When do vertical programmes strengthen health systems? A comparative assessment of disease-specific interventions in India

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Objective

Disease-specific programmes have had a long history in India and their presence has increased over time. This study has two objectives: first, it reports on the interaction between local health systems and key disease-specific programmes in India—National AIDS Control Program (NACP) (HIV/AIDS), Revised National Tuberculosis Control Program (RNTCP) (TB) and National Vector Borne Disease Control Program (NVBDCP) (Malaria), and second, it examines which factors create an enabling environment for disease-specific programmes to strengthen health systems.

Methods

A total of 103 in-depth interviews were conducted in six states in 2009 and 2010. Key informants included managers of disease control programmes and health systems, central and state health ministry and staff from peripheral health facilities. Analytical themes were derived from the World Health Organization (WHO) building block and the Systems Rapid Assessment framework.

Findings

Disease-specific programmes contribute to strengthening some components of the health system by sharing human and material resources, increasing demand for health services by improving public perceptions of service quality, encouraging civil society involvement in service delivery and sharing disease-specific information with local health system managers. These synergies were observed more frequently in the RNTCP and NVBDCP compared with the NACP.

Conclusions

Disease-specific programmes in India are widely regarded as having made a substantial contribution in disease control. They can have both positive and negative effects on health systems. Certain conditions are necessary for them to have a positive influence on health systems—the programme needs to have an explicit policy to strengthen local health systems, and should also be embedded within the health system administration.

Keywords

Health systems strengthening, vertical programmes, disease control programmes, India
KEY MESSAGES

- Disease-specific programmes in India, such as the Revised National Tuberculosis Control Program (RNTCP) (TB), National Vector Borne Disease Control Program (NVBDCP) (Malaria) and National AIDS Control Program (NACP) (HIV/AIDS), can contribute to strengthening components of the health system by sharing human and material resources, increasing demand for health services, encouraging civil society involvement in service delivery and sharing disease control information with local health system managers.
- Our analysis indicates that the RNTCP and NVBDCP play a greater role in strengthening local health systems compared with the NACP.
- Disease control programmes have a greater potential of strengthening health systems when (1) the programme has an explicit policy for strengthening health systems; and (2) the programme is structurally embedded in the health system network.

Background

Disease-specific programmes have a long history in India. Since the early years of independence, and before that during the colonial period, these programmes were central to Government policy for controlling epidemics and diseases of national importance. During the 1950s and 1960s, even as India began building its vast public sector health system, several national disease-specific programmes covering malaria, Tuberculosis (TB) leprosy, filaria, trachoma and cholera were launched, each with a dedicated cadre of managers and health workers (Duggal 2005). Currently, around 10 national disease-specific programmes covering a range of diseases operate in India. These programmes are regarded as having made a substantial contribution in disease control.

The role of disease-specific programmes in health systems has recently received increased attention (Uplekar and Raviglione 2007; Marchal et al. 2009; Atun et al. 2010; Conseil et al. 2010; Desai et al. 2010; Mounier-Jack et al. 2010; Rudge et al. 2010). Several issues seem to be responsible for this. First, there have been concerns about global health initiatives (GHIs) creating parallel systems of functioning and influencing national policies adversely (Biesma et al. 2009). On the other hand, while disease-specific programmes have tried to bring services closer to communities, these have been constrained by weak government health systems in terms of shortages of health workers, deficient supply systems and poor infrastructure (Elzinga 2005). Second, global funding for health is increasingly being channelled through GHIs and the disease-specific programmes they support (Ravishankar et al. 2009). This has created well funded and functioning disease-specific interventions embedded in a poorly functioning health system. Such issues have renewed the debate about how disease-specific programmes can best contribute to strengthening health services for the general population.

Some of this debate has been captured through case studies from several countries that outline interactions between GHIs, vertical programmes and health systems. Some positive effects of vertical programmes include freeing up investments for other local diseases (Desai et al. 2010), involvement of civil society and other stakeholders (Biesma et al. 2009; Desai et al. 2010; Rudge et al. 2010; Trågårdh and Shrestha 2010), improvement of patient confidence in facilities (Rudge et al. 2010), better human resource availability (Cavalli et al. 2010; Trågårdh and Shrestha 2010; Rasschaert et al. 2011) and reaching out to neglected population groups (Hanvoravongchai et al. 2010). One important concern about vertical programmes across case studies—and more apparent in countries where donor funding was heavy—was the sustainability of vertical programmes (Le Loup et al. 2010; Mounier-Jack et al. 2010; Rudge et al. 2010). Other concerns included parallel planning and monitoring processes (Kawonga et al. 2012), increased workload (Cavalli et al. 2010), and the drain of human resources from the general health system (Keoung et al. 2011).

