

Promoting adherence to tuberculosis treatment

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Tuberculosis (TB) is a good test of a health system: addressing the problem requires the use of laboratories and X-rays, the input of skilled clinicians, a reliable supply of drugs, the use of health education, the provision of continuity of care as well as good follow-up and information systems. WHO's DOTS strategy has helped improve outcomes in TB in many ways: new resources have been channelled towards TB control programmes, drug supplies and information systems have been strengthened and targets have been set. The strategy has helped ensure that national governments take notice of TB control efforts in their countries and also that advances have been made in the coverage and quality of TB control globally.

WHO has refined the global programme in the Stop TB Strategy.¹ To ensure that patients benefit from these efforts, it is clear that good health services are necessary but not sufficient. Patients still need to choose to take the drugs.

Patients choose to adhere

We deliberately use the word "choose". Over the past few years, we have taken part in the debate over what are the best evidence-informed strategies to improve adherence;² it seems to us that there are two extreme viewpoints in the community of TB experts.³ One holds that it is the right of public health authorities to demand adherence: there is a public health imperative that patients with positive sputum tests must take their treatment. This imperative is legislated, and needs strict implementation because these patients are a profound risk to others.

When this imperative becomes the prevailing attitude in TB management, the system is based on a coercive model. People occupying this polarity believe

that poor adherence is a problem for the public health system caused by recalcitrant patients; these patients don't know, don't care and don't understand why they need to complete the full course of treatment. The natural response to this set of beliefs is to devise a menu of policies to educate, to motivate, to watch and to punish patients if they do not do as instructed.

At the other extreme, policy-makers and providers consider it their job to deliver an intervention that is generally highly effective against a life-threatening and debilitating disease. For this approach to succeed, health-care practitioners must work within an effective health system that delivers care appropriate to people's needs. If a large proportion of people do not complete treatment, then it is the health-care system that has failed, by not delivering what it is supposed to. This viewpoint emphasises that a health-care system should operate in a way that is appropriate to people's needs, rather than emphasising the development of means for providers to control patients' behaviour.

Mapping interventions and barriers

Accepting that the most effective philosophy to underpin policy would probably be found between these two extremes, we sought to determine the priorities for developing and evaluating new interventions to improve adherence to treatment. We did this by mapping onto the known barriers to TB care the current menu of interventions used to promote adherence. A large volume of research documents barriers to the completion of long-term treatment regimens in chronic conditions. One framework, for example, groups these into various

factors relevant in turn to socioeconomic status, the health system, the condition itself, therapy and the patient.⁴ An unpublished qualitative systematic review of patients' experiences with TB revealed that the three groups of barriers to treatment completion were health-system factors, social and family factors (social contexts) and personal factors (S. Munro et al., unpublished data, 2006).

Against these categories of barriers we mapped specific tested interventions used to improve adherence.⁵ For example, staff training probably tackles health-system barriers by improving the quality of health care (Table 1). Health education mainly addresses personal barriers concerning knowledge and understanding of treatment requirements. Sanctions work as a negative force to alter behaviour. Some studies have given patients small amounts of money as reimbursement for transportation costs: we judged that this reduced the barriers of access and poverty within the family, rather than the money actually "motivating" the person, but of course this may be context-specific and depend on the level of financial reimbursement. Our exercise was designed to help policy-makers and providers think through the barriers and determine how best to address them, rather than to provide a final statement on the issue.

