Title: The influence of health system organisational structure and culture on integration of health services: the example of HIV service monitoring in South Africa

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Key messages

- Official policy in South Africa is to integrate the planning, supervision and monitoring of HIV services within the district health system under the leadership of district managers, but there has been little progress in achieving this, and no research exploring whether the health system organisational structure and culture supports this policy.
- This case study of HIV service monitoring reveals: a centralised health system structure and rules-based styles of management may undermine district managers' ability to assume a leadership role in the monitoring of HIV services at district level.
- Entrenched behaviours and practices, as well as leadership styles promote HIV programme managers as the key role players in HIV service monitoring, and signal that district managers are not valued as the key role players.
- Realising integration policy objectives requires structural and cultural changes and a leadership open to change rather than just doing what has always been done.

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Abstract

Administrative integration of disease control programmes (DCPs) within the district health system has been a health sector reform priority in South Africa for two decades. The reforms entail district managers assuming authority for the planning and monitoring of DCPs in districts, with DCP managers providing specialist support. There has been little progress in achieving this, and a dearth of research exploring why. Using a case study of HIV programme monitoring and evaluation (M&E), this paper explores whether South Africa's health system is configured to support administrative integration. The paper draws on data from document reviews and interviews with 54 programme and district managers in two of nine provinces, exploring their respective roles in decision-making regarding HIV M&E system design and in using HIV data for monitoring uptake of HIV interventions in districts. Using Mintzberg's configurations framework, we describe three organisational parameters: a) extent of centralisation (whether district managers play a role in decisions regarding the design of the HIV M&E system); b) key part of the organisation (extent to which sub-national programme managers versus district managers play the central role in HIV monitoring in districts); and c) coordination mechanisms used (whether highly formalised and rules-based or more output-based to promote agency). We find that the health system can be characterised as Mintzberg's machine bureaucracy. It is centralised and highly formalised with structures, management styles and practices that promote programme managers as lead role players in the monitoring of HIV interventions within districts. This undermines policy objectives of district managers assuming this leadership role. Our study enhances the understanding of organisational factors that may limit the success of administrative integration reforms and suggests what interventions may mitigate this.

Introduction

Ensuring that organisational structure and culture are congruent with reform objectives is a key health system stewardship function that is often overlooked in low- and middle-income countries (LMICs) (Travis et al., 2002). Structure is important in organisational reforms as it defines how task are allocated, the locus of decision-making authority, and formal authority (Robbins, 1983); while culture defines whether management styles and behaviours of organisational members support proposed changes (O'Neill et al., 2001). Poor congruence has been shown to hinder the success of reforms (Blaise & Kegels, 2004, Unger et al., 2000). For example, reforms aiming to achieve integrated health systems at sub-national level failed to yield results in several African countries because their centralised health system structures with controlling management styles did not support the proposed changes (Unger et al., 2000). In South Africa, the administrative integration of disease control programmes (DCPs) within general health services (GHSs) is official government policy, but there has been little progress to date in achieving it (Kawonga et al., 2013). This paper explores whether the health system organisational structure and culture support this policy.

DCPs are designed to tackle one or more related diseases ('vertical' approach) (Cairncross et al., 1997), while GHSs tackle a wider range of diseases ('horizontal' approach) (Gonzalez, 1965). Administrative integration of DCP has been defined as: bringing DCP middle managers under the authority of GHS middle managers, transferring administrative authority over DCP operations to GHS middle managers, with DCP managers providing specialist support (Unger et al., 2003). Dialogue amongst DCP and GHS actors (Unger, 2008, Criel et al., 1997), and a functioning GHS middle management (Church et al., 2010, Unger, 2008) are some of the conditions necessary for administrative integration to succeed.

Organisational structure and culture have been shown to be important in other organisational change processes, but have not been investigated in relation to administrative integration. We explore this issue in this paper using a case study of HIV programme monitoring and evaluation in South Africa.

Setting

In South Africa, integration is promoted against the backdrop of a decentralising health sector (Department of Health, 1997). Decentralisation reforms entail devolution of political and administrative authority from national level to nine semi-autonomous provinces (Republic of South Africa, 1996). It also entails deconcentration of administrative authority for managing health services from provincial level to health districts (a lower level of health sector management), thus establishing the district health system (Republic of South Africa, 2003). The district is where health services are supposed to be integrated and holistically managed under the leadership of a single management team (McCoy and Engelbrecht, 1999). District health management teams (DMT) are established in the 53 districts across the country and sub-districts (a lower administrative level) are progressively being established (Republic of South Africa, 2003). DMTs are led and mainly staffed by GHS managers at district level (district managers) but also comprise some DCP (programme) managers and support personnel (accounts, logistics, human resource).

Concurrently, programmes have been established in response to priority diseases such as HIV and tuberculosis (TB) (Schierhout and Fonn, 1999, Schneider and Stein, 2001). Established in the early 1990's, the HIV programme is one of the largest DCPs. It is financed largely (75%) through domestic funding (Department of Health, 2014) and has always

received additional ring-fenced funding (Ndlovu, 2008). There are HIV programme units at national and provincial levels, and since 2003 programme managers are also located in districts (Kawonga et al., 2013). Based on stated policy, district managers are supposed to assume responsibility for programme oversight in districts (planning, supervising and monitoring), while programme managers provide specialist support (Harrison-Magochi, 1998). In practice, this has not happened adequately (Smit et al., 2012, McIntyre and Klugman, 2003), and HIV programme and district managers fail to effectively communicate (Kawonga et al., 2014) and work together (Van Rensburg et al., 2008). The limited research available, focussing on HIV monitoring and evaluation (M&E), shows district managers play a limited role in monitoring HIV services in districts, while provincial HIV programme managers seldom support them in fulfilling this role and instead monitor HIV services in silos (Kawonga et al., 2013). Analysing whether the health system organisational structure and culture supports administrative integration of HIV service monitoring may shed light on why this is happening.