Most of the literature mentioned earlier focuses on documenting interactions between disease-specific programmes and health systems. But under what conditions what sort of interaction takes place, and how this influences health systems, are issues less frequently discussed. Political commitment, leadership and the occurrence of events necessitating co-ordination have been found to affect interaction (Atun et al. 2010, 2011); and robust systems are better integrated with vertical programmes (Cavalli et al. 2010). But generally, the literature on factors that lead to or hinder interactions between disease-specific programmes and health systems has been limited. In this article, we attempt to redress this gap with some evidence from India.

This study has two aims: (1) to report on the interaction between local health systems and key disease control programmes in India, and (2) to understand which factors create an enabling environment for disease-specific programmes to strengthen health systems. This study focuses on three key disease control programmes in India—the National AIDS Control Program (NACP), the Revised National Tuberculosis Control Program (RNTCP) and the National Vector Borne Disease Control Program (NVBDCP) for malaria control. Rather than evaluating the impact of these disease control programmes on population health, this study describes interactions between these programmes and the health system.

Disease control programmes in HIV/AIDS, TB and malaria have an important place in India’s health system; these diseases have high public health significance, their control programmes cover most of the country, and they consume substantial health resources. The NACP, RNTCP and NVBDCP are sponsored by the central health ministry—in the 11th Five Year Plan (2007–12), disease control programmes were allocated 13% of the central health ministry’s budget, of which a little more than half (58%) was for NACP, RNTCP and NVBDCP (Ministry of Health and Family Welfare 2010). International donors...
entire programme. For 2011–12 are budget estimates; (2) estimates for NVBDCP are for the Government of India, Union Budgets. Various years. Note: (1) figures informants. This is complemented by an analysis of This study is primarily based on qualitative interviews of key Data and methods programmes is given in Box 1. In contrast, donors contribute around only 1% of total health spending in India (WHO 2011a). Figure 1 shows the expenditure trends in these three programmes—of the three programmes, the NACP gets considerably more funds. A description of these three disease-specific programmes is given in Box 1.

**Box 1 The NACP, RNTCP and NVBDCP**

NACP: India had an estimated adult HIV prevalence of around 0.31% in 2009 (NACO 2012). Some parts of the country are experiencing a ‘generalized’ epidemic with prevalence exceeding 1% (NACO 2012). The national response to control HIV/AIDS has been through three phases of the NACP: NACP-1 (1992–99), NACP-2 (1999–2007) and NACP-3 (2007–12). Through these phases, the programme has moved its focus from prevention to include curative care too. NACP-3 focuses on preventing infection through increased coverage of targeted interventions, providing support to people living with HIV/AIDS, strengthening infrastructure and systems, and strengthening information management. During 2011–12, 9 million clients were tested for HIV, and currently, 486 000 people living with HIV are receiving antiretroviral therapy (ART) through the programme (NACO 2012). The NACPs have traditionally had a high level of donor support. For instance, around 45% of the NACP-3’s budget is from external sources. However, the NACP-4 is expected to be locally funded by the government (NACO 2012).

RNTCP: India is home to the largest number of TB cases with an estimated incidence of 16.8 (13.7–20.2) per million population, accounting for one-fifth of the global incidence (WHO 2011b). India also has one of the highest numbers of Multi Drug Resistant TB (WHO 2010). The first programme against TB, the National Tuberculosis Control Program, was launched in India in 1962. In 1997, the RNTCP was launched and it employs the Directly Observed Treatment Short-course (DOTS) strategy for TB treatment. The programme also strengthened the existing infrastructure and human resources for tuberculosis, decentralized supervision and management (GOI 2005). The RNTCP has wide coverage; more than 95% of India’s population is covered under its DOTS strategy. Since its inception, the programme has evaluated more than 44 million persons for TB and initiated treatment for 12.8 million TB patients and has saved more than 2.3 million lives (Central TB Division 2011). RNTCP is supported with funds from the government and donors.

NVBDCP-malaria: India contributes to 55% of the confirmed malarial cases in the South East Asia region (WHO 2009). The prevalence of malaria in India has historically fluctuated, resulting in modified responses to the malaria situation over the years. The National Malaria Control Program was launched in 1953 and was successful in reducing malarial cases substantially (Sharma et al. 1996). In the early 1970s and again, in the early 1990s, India experienced a resurgence of malaria. In 2002, the programme was incorporated into the NVBDCP. Key strategies employed by the programme include management of diseases (early detection of cases and referral), vector control through spraying and use of insecticide treated bed nets, larvivorous fish and other supportive interventions. For the period 2008–12, around a third of the NVBDCP’s budget for malaria was from external donors (Directorate of NVBDCP).

**Figure 1** Expenditure on NACP, RNTCP and NVBDCP. Source: Government of India, Union Budgets. Various years. Note: (1) figures for 2011–12 are budget estimates; (2) estimates for NVBDCP are for the entire programme.