First, it was interesting that most interventions were targeted at overcoming barriers associated with the health service and the individual. Within health services, the interventions were fairly mechanical and did not concern the responsiveness of the service; on the whole, these interventions fit into the coercive model. Second, relatively few interventions tried to overcome barriers in the social and family category. The health-service model of direct observation by a health worker appeared to

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Table 1. Barriers to treatment completion as derived from a systematic review of qualitative literature and mapped onto interventions to promote adherence

Intervention ^a	Barriers to treatment completion, ^b ranking of importance of intervention ^c and mechanism of action		
	Health system ^d	Social and family ^e	Personal ^f
Staff training	+++ Intervention improves quality of health care	–	–
Cash reimbursement	+++ Intervention increases access by reducing transport costs	++ Intervention reduces financial burden	–
Delivery of DOT by health worker	+++ Intervention provides medicine and offers supervision of patient taking medicine	–	–
Delivery of DOT by community health worker or family member	+++ Intervention provides medicine and offers supervision of patient	++ Intervention influences social and family groups	+ Intervention challenges beliefs and educates patients
Provide peer support	–	+++ Intervention influences social and family groups	–
Health education provided by doctor	–	–	+++ Intervention improves knowledge
Health education provided by a nurse	–	–	+++ Intervention improves knowledge
Impose sanctions	–	–	+++ Intervention acts as an extrinsic negative force to alter behaviour
Take defaulter action (actions taken by health workers when patients do not attend for treatment)	–	–	+++ Intervention acts by modifying behaviour
Use prompts to encourage attendance for treatment	–	–	+++ Intervention acts by modifying behaviour
Use contracts to encourage adherence to treatment	–	–	+++ Intervention acts by modifying behaviour

DOT, directly-observed treatment.

^a Interventions identified from *Clinical Evidence*.⁵

^b Barriers identified in unpublished systematic review of the qualitative literature on patients' experiences of adherence to tuberculosis treatment.

^c Main target to be addressed is denoted as "+++"; secondary target denoted as "++"; possible target denoted as "+"; issues that are generally not a target denoted as "–".

^d Barriers associated with health systems may include lack of access to a health facility, availability of service, length of waiting times, condition of clinic, length of treatment or relationship between provider and patient.

^e Barriers associated with social and family characteristics may include the sex of the patient, poverty and the financial burden of treatment, the influence of peers, the influence of family and community members and social stigma.

^f Barriers associated with personal characteristics may include a lack of motivation; lack of knowledge about the requirements of treatment; the patient's perceptions of disease; the patient's beliefs, attitudes and interpretations of illness; and other personal characteristics.

address problems with access and service delivery from the health service's point of view. Models that involve family members or community members provide an opportunity to tackle barriers related to the social and family category. They do this, for example, by reducing stigma and encouraging people within the community to complete treatment.

Some community health staff with good communication skills who are charismatic local advocates of good TB control may influence these barriers too, but experience from community health workers in the 1980s suggests that most community health staff do not have such skills and are merely seen as another pair of hands.⁶

Research in participatory interventions

Research has shown that at a local level, family and social organizations are potentially powerful areas in which to intervene. For example, a trial of participatory interventions with women's groups in Nepal demonstrated a 30%

reduction in neonatal mortality.⁷ Such interventions show potential and could be adapted to address social barriers to the completion of TB treatment. These findings suggest that removing barriers at the community and family level is an area that is relatively under-researched, but could provide powerful tools to use with current approaches to ensure completion of treatment. The limited number of interventions available in this area may well reflect the dominant model, which focuses on assuring adherence rather than on broader concerns about ensuring that services are appropriately tailored to patients' needs.

Advocates who seek to make progress in TB control at the country level

may argue that we do not need research in this area; we just need to make progress in social and community development. But this is a complex area and it is not clear how best to intervene or how policies can help overcome these barriers to treatment and adherence. New approaches are needed to overcome stigma and tackle gender differentials in treatment. Policies that could be introduced through health services need experimental and quasi-experimental testing to explore how robust they are when implemented across regions rather than in small pilot programmes.

Any strategy to improve adherence needs to improve health services and ensure that services are appropriate to

patients' needs. Sometimes, but not always, direct observation may help. We believe it is helpful to move away from the dominant paradigm of controlling patients to one that focuses on developing health systems and responding to patients' health-care requirements to help them choose to complete treatment themselves. ■

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