Conceptualising organisational structure and culture

Organisational theory provides useful insights for describing organisational structure and culture which are relevant to this discussion. Organisational structure "*depicts formal reporting relationships among organisational units, illustrates how the organisation differentiates among the tasks and activities, and shows how the activities of different units are to be integrated and coordinated"* (Liese et al., 1991). Features of organisational structure include: *formalisation* (extent to which formal mechanisms such as rules and procedures are used to define and coordinate tasks to be performed); *specialisation* (differentiation or extent to which job roles and tasks are specialised); *centralisation* (extent

to which the locus of decision-making lies at higher levels of hierarchy) (Robbins, 1983, Pugh, 1997a). Organisational culture "*is reflected by what is valued, behaviours and routines as well as the types of managerial and leadership styles that are dominantly used to coordinate employees"* (Cameron and Quinn, 2006). It may manifest as the extent to which employees are committed to collective objectives or the extent to which employees have freedom to participate in decision-making (O'Neill et al., 2001). Organisations can be classified based on their structural or cultural features. For example, mechanistic organisations are highly formalised and centralised, as are bureaucracies (Pugh, 1997b) ; adhocracies rely on informal communication or ad hoc joint working amongst actors (Mintzberg, 1993); and organic organisations predominantly use cultural features to coordinate employees (management styles that foster unity and shared values) (Pugh, 1997b).

Mintzberg's organisational configurations framework

Extending these ideas, Mintzberg's configurations framework provides a useful approach for describing organisations (Mintzberg, 1993). The framework classifies organisations based on three parameters: the main coordination mechanism used, the key part of the organisation, and the type of decentralisation (Mintzberg, 1993) (Table 1). In Mintzberg's conception, division of labour differentiates organisations into five parts: *strategic apex* (top management); *operating core* (workers who perform operational tasks); *middle line* (managers who formally supervise the workers); *technostructure* (analysts or specialists who design work processes but have no formal authority over the workers); and *support staff* (who provide indirect services such as human resources, legal or accounting) (Mintzberg, 1993). Coordination amongst these parts is achieved through: highly formalised (e.g. use of

rules to standardise how work gets done), less formalised (standardising skills, or outputs thus allowing members some discretion over how they do the work), or more flexible mechanisms (mutual adjustment which relies on informal actor interactions) (Mintzberg, 1993) (Table 1). The type of decentralisation may entail transfer of formal authority from higher to lower levels (vertical decentralisation) or informal authority from a manager with formal authority to one without it at the same level (horizontal decentralisation) (Table 1) (Mintzberg, 1993). Tensions amongst components and coordination mechanisms constantly pull an organisation in different directions, but one of six configurations emerges when conditions favour one pull over the others: simple structure, machine bureaucracy, professional bureaucracy, divisionalized form, adhocracy, or missionary organisation (Table 1). For example, when conditions favour technostructure actors (who emphasise standardisation of processes), a highly formalised machine bureaucracy emerges. When conditions favour the middle line (where the emphasis is on standardisation of outputs), a divisionalised form emerges (Table 1). There is no correct configuration; the key is a good fit with an organisation's objectives and environment.

Applying Mintzberg's framework to health systems

Mintzberg's framework has been applied to a limited extent in health systems to explore how organisational configuration may affect health reforms (Unger et al., 2000, Blaise and Kegels, 2004). In this study we apply Mintzberg's approach to explore how the organisational configuration of the provincial health system within which districts operate may affect administrative integration of health services within the district health system. We use a case study of HIV monitoring and evaluation (M&E) to focus the analysis. M&E encompasses the production (data collection, collation and analysis) and use of health

information (Management Sciences for Health, 2010). We focus on M&E because monitoring health services is an essential part of a district manager's job in South Africa (Department of Health, 2011). Guided by South Africa's stated policy for health systems organisation, we conceptualise administrative integration of HIV M&E to be: a) district managers have and exercise authority over HIV data collection (oversee HIV data collection activities and personnel) and collation (verify HIV data for quality, compile and submit summary reports), and use HIV data for monitoring HIV services at district level (review progress, derive implications for improvement, take action based on these); and b) district-based and provincial HIV programme managers support district managers – help with the technical aspects of verifying, interpreting and using HIV data (Kawonga et al., 2013). Our premise is that a supportive configuration is one that enables these role players to relate in this way. Our research aims to: a) describe the health system configuration based on Mintzberg's framework, and b) assess whether this configuration supports administrative integration of HIV M&E.

Methods

We collected data in two of South Africa's nine provinces (one rural [Site A] and one urban [Site B]) during 2010 to 2012. We selected one district each in Site A and Site B, and one sub-district per district, both exhibiting the full range of HIV prevention and treatment services provided in South Africa at the time. Within districts, public sector health services are delivered through clinics (8-hour service, nurse-run), community health centres (CHCs) (24-hour service, nurse-run and supported by visiting doctors) and a referral district hospital. HIV interventions – HIV counselling and testing (HCT), antiretroviral treatment (ART), TB screening and treatment for HIV positive patients (HIV/TB), prevention of mother

to child transmission of HIV (PMTCT) and HIV pre-exposure prophylaxis (PEP) – are delivered through these facilities. At the time of this study, general health service and HIV data were collected on paper-based forms at facility level, and captured, analysed and reported electronically through the nationally-standardised district health information system (for general and non-ART data (HCT, HIV/TB, PMTCT)) or a dedicated ART M&E system (for ART data only) (Kawonga et al., 2012).