**Data and methods**

This study is primarily based on qualitative interviews of key informants. This is complemented by an analysis of institutional arrangements in the three disease control programmes based on published government documents from the three programmes and the general literature.

Qualitative interviews from a range of informants were collected between January 2009 and September 2010 at the national level and from seven states in India. These states were selected based on their epidemiological profile, geographic diversity, and if disease control programmes in these states were supported by international donors, including the Global Fund. Information was collected in two phases—the first phase was commissioned by the WHO Maximizing Positive Synergies group and focused on the states of Andhra Pradesh, Uttarakhand and Manipur. The second phase was funded by the Global Fund and focused on the states of Karnataka, Nagaland, Orissa and Uttar Pradesh.

A total of 103 in-depth interviews were conducted at national, state and district level (Table 1). Key informants were selected purposively as well as by snowball sampling based on their job characteristics, and their roles or experiences. Informants included relevant policy makers based in health departments at the national and state level, managers of disease control programmes (NACP, RNTCP and NVBDCP) and public sector health services at the national, state and district level, staff at health facilities and members of civil society organizations (CSOs). In each state, the district nearest to the capital city where Global Fund supported programmes in NACP, RNTCP, NVBDCP were functioning was selected for interviewing district managers. Staff at the district hospital, sub-district hospital and
Primary Health Centre (PHC) were selected for interviews. All interviews were conducted by the study investigators.

The elements of the interview guides used are listed in Table 2. For phase 1 of the study, key informant guides were internally developed and for phase 2, the guides were modified using the Systems Rapid Assessment toolkit (Atun et al. 2010). Broad themes of analyses were identified in advance (but loosely structured to provide flexibility inherent to qualitative research) and were inspired by the six WHO health system building blocks, i.e. service delivery, human resources, financing, information, medical technology and governance (WHO 2000). Using interview guides with similar themes enabled combining information from both phases. In both phases, the focus was on Global Fund supported disease control programmes. Verbal consent was taken for all interviews. The results were triangulated by comparing the perspectives of key informants from different backgrounds and different levels within the health system (Denzin 1978). In addition, having a team of investigators analyse the information collected provided the added advantage of investigator triangulation and minimized researcher bias in the process. ATLAS.ti Version 6.0 was used for the analyses. The findings are discussed according to the WHO health system building blocks.

Table 1 Distribution of interviews conducted

<table>
<thead>
<tr>
<th>Programme</th>
<th>National</th>
<th>State</th>
<th>District</th>
<th>Health facility</th>
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</tr>
<tr>
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<td>7</td>
<td>12</td>
<td>9</td>
<td>34</td>
</tr>
<tr>
<td>NVBDCP</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>5</td>
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<tr>
<td>Total</td>
<td>13</td>
<td>29</td>
<td>37</td>
<td>24</td>
<td>103</td>
</tr>
</tbody>
</table>

Table 2 Topic guides for policy makers, programme managers and health workers

- Informant background
- Disease control programmes (Global Fund supported programmes in malaria, TB and HIV/AIDS) and health systems
  - Key changes in health system
  - Overall effect of disease control programmes on health systems
- Governance (planning)
  - Process of programme planning
  - Donor influence on programme planning and activities
- Finance
  - Funding and fund flows for disease control programmes
  - Adequacy of funds
- Services (infrastructure, civil society)
  - Effect of diseases control programme on the health system infrastructure
  - Role of civil society in health delivery
  - Effect of disease control programmes on civil society
- Information [monitoring and evaluation (M&E)]
  - Reporting mechanism in disease control programmes
  - Burden of reporting due to disease control programme
  - Effect of disease control programme on M&E in health system
- Technology (drugs)
  - Process of drug procurement and distribution
  - Use of disease control programme drugs for general purposes
- Health workforce
  - Effect of disease control programmes on health workforce
  - Use of disease control programme health workers for general health services

Ethical clearance for this study was received from the Public Health Foundation of India (PHFI) Ethics Review Committee. Funding for this study was from the Maximizing Positive Synergies project of the WHO and the Global Fund.

Findings

Disease control programmes and governance

The NACP, RNTCP and NVBDCP are generally uniform across states. However, they differ in their relative location in the health system administration. By design, the NACP’s administrative structure gives it considerable functional independence from the public sector health system. The RNTCP and NVBDCP, on the other hand, have been designed to be structurally and functionally more integrated with the health system. These differences potentially influence the nature of interaction and the contribution they make towards strengthening health systems.

