhaps unsurprisingly, only 18% of a cohort of 200 patients had documented completion of treatment. In mid-1991, a project was started that aimed to deliver tuberculosis diagnosis and treatment services to all district residents entirely within the Hlabisa district. The new service, deliberately not referred to as a ‘tuberculosis control programme’ but rather as the ‘tuberculosis treatment team’, had the goals of being fully integrated into the emerging district health system, and of being sustainable. To this end the team was fully funded through the existing district budget of Rands 2.5 million (US$ 5 million), equivalent to approximately US$100 per capita per annum. Although substantial funding has been attracted for research, no extra funding has been provided for service provision.

An integrated diagnostic and treatment service

The system that was initially planned and that subsequently evolved is outlined in the Figure. Patients access the service through a number of portals, including a village clinic and a private doctor, and many self-refer themselves to the hospital out-patient department. Although not formalised, it is clear that some patients are also sent to hospital by traditional healers (submitted). The hospital general out-patient clinic is the point of contact where screening for possible tuberculosis first takes place, following international criteria. Initial screening here is by a senior nurse and/or a medical officer, and is based on clinical assessment with or without a chest X-ray. It would be valuable to have a system for examining at least one sputum smear in the out-patient setting, but we were unable to achieve this due to the heavy workload in the laboratory and the small number of technicians available. Some patients are treated with an antibiotic as out-patients and reviewed 1 week later, and those considered to be tuberculosis suspects are admitted for a definitive diagnosis to be made.

We decided that tuberculosis suspects would be admitted to the acute medical services as many patients are acutely sick, several may have multiple pathology, and in our setting at least, it is easier to organise diagnostic tests and regular medical review in the acute medical wards. Once a definitive diagnosis is made, on the basis of smear microscopy, chest X-ray, histological examination and/or clinical assessment, and once the patient is stable, formal transfer to the tuberculosis treatment team occurs.

This team is based in the tuberculosis ward, separate from the acute medical services. We have found this to be a useful arrangement as it frees up acute medical beds, and makes explicit recognition that continued treatment for tuberculosis is not a function best facilitated by acute services, but is rather a long term, community-oriented task, remaining within the DHS. The tuberculosis team comprises a medical officer who is a member of the general hospital staff and who does tuberculosis work perhaps half-time. He or she also shares out-patient duties and on-call duties with other doctors. The medical officer’s role is to provide medical care to patients with tuberculosis (and increasingly with concomitant HIV infection), to help co-ordinate and manage the tuberculosis team, to facilitate audit and to initiate and conduct appropriate research. The medical officer has typically spent 1–2 years in this role in Hlabisa. As more than 10% of all hospital admissions are now due to tuberculosis, this allocation seems reasonable.
A senior nurse provides a more stable influence. As all health workers become more senior there tends to be a narrowing of field of activity as expertise grows. We have found it useful for a senior nurse to oversee the tuberculosis team (and have recently added HIV/AIDS to her responsibilities). Her role is primarily managerial, running the ward, helping supervise the tuberculosis team, supervising field staff, and helping audit programme activity. Several junior nurses rotate regularly through the ward, providing the less intensive nursing care needed on this ward, and gaining experience of the tuberculosis programme. Key team members are three health assistants who, based in the ward but working in the community most of the time, act to register and notify cases, organise community care, and supervise the community supervisors.

The Hlabisa tuberculosis team has utilised three main groups of treatment supervisors: nurses based in village primary care clinics, CHWs (local women trained to promote preventive health care, and paid by the tribal authority), and volunteers (mainly local store keepers). The clinics and CHWs are integral members of the district health system, and tuberculosis patients are formally handed over to their care. The tuberculosis team visits the supervisor (not the patient) monthly to provide additional support as required (including efforts to trace defaulters if outside the supervisor’s geographical area), and to collect outcome data. Volunteers are not formally part of the DHS. Follow up also occurs through the same DHS structures and services.

**DISCUSSION**

This model of a tuberculosis treatment service that was planned to be as fully integrated with the emerging...
DHS as possible has achieved substantial success. The tuberculosis team has used all available district resources, such as the laboratory, the vehicle pool, district staff, pharmacy, primary care clinics and CHWs. Prior to this reorganisation, only 18% of cases completed treatment (among approximately 300 per year), but now around 85% of survivors (among approximately 1300 per year) complete treatment and are cured. This model has been shown to be cost-effective, providing much cheaper care than an institution-based programme. It must be stated that we do not suggest that this is the only way to integrate tuberculosis diagnosis and treatment into a DHS; the detail may well differ in other settings, but our experience does suggest that integration is feasible.

**Issues arising**

Many issues that may be of generic interest arise from our experience.

**Budgets and drugs**

The tuberculosis budget is sourced from within the DHS budget, with no extra resources sourced from outside. Ward and staff costs are carried by the hospital and clinics, with the district management team agreed on allocation of staff time and responsibilities at all levels of the DHS. Drug procurement is through the routine pharmacy services and budget. Tuberculosis drug supply is guaranteed, broadly based on the number of registered cases. Tuberculosis drug costs account for <5% of tuberculosis activities. There is no specific tuberculosis line item in the budget and no district plan to guide activities and budget allocation: both are desirable.