Participants

Participants included 8 actors at national and 46 at sub-national level whose jobs included HIV M&E. National participants were actors with responsibilities for strategic oversight of the HIV programme, district health information system, HIV-specific M&E system, or district health services. Participants at sub-national level included: a) HIV programme managers (provincial and district-based); b) district managers (district heads, sub-district heads, primary health care managers at district and sub-district levels, and local area managers who supervise clusters of clinics and CHCs); c) facility managers (operational managers of general clinics and CHCs or the district hospital HIV clinic); and d) information managers (those overseeing the district information system or HIV M&E system) (Table 2).

Data collection and analysis

We conducted semi-structured interviews in English. Interviews were recorded and transcribed where consent to record was provided; otherwise detailed notes were taken and later typed. At the time of this study, the HIV M&E system had been re-designed resulting in the inclusion of new HIV data elements and data collection tools, and revision of existing tools. The revised / new tools were supposed to be implemented in health facilities

that fall under the control of district managers who are supposed to oversee their use. In the interviews we thus used the process of HIV M&E re-design as a probe to explore the notion of decentralisation – lower level actors' roles in decision-making regarding HIV M&E re-design. Interviews also explored division of labour – sub-national programme and district actors' roles in the re-design of HIV M&E tools and the execution of HIV M&E tasks (collating and using HIV data for monitoring services). Interviews also explored respondents' perceptions of theirs and other actors' HIV M&E roles. We also reviewed documents (policies, operating procedures) to describe formal allocation of M&E roles and mandates regarding M&E practice.

Transcripts and documents were coded manually. We analysed data deductively using the framework analysis approach which entails using a thematic framework informed largely by pre-set objectives to derive analytical themes from respondent accounts, while allowing inclusion of new emerging themes (Srivastava and Thomas, 2009). Our thematic framework focused on the following based on Mintzberg's concepts (Mintzberg, 1993)):

- Type of decentralisation: we explore the roles of higher (national, provincial) versus lower level actors (district, facility) in decision-making regarding HIV M&E re-design.
- Key part of the organisation: we identify which part of the health system plays the key part in HIV M&E. First we characterised where each actor is located viz: *strategic apex* (top management at provincial head office), *technostructure* (provincial and district-based programme managers, HIV M&E and district information specialists), *middle line* (district managers), *operating core* (health workers and facility managers); and *support staff* (finance, supply chain, data managers) (Figure 1) (Mintzberg, 1993). As our interest is in integration, we focus on exploring

technostructure (programme) versus middle line (district) actors' roles in the collation and use of HIV data for monitoring HIV services within districts – both role allocation (from written documents) and execution (from respondent accounts).

- Coordinating mechanisms used: we explore how provincial head office coordinates the districts and how the HIV M&E work of managers across the system is coordinated (through rules versus outputs); as well as use of formal coordination structures (meetings to discuss HIV M&E, who attends them, what happens there).

We then discuss how the above may affect administrative integration of HIV M&E functions.

Our study was granted ethical approval from the University of the Witwatersrand Committee for Research on Human Subjects, and the respective provincial research committees in both study sites. All participants signed informed consent. To ensure anonymity, where identification of interview participants can be intuited their job descriptions have been omitted from the results.

Results

Our findings describe organisational features of the health system in terms of: the type of decentralisation (lower versus higher level actor roles in decisions regarding HIV M&E re-design); the key part of the organisation (programme versus district manager roles in HIV M&E); and main mechanisms used to achieve coordination.

Type of decentralisation

Thus we found that the locus of decision-making lay at national level. At the time of this study, changes to the HIV data collection forms were underway. This strategic decision had

been taken at national level. According to our respondents, national level actors formulate policy and define interventions that need to be implemented, but should consult provincial and district level actors. National actors reportedly discussed the HIV M&E changes with provincial actors, who were then supposed to consult district actors. Seemingly district actors were seldom consulted. National stakeholders blamed provincial level actors for not cascading the information to districts, but did not intervene because they "*can't talk to the districts directly*".

Consulting the districts was commonly understood by national and provincial respondents as being about informing district actors and training them on new or revised HIV M&E forms. A national respondent believed this constituted "*a bottom-up approach*", while some provincial stakeholders felt that the approach in the health system was actually "*top down*" with national actors imposing decisions on both district and provincial levels.

> *There is* a *top-down approach rather than feedback and debating. It's like there is somebody up there deciding for us, our government is too dictatorial* (provincial programme manager).

Some district actors also believed that being informed about and trained on new HIV M&E forms constituted adequate involvement in decision-making. However, most managers at lower level felt that they (as the implementers) should be integrally involved in decisions rather than merely informed of changes.

> *We are supposed to play a role. We are the custodians of health information, but we are not involved. When you are involved you own it, now we just obey* (district manager).

This is what's happening, they call us in a meeting and tell us "these are the new data elements" and they tell us we are involved. But then, that is not involvement (district information manager).

We were not involved...We do not have inputs, we are given instructions. Maybe they think we are just operational and not decision-makers (general health facility manager).