At the central level, all three programmes are housed within the Ministry of Health and Family Welfare. The Ministry has the following departments—Department of Health and Family Welfare, Department of AYUSH (which pertains to Indian systems of medicine and homeopathy), Department of Health Research and the Department of AIDS Control. Each Department is headed by an officer from the Indian Administrative Service with the rank of Secretary. The NACP is implemented by the National AIDS Control Organization (NACO), and has its own department, i.e. the Department of AIDS Control. The RNTCP and NVBDCP are located within the Department of Health and Family Welfare, and administered by their respective units. Consequently at the central level, a high level bureaucrat directly administers the NACP, whereas the RNTCP and NVBDCP are directly administered by programme officers.
At the state level, NACP activities are implemented by the State AIDS Control Society (SACS). SACS are autonomous societies with their own governing boards. The SACS is typically headed by an officer from the Indian Administrative Service and has its own dedicated staff. SACS implement the NACP at the district level either directly or through District AIDS Prevention and Control Units. NACP service delivery points are typically located at public sector health facilities and services are delivered, managed and supervised by their own dedicated staff or through partnerships with CSOs (The Institute of Health Systems 2006).

The RNTCP and NVBDCP, like other disease control programmes, are implemented at the state and district level by autonomous State Health Society and the District Health Society, respectively. Before the advent of the National Rural Health Mission (NRHM) in 2005, the central ministry’s main programme to bring about an architectural correction to the country’s health system, programme-specific societies existed. Under NRHM these were merged into common State and District Health Societies, to better integrate disease-specific programmes with health systems. SACS was an exception to this integration.

The State Health Societies have a governing body composed of members from government and civil society. Activities of the Society are implemented by the office of the NRHM Mission Director, who usually is an officer of the Indian Administrative Service. Importantly, and in contrast to the SACS, there is a much broader representation of health department officials in the State Health Society’s administration.

At the district level, and after the onset of NRHM, the District Health Society is responsible for implementing RNTCP and NVBDCP (and other disease control programme) activities in the district. Officials who were affiliated with a specific disease programme continued to function within the ambit of these societies. However, they serve under the office of the Chief Medical Officer of the district, who manages the district’s health system. So, for instance, the District TB Officer, or the District Malaria Officer, serve under the Chief Medical Officer of the district, and are responsible for planning and monitoring of their respective disease activities in the district.

All three disease control programmes have their service delivery points at hospitals and health centres of the public sector health system. The NACP has added on service delivery points like ART centres and Integrated Counselling and Testing Centres with their own dedicated staff. The RNTCP and NVBDCP rely on health facilities and human resources in the public sector health system to deliver and monitor services (though there are programme-specific supervisors). The RNTCP also fills vacancies (doctors at designated TB Units and laboratory technicians) in public sector health facilities by posting contractual workers. These programmes also use the services of community outreach workers present in the general health workforce for case detection and treatment (Indian Institute of Health Management Research 2005).

Key informants reported several reasons for the Ministry’s decision to establish the Department of AIDS Control. First, the NACP always enjoyed a high degree of autonomy within the health ministry so that it could effectively and quickly control HIV/AIDS; establishing it as a separate department was a culmination of this position. Second, the large amounts of donor funds that flowed into the NACP, which were invariably followed by strong donor oversight, made it administratively easier to keep the programme separate. Third, the ‘mission mode’ in which the programme was operated demanded considerable autonomy. Finally, the establishment of an independent health department created space to accommodate bureaucrat postings.

The administrative location of the NACP has bestowed on it considerable financial and administrative freedom, especially in comparison with the RNTCP and NVBDCP. For one, the Department of AIDS Control is headed by an officer with the rank of Secretary that is equivalent to that of the other departments in the ministry, and higher than that of those administering the RNTCP and NVBDCP. At the state level too, the officer in charge of the SACS usually has similar rank to the NRHM Mission Director, who is in charge of administering a large portfolio of activities that includes NRHM activities and disease control programmes, including the RNTCP and NVBDCP. This gives the NACP considerably more administrative influence and independence (see Box 2).

The administrative location of these three programmes also exposes the RNTCP and NVBDCP to more interaction, in comparison with the NACP, with functionaries of the general health system. This enables programme activities to be more integrated with those of the general health system. For one, key informants reported that because the RNTCP and NVBDCP are located within the Department of Health and Family Welfare, which is responsible for administering health services within the country, it exposes them more to the flow of information within this department. At the state level too, because the NRHM Mission Director’s office implements the RNTCP and NVBDCP, along with other NRHM activities, the potential for integration of these programme activities with those of NRHM is greater. Key informants also reported that when a disease-specific programme was under the stewardship of health system officials, information about programme functioning and related health conditions flowed to health system managers (Box 2). Furthermore, there was a lack of information about specific programmes, health system managers were limited in their stewardship role.