**Vehicles**

Vehicles in the district vehicle pool are allocated to different DHS services by the district management team, and tuberculosis treatment services have been prioritised due to the high burden of disease and its public health importance. A vehicle is made available to the team two to three times each week.

**Team management**

The tuberculosis treatment team is a multidisciplinary team that is managed jointly by the medical officer and senior nurse working on the team. They report outcomes through a standard reporting system to the district management team and on to the provincial tuberculosis control programme. Audit is most active and effective at district level, with quarterly reports generated and used to try to maintain service quality.

**Staff allocations**

It is considered important by many for a DHS to have staff that are multi-skilled. We have tried to ensure that this is the case by rotating medical and nursing staff through the tuberculosis ward, and by devolving supervisory functions to the community clinics (all nurses in the village clinics supervise tuberculosis treatment, for example). Developing multiple skills in staff may at times be best achieved by longer period of stability in a particular role. This may ensure a depth of skill and knowledge leading to particular confidence in a role. It is important to ensure that staff in such roles do not stagnate and do not exclude other staff from developing similar skills and responsibilities.

**Integration or isolation?**

In the current climate of health sector reform, integration seems to be the only choice for tuberculosis control efforts. In Hlabisa we ensured there are no dedicated tuberculosis clinics, diagnostic or drug procurement pathways, or separate staff establishments. We similarly ensured a strong tuberculosis team identity within the integrated DHS. This is built around a common goal that requires substantial effort to ensure success. This sense of identity, of shared purpose, and of particular skill development and retention, is no different from that which midwives have, for example. All district hospitals have dedicated labour wards, many may have a particular day or days for antenatal care services, and while promoting an integrated service we should also be careful not to force all our staff to become ‘jacks of all trades and masters of none’. In our experience, function should drive structure and organisation; and the success of that function should be carefully assessed through rigorous measurement of outcome. Outcomes, not process, should drive our efforts. With its focus on rigorous output measures, tuberculosis control efforts may well have something positive to teach other services within the DHS.

**How far can integration into a DHS go?**

Our tuberculosis service rapidly made use of many DHS components such as primary care clinics and CHWs. It then went beyond the DHS to include volunteers. We are now working to involve private medical practitioners. As in much of the developing world, such doctors have little or no responsibility in the public health sector, but we have found that some are interested in co-operation if it adds value to their own service (submitted). We are now piloting a scheme whereby private doctors make use of public sector smear microscopy services, and then refer diagnosed cases to the public sector for treatment; private doctors may then be asked to supervise patients. The public sector retains core responsibility for tuberculosis control, but acts to involve as many community resources as possible.

As part of a WHO co-ordinated project we are currently exploring the possible inclusion of traditional healers in the DHS in general and within tuberculosis control in particular. Findings to date suggest that healers see large numbers of patients with possible tuber-
culosis, and that they are willing to share responsibility for diagnosis and for treatment supervision (submitted).

**Integrating HIV/AIDS care**

Calls have been made for tuberculosis and HIV/AIDS programmes to work more closely together. This is likely to be particularly difficult when services are organised vertically and run separately, as effective barriers to collaboration are almost inevitably imposed. When both sets of activities are operating within a DHS, cooperation probably has a greater chance of success. Referring to the Figure, acute medical services will deal with presenting complaints that are HIV-related, the tuberculosis ward can start to provide long-term and palliative care for sick patients with AIDS whose discharge is inevitably delayed, and with supervision being in the community, access to comprehensive care from village clinics and CHWs should be relatively straightforward. More structured HIV/AIDS care and support activities can be linked up to tuberculosis activities more easily when DHS management has broad overall responsibility for each.

In conclusion, health sector reform is a reality that those of us concerned with tuberculosis control cannot afford to ignore. By actively engaging in the process we have the possibility of influencing it, and of making it work for people with tuberculosis. One important way of influencing the process may be through documenting effective models that have integrated tuberculosis diagnosis and treatment within emerging district health systems. While health sector reform can probably inform tuberculosis control efforts, it is also likely that tuberculosis control efforts can positively inform the process of health sector reform for the good of all community members.

Our experience was positive and it may be feasible to implement similar changes in other rural South African districts.

**References**

RESULTADOS: Un sistema altamente ‘vertical’ de administración del tratamiento de la tuberculosis (con resultados programáticos pobres) fue transformado en un equipo ‘horizontal’, integrado dentro del sistema distrital de salud usando los recursos disponibles tales como consultorios urbanos y trabajadores sanitarios de la comunidad, lo que mejoró los resultados del programa.

CONCLUSIONES: Por lo menos en algunos ambientes, la integración de los programas de tuberculosis en el sistema sanitario distrital, como ‘equipos’ de tuberculosis es factible y puede producir resultados favorables en costo-beneficio.