Key part of the organisation

Programme versus district actor role in re-designing and introducing HIV M&E tools

We found that most technostructure actors at sub-national levels were informed about and trained (by national technostructure) on changes to HIV M&E forms and data elements, while middle line (district) actors were not. National actors led the process of re-designing HIV M&E data elements and tools while provincial HIV programme (supported by HIV information managers) were required to introduce the changes at district level through information and training workshops. Provincial HIV programme managers reported always inviting district managers to these workshops, but it was in fact district-based HIV programme managers and not district managers who they invited.

Every time when there are changes they [provincial HIV and information managers] call us the HIV managers and health information managers at district level (district-based programme manager).

Some argued that given the vast sizes of provinces it was impossible to consult every manager in every district. However, it was telling that in both study sites even the most senior district managers (district and sub-district heads) were not included.

I do not remember participating as an individual. I also don't remember being part of the process. As overall overseer for this district I should be aware; but it is not happening that way (district manager).

Further, when new HIV data recording forms were introduced, district-based programme managers were trained in their use and subsequently trained health workers, while district managers (including clinic supervisors who oversee the health facilities where forms are used) were not trained. Some felt that district managers were excluded because they were perceived as lacking the capacity to oversee programme operations. For example, a national programme actor opined that poor capacity justifies their exclusion.

In order for you to have joint planning, implementation and evaluation, you really have to have strong entities [districts] that are very capable in the first place, otherwise you end up with what is called a weakest link. So, we don't consult districts for the sake of consulting (National stakeholder).

Another national stakeholder however felt that it is national leaders' responsibility to develop district managers' capacity rather than exclude them, especially as two decades of focussing on building programme capacity had resulted in *"a pyramid sitting on its head"* – a top-heavy provincial structure with well-staffed programme units at provincial level headed by senior managers, and districts being staffed with fewer, less skilled and relatively junior managers.

Programme versus district actor roles in collating and using HIV data for monitoring

A differentiated organisation should clearly allocate different actors' roles in writing. We found that written documents allocate overlapping HIV data collation roles for district and programme managers. The District Health Management Information System standard operating procedures (SOPs) (Department of Health, 2013) specify the same HIV data collation tasks for both manager groups (Table 3). The ART M&E operating procedures (only for ART data) state that programme managers should periodically check ART data quality, but specify no role for district managers (Table 3) (Department of Health, 2012). In practice, programme and district manager executed overlapping data collation tasks – both groups visited health facilities to perform HIV data quality checks, though on separate days with programme managers focussing only on HIV-specific data while district managers looked at all health data.

Neither operating procedures specifies the role that managers should play in the use of HIV data for M&E. However, in practice, programme managers played a lead role in HIV monitoring, and organisational practices favoured them to do so. For example, during district quarterly review meetings convened to enable all managers at district level to collectively review data on district performance (Department of Health, 2011) it was district-based HIV programme managers who were required to (and did) present data on HIV services and propose areas for improvement. Further, at meetings convened at provincial and national levels to monitor a national HIV counselling and testing (HCT) campaign, senior provincial and national leaders required district-based HIV programme managers and not district managers to compile and present data on HCT uptake.

> *When it came to the HIV counselling and testing campaign, it was not the district people that were reporting when we went to the meetings. It would be a sub district HIV/AIDS manager giving the report to a district HIV/AIDS manager* (National stakeholder).

HIV programme managers were also the key role players in the use of HIV data for planning (setting targets). District managers are mandated to develop annual district health plans outlining activities and targets for all services in their respective districts. We found that district plans excluded many HIV activities and targets, which were instead included in HIV business plans that provincial HIV programme managers were required to develop. National respondents were aware of this practice but argued that developing separate HIV-specific plans was a condition attached to provinces receiving ring-fenced HIV funding. That HIV funding had enabled significant technical and financial investment into supporting provincial HIV programme managers to improve the quality of HIV plans. A national stakeholder reported that in the spirit of integration, district managers were now being encouraged "*to take the HIV business plan and include those things that are relevant to their districts in their district health plans",* but admitted this was not happening as there had been no investment in building district manager capacity to do this.

Mechanisms used to coordinate HIV M&E work and actors

In South Africa where policy requires districts to operate as more or less self-contained geographically-defined divisions within a provincial health system and district managers to adapt services to local realities (Department of Health, 1997), coordination mechanisms that promote district agency seem appropriate. In theory districts should be coordinated by the

strategic apex at provincial head office, using a performance-based approach (standardisation of outputs) (Department of Health, 2011). Our case study depicts that in practice, there was a tendency to apply a rules-based approach (standardisation of processes). Regarding M&E, there was a greater focus on district managers conforming to set procedures (how to verify data, by when to submit data) than ensuring good quality outputs (complete data, use of data). District managers felt constrained by rules when they were not allowed to modify the format of an M&E data recording tool (without changing data elements) in order to make it more useable and thus improve data quality. Further, there was greater emphasis on compliance with procedures for conducting quarterly review meetings (by when, what data to present and how, and using a standardised agenda) than on outputs (e.g. action taken based on meeting discussions, actual service improvement).

It emerged from the data that coordination by norms and cultural coordination mechanisms were not much used. Seemingly the management style adopted by the current senior national and provincial leaders neither fostered collaborative interactions amongst district and programme managers nor signalled that district managers are the key players in HIV service monitoring.

> *The previous [head of health] was involving district directors. We [programme managers] were playing a supervisory role or support. The district directors had to come and present their programmes with indicators and their challenges, and then we would comment. So there was more unity because of the leadership. Now, the new [leader] never ever mixes us with the district directors* (provincial programme manager).

With the HIV counselling and testing campaign, the minister of health invited everybody but it was only once-off. Thereafter when we had our follow-up meetings with the national department of health, only the HIV managers were called, the districts were never invited (provincial programme manager).