Financing

The NACP, RNTCP and NVBDCP have dedicated budgets. At the central level, RNTCP and NVBDCP budgets are included within the NRHM budget under programme-specific heads. For these programmes, funds flow from the NRHM budget to the State and District Health Societies. For the NACP, funds flow from the central level to SACS and onwards. This system of routing funding directly through societies is acknowledged as a more efficient method for routing funds then through the state budgetary route. Key informants mentioned that additional finances provided through vertical programmes enabled targeted action against these diseases (see Box 3). Similar findings have been reported in other studies also (Cavalli et al. 2010; Trägård and Shrestha 2010; Keugoung et al. 2011).

We did not observe mechanisms by which financial processes in disease control programmes strengthened health systems. However, because the State and District Health Societies are
Box 2 Perceptions of key informants on disease control programmes and governance

‘RNTCP is led through the Directorate by an officer of the Directorate, and is therefore seen as a Directorate activity. Whereas the fact that AIDS control programme functions out of an independent society immediately makes it a foreign body.’ (Health Secretary, State level, Health system)

‘We never allowed TB centers to work in isolation because in isolation they cannot achieve anything. RNTCP is to be implemented within the Primary Health Care (PHC) system Healthcare. But (we must) identify the gaps within PHC system which might prove to be a block and give a focused approach to supervision and monitoring to TB activities rather than calling it a vertical programme. We wanted it [RNTCP] to be a programme within the PHC system with a focus on TB supervision and monitoring.’ (Program Manager, Central level, RNTCP)

‘During the Chief Medical Officer [CMO] meetings, all the CMOs are there, but from the SACS, there is no representative. At least they [SACS] should appraise the CMOs. Also the CMOs should know what is going on in the districts.’ (Director, State level, Health system)

‘I feel that the [Health] Department has been chopped off into differences pieces. Initially it included hospital services, colleges, primary health care, everything. Medical education and hospital services was separated, then different programmes of AIDS and HIV was separated. I do not know what is happening in HIV program at all.’ (Director, State level, Health system)

‘I thought that this [SACS] was a separate entity. Even the District Health Officer has no control on any of the consultants. Other state officials also do not have any control over people in contract.’ (Officer, District level, NACP)

‘The Directorate, the National AIDS Control Organization and the National Rural Health Mission all function like sovereign entities which is wrong. They should not function like sovereign entities because at the end of the day your district hospital or the government hospital is the delivery agent and is part of the Directorate set up. These various processes should work together closely but they don’t.’ (Health Secretary, State level, Health system)

‘These are all vertical programmes, up to some level they are vertical. But at the grassroots level, things are no more vertical. We have not put a person for malaria, we have not put a person for TB. It is one person who looks at it directly.’ (Officer, State level, NVBDCP)

Located within NRHM, health system managers at the state and district level have oversight over RNTCP and NVBDCP expenditures because they often have to co-sign expenditure requests. This has been introduced as a routine governance measure under NRHM. However, several informants were concerned that this requirement not only increased the time taken to sanction even simple expenditures but also compromised the financial autonomy of the programmes (see Box 3). Since the NACP was outside the ambit of NRHM, their financial processes are autonomous.

**Human resources**

All three programmes, i.e. RNTCP, NACP and NVBDCP place a sizeable number of contractual staff such as doctors (NACP and RNTCP), district/sub-district level technical supervisors (NACP, RNTCP and NVBDCP), laboratory technicians (NACP and RNTCP) and counsellors (NACP) at their service delivery points. However, there was substantial heterogeneity in the degree to which these health workers contributed to strengthening the capacity of the general health system. Laboratory technicians and doctors contracted by the RNTCP usually performed a range of services in the health facility where they are posted. Similarly, RNTCP doctors posted at TB Units located at PHCs also treat general patients. The cadre of multipurpose health workers was first introduced by the malaria control programme and now serves multiple roles in local communities.

On the other hand, all the NACP contractual doctors and most of the laboratory technicians and counsellors who were interviewed by the study team usually limited their services to HIV/AIDS patients only. Furthermore, in one of the study states, to overcome the shortage of laboratory technicians that fulfilled RNTCP qualification norms, a new cadre of laboratory technician (‘sputum microscopists’) was created and they only performed sputum microscopy providing little benefit to general laboratory services.

Factors that appeared to influence the extent to which contractual health workers specific to health programmes contributed to building general health system capacity are described below. Generally, in the RNTCP and NVBDCP, there was an explicit attempt by programme personnel to fill human resource gaps in the public sector health workforce. Furthermore, key informants viewed programme-specific staff in these two programmes as resources for the health system. In addition, as they were under the administration of health system managers, these managers could exercise some control over their activities. In facilities where programme managers and supervisors realized the importance of integration, human resources were shared better. Laboratory technicians specific to RNTCP and NVBDCP programmes also expressed an intent to work with other programmes; though some of them mentioned that this intent might be deterred due to lack of laboratory reagents, space and other resources. On the other hand, contractual workers in the NACP were not intended to fill vacancies in the existing health system; rather, the programme
WHEN DO VERTICAL PROGRAMMES STRENGTHEN HEALTH SYSTEMS?

Box 3 Perceptions of key informants on funds provided through vertical programmes

‘If [funds from] the Global Fund will not be available the government will have to arrange money from somewhere else to continue this activity. If the government is not able to provide the money then definitely people will suffer and the programme will suffer.’ (Programme Officer, Central level, NVBDCP)

‘Information, Education and Communication (IEC) activities are going on- which was not previously possible with our existing manpower, existing funds. The state government was not able to do all these things.’ (Programme Officer, State level, NVBDCP)

‘Definitely with funds, we are able to give some manpower in the field. Previously we were unable to get this. Due to manpower being there and getting trained we are getting quality services.’ (Programme Officer, State level, RNTCP)

‘Additional funds have improved our poor performance districts where all other indicators are low, but the indicators under the TB programme have improved.’ (WHO consultant, State level, RNTCP)

‘See any paper that I want moved, even if I want “2-naya paisa”1 to be given, needs to get approved at many different levels.’ (Programme Officer, State level, RNTCP)

Box 4 Perceptions of key informants on the sharing of human and material resources

‘From our side the direction is that the lab technician belongs to the health system.’ (Director, Central level, RNTCP)

‘Though this is a designated TB microscopy center we conduct sputum examination and tests for malaria, urine, hemoglobin, albumin sugar.’ (Lab technician, Primary Health Centre, RNTCP)

‘When I get free from my regular work, I dispense pharmaceuticals, and coordinate with the polio programme, as directed by the Medical Officer.’ (Supervisor, District level, RNTCP)

‘We have got malaria technicians in all the states. They receive meticulous training on malaria microscopy. Recently in our state some of them have been given training in RNTCP. So they are doing RNTCP sputum microscopy.’ (Programme Officer, State level, NVBDCP)

‘Contractual staff of the SACS are not under our control. They are not under the control of the district.’ (Medical Officer, District level, Health System)

‘The HIV contractual staff are specifically for HIV work and not for other work. The order that is given to them is such that they have to work primarily for HIV/AIDS. They cannot do other work.’ (Director, State level, SACS)

‘added-on’ human resources to add capacity for managing HIV/AIDS in the health system (see Box 4).

Rasschaert et al. (2011) report positive spill-over effects of ART scale-up on human resource policies in Malawi and Ethiopia; and cite political commitment as the precondition for this. In our study, we found that efforts at integration were mainly lead by state and local level programme managers and supervisors. There appeared to be little national level effort by disease control programmes to systematically address human resource shortages.

One important concern that has been reported by several studies (Desai et al. 2010; Keugoung et al. 2011) is that because vertical programme staff received more incentives, this may attract human resources away from the general health system. We did not find this a concern in our case study. This because disease control programme staff are on contracts, and permanent jobs in the health system are prized in comparison with contractual work.

Service delivery

The presence of disease-specific programmes appears to influence service delivery mainly in two ways—by improving patient perceptions of the facility, and by the involvement of civil society (see Box 5).

Several health systems and facility managers reported that the presence of a well-functioning disease control programme improved patient perceptions of the health facility. In their view, overall demand for general health services also increased because patients visiting for disease-specific services also tend to make use of other services offered at the health centre. Key informants also reported that the presence of a well-functioning service at a health facility is likely to build expectations that other services of similar quality would also be available at the health centre. The case study from Papua New Guinea reports similar findings—Rudge et al. (2010) found that the availability of drugs at health facilities due to vertical programmes enhanced patient confidence.

The involvement of civil society as a positive effect of vertically funded programmes has been reported widely in similar studies (Biesma et al. 2009; Desai et al. 2010; Rudge et al. 2010; Trägård and Shrestha 2010). Studies have also pointed out the need for better co-ordination between the government and CSOs (Biesma et al. 2009; Rudge et al. 2010). In our study, we observed that disease-specific programmes, particularly the NACP, have strengthened service delivery by encouraging the participation of CSOs. CSO participation occurred in three ways: their engagement by donor agencies (in this case the Global Fund) to participate in the programme planning.
Box 5 Perceptions of key informants on strengthening service delivery

Demand generation through improved perceptions

‘When I was in the PHC [service], the RNTCP had just come up and during that time they funded the lab of the particular PHC. It helped in strengthening the PHC. They made sure running water was there, the tiles were put, microscope was given and some reagents were also given. More people started coming to the PHC.’ (Deputy Director, State level, Health systems)

‘When it comes to the health care delivery system and health care output, the impact of the NRHM or the HIV/AIDS programme or whatever other vertical programme is enormous. Both indoor patients in the last three years and outdoor patients have really increased. Health seeking behaviors of patients has really increased. Antenatal check-up, institutional delivery, immunization have really improved.’ (Medical Officer, Community Health Centre, Health System)