Discussion

Our research depicts a provincial health system that exhibits features akin to Mintzberg's machine bureaucracy configuration. This is based on: a) the tendency to centralise operational decision-making; b) provincial programme managers (technostructure) are the key role players in HIV service monitoring in districts; and c) reliance on standardisation of processes to achieve coordination. Another feature is that leadership styles neither foster joint working across programme and district divisions (cultural coordination) nor signal that integration is the new norm. Below we discuss implications of these organisational features for administrative integration.

How might the observed configuration affect administrative integration?

The machine bureaucracy configuration observed in our study may affect administrative integration in several ways. First, *centralised decision-making undermines district managers' authority because they are excluded from decisions about HIV M&E interventions that are supposed to be implemented in their districts.* Decentralisation should shift the locus of operational decision-making from higher to lower levels (Mills, 1990). We find that the locus of decision-making on the design of HIV M&E tools and process is located at higher levels and that "consultative" processes were in actual fact about disseminating information and ensuring rules are followed. Further, since programme managers are mostly located at

higher levels, they tend to be included in consultative processes while district managers at lower level are not.

Second, promoting HIV programme managers as the key role players in HIV M&E while neglecting district managers undermines the latter's ability to assume leadership in this role. Programme managers aptly play a technostructure role by leading the re-design of HIV M&E tools. However, that they also play a lead role in HIV M&E in districts contradicts stated integration policy aims. Some observed practices which signal that district managers should not assume a lead role in HIV M&E include: a) requiring HIV programme rather than district managers to monitor progress on uptake of HIV interventions and b) strengthening HIV programme but not district managers' capacity to use HIV data for planning. These practices may perpetuate a culture of district managers deferring HIV M&E tasks to programme managers rather than exercising authority themselves.

Third, *a rules-based approach may undermine district managers' ability to exercise agency in monitoring HIV interventions in districts.* Placing district managers closer to where implementation happens has the potential to facilitate decision-making that is responsive to local needs and encourage agency amongst lower level managers (Mills, 1990), but requires a management style that allows them some discretion over how they do their work (Unger et al., 2000). Our findings – such as district managers being barred from adapting HIV data recording tools to their local realities – suggest that managers have little discretion. A rules-based approach – rather than standardisation of outputs – has been shown to engender a culture of compliance rather than performance improvement (Elloker et al., 2013).

Fourth, the observed *leadership style neither adequately fosters collaboration amongst programme actors and district managers nor reinforces the notion that district managers should play a lead role.* This is exemplified by senior leaders' failure to: bridge communication gaps between provincial and district levels, make a concerted effort to ensure district managers are present and play a lead role at forums where HIV service monitoring happens, and build district managers' capacity. Failure to exercise leadership is a missed opportunity to create an organisational culture in which integrated service monitoring is valued and collaborative relations are accepted as the norm.

Our characterisation of the configuration as a machine bureaucracy is consistent with other studies depicting South Africa's health system as having an autocratic management style that stifles lower level managers' agency (Penn-Kekana et al., 2001, Blaauw et al., 2004) and forces district managers to adopt decisions that do not address their local needs (Elloker et al., 2013). Health workers and district managers also experience it as disempowering as they are unable to solve problems (Masilela et al., 2001, Fonn and Xaba, 2001) and are excluded from policy-making processes (Masilela et al., 2001, McIntyre and Klugman, 2003). Others (Penn-Kekana et al., 2001) describe the health system as highly formalised, and document that managers adopting a flexible management style (judging staff based on performance rather than adherence to rules) feel less respected because a rules-based approach seems more valued. It is also documented that the health system increasingly invests in provincial HIV programmes (personnel numbers and skills) (Masilela et al., 2001) while ignoring district capacity development (Naledi et al., 2011).

The influence of organisational configuration on integration is little researched in South Africa. Available research shows that inadequate consultation of district managers when developing new reproductive health policies (centralisation) hampers integration of reproductive health interventions within district services (McIntyre and Klugman, 2003). Research in other LMICs shows how the transfer of authority over programme operations to district managers can be undermined by national and provincial programme actors' reluctance to accept a diminished role in programme operations and by programmes continuing to receive ring-fenced funding with which they establish parallel disease-specific systems (Keugoung et al., 2011, Oliff et al., 2003).

Implications: a health system incongruous with its policy context

A key implication of incongruence is that it results in an organisation unsuited to attain its policy objectives (Miles and Snow, 1997). The machine bureaucracy observed in this study is incongruous with stated policy envisioning integrated programmes with districts as the building block of the health system. Existing policy aims seem consistent with Mintzberg's divisionalised configuration – district managers (middle line) playing the key part in managing programme interventions in districts and coordinating districts through performance standards and results in order to promote local agency. The observed authoritative machine bureaucracy however instead vests power in programmes and undermines district-led integrated management of services, underscoring assertions by some that programmes in South Africa have become the "*de facto building block of the health system*" (Thomas et al., 2007).

Other researchers applying Mintzberg's concepts demonstrate the effects of incongruence. For example, in work in several African health systems Unger and others (2000) show that reforms aiming to integrate district and primary health care under the leadership of semi-autonomous district management teams failed because centralised decision-making and excessive formalisation (responding to an increasingly less skilled workforce) driven by dominant centrally-controlled disease programmes resisted the reforms. In other work, Blaise et al. (2004) show how quality management reforms failed to yield success because they emphasised excessive standardisation of procedures – a highly formalised approach that was resisted by the professional bureaucracy cultures of European health care sectors which value professional independence in clinical decision-making. Those authors show that in machine bureaucracy cultures of African health systems, quality management approaches (standardised algorithms and protocols) failed because they were implemented as vertical top-down interventions by powerful technostructure units, thus undermining lower level actors' ability to exercise agency and innovate for sustained quality improvement.