‘Patients start assessing other services at health facilities [because of the NACP services there] and obviously they would also say that “we are getting this service here for HIV/AIDS why can’t we expect similar facilities for other services.” It builds some expectations.’ (Programme manager, Central level, NACP)

‘If at one facility a good TB control programme is going on, it means they have the minimum human resources there. If minimum human resources are there, then the facility will definitely benefit from it.’ (Programme officer, State level, RNTCP)

Involvement of civil society

‘Some of the defaulters for ART are being tracked by the civil society organizations. Some of them work at the grassroots level and they are doing a wonderful job.’ (Medical Officer, ART Unit, NACP)

‘These civil society organizations are going to the field and bringing us patients for counseling. That’s why I think it is useful to involve civil society organizations.’ (Integrated Counselling and Testing Center (ICTC) Counsellor, PHC, NACP)

‘Thanks to the Global Fund’s initiatives, civil society participation has increased. Because the government system was defunct, the district TB officers encouraged the participation of civil society organizations [CSO] in delivering programme activities. The people are now getting some amount of health care through civil society organizations.’ (Consultant, Central level, RNTCP)

‘The issue of stigma and discrimination [among HIV positives] has been brought up strongly by civil society groups and that has influenced Global Fund [policies]. There definitely has been discussion in the public domain. I think there has been a huge movement and the credit goes to these groups.’ (Civil Society Member, Central level, NACP)

process, as primary or sub-recipients of donor grants, and as providers of key services. Policies such as the Global Fund’s ‘dual track’ funding ensured that CSOs were part of the implementation process. The contribution of CSOs in improving the quality and coverage of HIV/AIDS services was highlighted by key informants. CSOs associated with the NACP operated laboratories, provided care to patients, and increased programme reach to difficult to reach groups. The NACP strengthened CSO capacity because the nature of HIV/AIDS, in terms of high-risk groups and stigma, required working with communities and patients in a way that CSOs could do well.

Information

Health information systems in vertical programmes can contribute to health system strengthening through the wide use and sharing of programme-specific information. For instance, in Mali, it has been pointed out that data akin to census information are collected via vertical programmes and are used beyond the programmes themselves (Cavalli et al. 2010). The NACP, RNTCP and NVBDCP generate substantial amount of routine monitoring data. Though all three programmes have dedicated information systems, they differed in the degree to which this information was shared with local health system managers. In particular, there appeared to be little information sharing between the NACP and district level health system managers—the latter reported that they were neither involved in programme monitoring nor fully aware of the HIV/AIDS situation in their area. This was less of an issue at the state level because NACP managers required frequent interaction with state level health system administrators because the latter administered the hospitals where ART centres were located. Across all levels—centre, state and district—of the health system administration, key informants reported good flow of information between them and the RNTCP and NVBDCP. This is because health system managers at these levels have administrative responsibility of these programmes (see Box 5).

Officers in all three disease-specific programmes were regularly trained in the collection, management and analysis of monitoring data due to donor and programme requirements for good and timely reporting. In some instances, there were spillover effects of such trainings with local health system officers either participating in such trainings or picking up these skills by association (see Box 5).

One commonly reported feature of information systems in vertical programmes is the burden of setting up parallel systems of monitoring and evaluation. These parallel systems have their root in donor requirements (Cavalli et al. 2010; Desai et al. 2010; Hanvoravongchai et al. 2010; Trägård and Shrestha 2010; Keugoung et al. 2011). In this study, parallel systems

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of monitoring were reported by all three programmes. However, key informants from the NACP and RNTCP did not view additional reporting as a burden, mainly due to the presence of adequate and dedicated staff to perform these functions. However, in the NVBDCP, key informants reported an inadequacy of field staff for monitoring activities and viewed data compilation in various formats as a burden (see Box 6).

**Discussion**

The NACP, RNTCP and NVBDCP represent India’s main response to control HIV/AIDS, TB and malaria, respectively. The NACP is widely credited for reducing HIV prevalence in India and building capacity for prevention and care for HIV/AIDS patients. This study reported on the interaction between these three key disease control programmes and local health systems. These interactions were observed in a diverse set of states and for the health system components of human resources, financing, information, service delivery and governance. While local health systems and disease control programmes influence each other’s performance, we focused on the influence of the latter.

Our findings indicate that disease control programmes in India have both positive and negative effects on health systems. As we documented in this study, they can strengthen health systems by sharing of human and material resources, making disease-specific information available to health system managers, improving public perceptions of service quality, strengthening competencies and funding for specific diseases, strengthening service delivery through improving facility infrastructure, drugs and supplies, and encouraging CSO participation. When disease control programmes operate in relative isolation from the health system these positive synergies occur minimally or not at all. Similar findings on the interaction between disease-specific programmes and health systems have been reported by case studies in other countries (Biesma et al. 2009; Cavalli et al. 2010; Desai et al. 2010; Rudge et al. 2010; Trägård and Shrestha 2010; Rasschaert 2011).