Lessons and proposals for organisational change

The key question is not whether the machine bureaucracy is a good or bad organisational type, but whether it is appropriate for this policy context. Bureaucracies are highly efficient organisations wherein rules regulate employees to reduce variability and ambiguities, and competence-based employment maintains a well-oiled machine (Weber, 1997). However, they are most suited to highly routine tasks that can be easily standardised and coordinated through centralisation (Mintzberg, 1993). In the health sector, a mechanistic approach may be suited to short-term aims and the delivery of very routine care, but not for more complex sustained health improvement which often requires innovative problem-solving or

integrated approaches and collaborative interactions across the health system (Das Gupta et al., 2003).

We propose that organisational change is required to transform the configuration observed in our study to one that has greater likelihood of supporting administrative integration. A divisionalised form that uses standardisation of outputs and promotes the middle line as role players seems more appropriate. Though we propose actions for organisational change, we recognise that change strategies should be informed by an understanding of why the existing structures and cultures have developed in the first place, and opposition that may be encountered in effecting change. Further, our proposed actions are not aiming to achieve one of Mintzberg's pure configurations but rather an appropriate balance in organisational parameters.

First, an appropriate balance is needed in the extent of centralisation and formalisation such that higher levels can retain strategic control and enforce some standardisation without stifling district flexibility. While highly formalised organisations achieve uniformity, they create a culture in which people blame poor performance on rules (O'Neill et al., 2001) and stifle agency (Blaise and Kegels, 2004). With 53 districts in South Africa, some standardisation may be needed to ensure uniformity in policy implementation, but standardising outputs (quality, efficiency, or health outcomes) may be more desirable than excessive standardisation of processes which may stifle district managers' ability to adapt implementation to local realities (Gilson and Daire, 2011). Standardisation of outputs however requires competent district managers who can adapt work processes to meet set

performance standards. Creating a cadre of competent district managers remains a key challenge that needs to be addressed (Schaay et al., 2011).

Second, an appropriate balance is needed in the division of labour. Clarity in role allocation is essential in differentiated organisations (Axelsson and Axelsson, 2006). As we and others have shown, written documents do not clarify respective district and programme manager roles (Blaauw et al., 2004). Existing standard operating procedures should thus be modified to better reflect the respective implementation and support tasks that district and programme managers should perform. This is important to avoid duplication in role execution. Role clarity should be accompanied by capacity building, as research shows district managers lack technical competence to execute HIV M&E tasks (Kawonga et al., 2013). Intentions to build district managers' capacity have been stated (Department of Health, 2010) but not translated into action.

Our study shows that managers at all levels seemingly accept that the ways things are is the way they are meant to be. However, organisations can change. Commitment and strong leadership from the top management level is necessary to effect the organisational changes proposed above (Cummings and Worley, 2009). However, leaders at all levels in the health system can and should play a role by exercising the king of leadership that aims to achieve particular outputs and outcomes rather than just doing what has always been done. Managers at higher levels can lead change to shift the locus of operational decision-making to lower levels by choosing to directly engage with district managers in discussions (Schaay et al., 2011) and changing from a "*command style of management to a more facilitatory approach*" (Blaauw et al., 2004). Leaders at all levels could lead organisational change by

reinforcing district managers as the lead players in HIV service monitoring, and signalling that the integrated approach is the norm. They could do so by holding district managers) accountable for this role, and encouraging and rewarding behaviours that promote integration – such as actors communicating and working with unity of purpose (Unger, 2008) and performing tasks in line with their new respective roles (Cheng, 1983).

This study has a number of limitations. First, Mintzberg's framework intentionally simplifies a more complex reality and may mask nuances. Though simplified, the framework nonetheless provides a useful approach that enabled systematic description of organisational features. Second, our case study addresses only HIV M&E at one point in time, and yet health systems are complex adaptive systems that also comprise other functions (besides M&E) including financing, service delivery and governance (de Savigny and Adam, 2009). Analysing more than one function may have provided a more nuanced understanding of how organisational configuration influences integration. Third, we analyse only two provinces and one district per province, which limits generalisability to other districts and provinces in South Africa.

Conclusion

Administrative integration of programmes within the district health system in South Africa necessitates redistributing authority from higher to lower (district) levels and the transfer of responsibilities for managing programmes from programme to district managers. Appropriate organisational structures and cultures are necessary to support these changes. Our study shows that South Africa's health system exhibits organisational structural and cultural features that may undermine these proposed changes. Organisational change is

recommended in order to create an organisational configuration that potentially supports administrative integration of HIV services. Stated policy clearly talks the talk of integrated health services. Perhaps it is now time to translate the promise of integration into practice.

References

Axelsson R, Axelsson S. 2006. Integration and collaboration in public health – a conceptual framework. *The International Journal of Health Planning and Management* **21**: 75-88.

Blaauw D, Gilson L, Modiba P, Erasmus E, Khumalo G, Schneider H. 2004. Governmental relations and HIV service delivery. In: The Local Government and Health Consortium (ed). *Decentralising Health Services in South Africa: constraints and opportunities.* Durban: Health Systems Trust.

Blaise P, Kegels G. 2004. A realistic approach to the evaluation of the quality management movement in health care systems: a comparison between European and African contexts based on Mintzberg's organizational models. *The International Journal of Health Planning and Management* **19:** 337-364.

Cairncross S, Periès H, Cutts F. 1997. Vertical health programmes. *The Lancet* **349**: Supplement 3**,** S20-S21.

Cameron KS, Quinn RE. 2006. *Diagnosing and changing organizational culture: based on the competing values framework,* San Francisco, CA, John Wiley & Sons.

Cheng JLC. 1983. Interdependence and coordination in organizations: A role-system analysis. *The Academy of Management Journal* **26:** 156-162.

Church K, De Koning K, Hilber AM, Ormel H, Hawkes S. 2010. Integrating sexual health services into primary care: An overview of health systems issues and challenges in developing countries. *International Journal of Sexual Health* **22**: 131-143.

Criel B, De Brouwere V, Dugas S. 1997. Integration of vertical programmes in multi-functional health services. In: Van Lerberghe W, Kegels L, De Brouwere V (eds). *Studies in Health Services Organisation and Policy 3.* Antwerp: ITGPress.

Cummings TG, Worley CG. 2009. *Organization development and change.* Mason, Australia, Cengage Learning.

Das Gupta M, Khaleghian P, Sarwal R. 2003. Governance of communicable disease control services: a case study and lessons from India. *World Bank Policy Research Working Paper 3100.*

De Savigny D, Adam T. 2009. *Systems thinking for health systems strengthening.* Geneva: Alliance for Health Policy and Systems Research, World Health Organization.

Department of Health. 1997. *White Paper for the Transformation of the Health System in South Africa*. Pretoria, South Africa: Department of Health.

Department of Health. 2011. *District Health Management Information System (DHMIS) Policy*. Pretoria, South Africa: Department of Health.

Department of Health. 2012. *Standard Operating Procedures for 3 tier ART Monitoring and Evaluation System*. Pretoria: South Africa. Department of Health.

Department of Health. 2013. *District Health Management Information System (DHMIS). Standard Operating Procedures: District Level*. Pretoria, South Africa: Department of Health.

Department of Health. 2014. *Joint review of HIV, TB and PMTCT Programmes in South Africa*. Pretoria, South Africa: Department of Health.

Department of Health. 2010. *Negotiated Service Delivery Agreement for Outcome 2: A long and Healthy Life for all South Africans*. Pretoria, South Africa: Department of Health.

Elloker S, Olckers P, Gilson L, Lehmann U. 2013. Crises, routines and innovations: The complexities and possibilities of sub-district management. In: Padarath A, English R (eds). *South African Health Review 2012/13.* Durban: Health Systems Trust.

Fonn S, Xaba M. 2001. Health Workers for change: Developing the initiative. *Health Policy and Planning* **16**: 13-18.

Gilson L, Daire J. 2011. Leadership and governance within the South African Health System. In: Padarath A, English R (eds.) *South African Health Review 2011.* Durban: Health Systems Trust.

Gonzalez CL. 1965. Mass campaigns and general health services. *World Health Organization Public Health Papers No. 29.* Geneva: World Health Organization.

Harrison-Magochi K. 1998. Priority programme implementation. In: Ntuli A. (ed) *South African Health Review 1998.* Durban: Health Systems Trust.

Kawonga M, Blaauw D, Fonn S. 2015. Exploring the use of social network analysis to measure communication between disease programme and district managers at sub-national level in South Africa. *Social Science and Medicine*. **135**:1-14. doi:10.1016/j.socscimed.2015.04.024

Kawonga M, Fonn S, Blaauw D. 2013. Administrative integration of vertical HIV monitoring and evaluation into health systems: a case study from South Africa. *Global Health Action [S.I]* **6**: ISSN 1654-9880.

Keugoung B, Macq J, Buve A, Meli J, Criel B. 2011. The interface between health systems and vertical programmes in Francophone Africa: the managers' perceptions. *Tropical Medicine & International Health* **16**: 478-485.

Liese BH, Sachdeva PS, Cochrane DG. 1991. *Organizing and managing tropical disease control programs: Lessons of success*. Washington. D.C: The World Bank.

Management Sciences For Health 2010. *Health systems in action: An eHandbook for leaders and managers*. Cambridge, MA: Management Sciences for Health.

Masilela T, Molefakgotla P, Visser R. 2001. Voices of district managers. In: Ntuli A (ed). *South African Health Review.* Durban: Health Systems Trust.

Mccoy D, Engelbrecht B. 1999. Establishing the district health system. In: Crisp N, Ntuli A (eds). *South African Health Review.* Durban: Health Systems Trust.

Mcintyre D, Klugman B. 2003. The human face of decentralisation and integration of health services: experience from South Africa. *Reproductive Health Matters* **11:** 108-119.

Miles R, Snow C. 1997. Organizational fit. *In:* Pugh D (ed). *Organization theory. Selected readings.* Harmondsworth: Penguin.

Mill A. 1990. Decentralisation concepts and issues: a review. *In:* Mills A, Vaughan J, Smith D, Tabibzadeh I (eds). *Health System Decentralisation: concepts, issues and country experience.* Geneva: World Health Organization.

Mintzberg H. 1993. *Structure in fives: designing effective organizations,* New Jersey, Prentice Hall International, Inc.

Naledi T, Barron P, Schneider H. 2011. Primary health care in South Africa since 1994 and implications of the new vision for PHC Reengineering. In: Padarath A, English R (eds). *South African Health Review.* Durban: Health Systems Trust.