The reported negative effects of disease control programmes were mainly related to health systems governance. Health systems managers, particularly at the district level, reported having limited stewardship role when disease control programmes were not under their administration or did not actively share information with them. Such issues had less salience when disease control programmes were more integrated with the health system administration. Similar to other case studies (Cavalli et al. 2010; Desai et al. 2010; Trägård and Shrestha 2010; Keugoung et al. 2011), our study also reports parallel systems of monitoring and reporting. However, this additional reporting was not viewed as a burden by programmes such as RNTCP, which had adequate and dedicated staff to perform these functions. In addition, the drain of human resources from the general health system to disease-specific programmes was not a concern (unlike Keugoung et al. 2011), because disease programme specific staff were hired on a contractual basis, and these jobs were less prized than permanent jobs. In general, concerns about sustainability of vertical programmes did not play out strongly during interviews with key informants (unlike case studies: Le Loup et al. 2010; Mounier-Jack 2010; Rudge et al. 2010).

The comparative assessment of the RNTCP, NACP and NVBDCP provides an insight into the conditions that enable disease-specific programmes to contribute, or not, towards strengthening of health systems. Based on our findings, two related factors appear to be critical—the explicit intent of the programme to strengthen the health system from within, and the degree to which the disease control programme is embedded within the health system.

The RNTCP and NVBDCP function to strengthen TB and malaria control capabilities in the existing health system. Their managers viewed the programme as strengthening disease-
specific capacities within the public sector health system. In contrast, the NACP presents itself as ‘adding-on’ HIV/AIDS prevention and treatment capacities to the existing health system. This intent manifested itself in the way these programmes interacted with the health system. For instance, the RNTCP and, to a lesser extent, the NVBDCP made an effort to address the human resource and material deficiencies they encountered in the public sector health system by deploying their own resources to fill this need. In contrast, the NACP appeared to place less emphasis on contributing to non-HIV/AIDS related services (TB–HIV cross referrals being an exception).

The relational interactions between disease control programmes and local health systems can be viewed from a framework of organizational networks (Luke and Harris 2007). Organizations possessing greater connections with others in a network possess greater centrality or embeddedness in the network. This provides greater immersion in the flow of information and resources within the network and places them in a position to influence, and be influenced by, the decisions of other organizations in the network. Our findings show that the RNTCP and NVBDCP are more embedded in the network of health system institutions relative to the NACP. This embeddedness is conferred by two things. First, the greater integration of the RNTCP and NVBDCP with NRHM. Second, RNTCP and NVBDCP staff are under the administrative control of local health system managers (in addition to programme managers). Such structural and administrative positioning immerses the RNTCP and NVBDCP more, compared with the NACP, in the information and resource flows of the health system and places them in a position to influence (and be influenced by) the decisions of entities managing the health system.

One consequence of greater embeddedness is that NVBDCP and RNTCP are better able to address the resource deficits in the local health system, compared with the NACP. Not only are they more exposed to the needs of the local health system but also the latter’s managers have command over programmes’ human and material resources. For instance, all three programmes assessed engaged contractual staff who received salaries directly from their respective programmes. However, RNTCP and NVBDCP contractual workers such as laboratory technicians usually served both their specific programme and also provided general health services. In contrast, such instances were rare among NACP contractual staff. Programme embeddedness in the health system also influenced sharing of information and resources with the local health system. Information related to the performance of the disease control programmes was more freely shared with local health system managers enabling them to have a more comprehensive perspective of the health situation of the area under their jurisdiction.

Disease-specific programmes in India have played an important role in enhancing the health system’s capacity to control specific diseases. In particular, programmes such as the NACP are widely recognized to be successful because of their ability to respond to the epidemic with innovation, quality, flexibility and speed due to their administrative and financial independence. On the other hand, disease-specific programmes that have been more embedded within the health system have demonstrated a greater propensity to strengthening health systems. The resources available with them offered several benefits like filling human resource gaps in the health system, improving access to services and reinforcing trust in public health services. For resource-scarce health systems like India, it is important to find ways to harness the potential of disease control programmes to strengthen health systems, without compromising their effectiveness.

Acknowledgements
K.D.R. and S.R. were involved in the conception and design of the study, analysis and interpretation of the data and drafting the paper. I.H. and S.G. were involved in analysis and interpretation of the data and drafting the paper.

Funding
Funding for this study was from the Maximizing Positive Synergies project of the World Health Organization (WHO) and The Global Fund to Fight AIDS, Tuberculosis and Malaria.

Conflict of interest statement. None declared.

Endnote
1 A paltry sum of money.

References