Ndlovu N. 2008. An exploratory analysis of HIV and AIDS donor funding in South Africa. *IDASA - Budget Brief No. 155.* Cape Town: AIDS Budget Unit, IDASA Budget Information Service.

O'Neill JW, Beauvais LL, Scholl RW. 2001. The use of organizational culture and structure to guide strategic behavior: an information processing perspective. *Journal of Behavioral and Applied Management.* **2:** 131-150.

Oliff M, Mayaud P, Brugha R, Semakafu AM. 2003. Integrating reproductive health services in a reforming health sector: The case of Tanzania. *Reproductive Health Matters.* **11**: 37-48.

Penn-Kekana L, Schneider H, Matsebula T *et al*. 2001. Voices of national and provincial managers. In: Ntuli A (ed). *South African Health Review.* Durban: Health Systems Trust.

Pugh D. 1997a. Does context determine form? In: Pugh D (ed) *Organization theory. Selected readings.* Harmondsworth: Penguin.

Pugh D. 1997b. *Organization theory: selected readings.* Harmondsworth: Penguin.

Republic of South Africa. 1996. *Constitution of the Republic of South Africa*. Act No. 108 of 1996. Cape Town, South Africa.

Republic of South Africa. 2003. *National Health Act*. Act No. 61 of 2003. Pretoria, South Africa.

Robbins S P. 1983. *Organization theory. The structure and design of organizations.*Englewood Cliffs, N.J: Prentice-Hall.

Schaay N, Sanders D, Kruger V, Olver C. 2011. *Overview of health sector reforms in South Africa.* DFID Human Development Resource Centre.

Schierhout G, Fonn S. 1999. The integration of primary health care services: A systematic literature review. Durban: Health Systems Trust.

Schneider H, Stein J. 2001. Implementing AIDS policy in post-apartheid South Africa. *Social Science and Medicine.* **52:** 723-731.

Smit J, Church K, Milford C, Harrison A, Beksinska M. 2012. Key informant perspectives on policy- and service-level challenges and opportunities for delivering integrated sexual and reproductive health and HIV care in South Africa. *BMC Health Services Research.* **12**: 48.

Srivastava A, Thomas S. 2009. Framework analysis: A qualitative methodology for applied policy research. *Journal of Administration and Governance.* **4**: 72-79.

Thomas LS, Jina R, Tint KS, Fonn S. 2007. Making systems work: The hard part of improving maternal health services in South Africa. *Reproductive Health Matters.* **15:** 38-49.

Travis P, Egger D, Davies P, Mechbal A. 2002. *Towards better stewardship: concepts and critical issues*. Geneva: World Health Organization.

Unger JP. 2008. *How could disease specific programs strengthen health systems delivering comprehensive health care?* Strategic and technical guidelines. Antwerp: Institute of Tropical Medicine.

Unger J P, De Paepe P, Green A. 2003. A code of best practice for disease control programmes to avoid damaging health care services in developing countries. *The International Journal of Health Planning and Management.* **18:** S27-S39.

Unger JP, Macq J, Bredo F, Boelaert M. 2000. Through Mintzberg's glasses: a fresh look at the organization of Ministries of Health. *Bulletin of the World Health Organization.* **78:** 1005-1014.

Van Rensburg DH, Steyn F, Schneider H, Loffstadt L. 2008. Human resource development and antiretroviral treatment in Free State province, South Africa. *Human Resources for Health.* **6**: 15.

Weber M. 1997. Legitimate authority and bureaucracy. In: Pugh D (ed). *Organization theory. Selected readings.* Harmondsworth: Penguin.

Table 1: Mintzberg's organisational configurations (Mintzberg, 1993)

Structural configuration*	Prime coordinating mechanism	Key part of organisation	Type of decentralisation
Simple structure	Direct supervision	Strategic apex	Vertical and horizontal centralisation
Machine bureaucracy	Standardisation of work processes	Technostructure	Limited horizontal decentralisation
Professional bureaucracy	Standardisation of skills	Operating core	Vertical and horizontal decentralisation
Divisionalised form	Standardisation of outputs	Middle line	Limited vertical decentralisation
Adhocracy	Mutual adjustment	Support staff	Selective decentralisation
Missionary	Standardisation of norms	Ideology	Complete decentralisation

Table 2: Participant interviews included in the analysis

Participant's management responsibility	Level of the health system				
	National	Province	District and sub-district	Health facility	Total
HIV programme*	4	15	4	-	**23**
Programmes (HIV, MCH and TB)	1	1	2	-	**4**
General health services*	1	1	7		**9**
Health information (general)	1	1	3	-	**5**
HIV-specific information	1	2	-	-	**3**
General health facility	-	-	-	8	**8**
HIV clinic at district hospital	-	-	-	2	**2**
Total	**8**	**20**	**16**	**10**	**54**

Notes:

*Provincial HIV programme managers are clustered into ART, prevention (HCT, PMTCT, PEP, HIV/TB), and care and support sub-directorates

**This includes district managers as well as managers at provincial and national level who were responsible for strategic oversight of district health services

Table 3: Allocation of district and programme manager HIV M&E roles

Type of M&E tasks	Written documents defining programme and district managers' M&E roles	
	District Health Management Information System Standard Operating Procedures (Department of Health, 2013)	ART Monitoring and Evaluation Standard Operating Procedures (Department of Health, 2012)
Data collation tasks	***District managers*** Ensure the correct data recording tools are available at health facilities; Ensure all personnel in district are trained on the use of these tools; Periodically perform data quality checks at facilities.	No role specified .for district managers.
	Programme managers The same as for district managers, plus: - Train health workers on programme data and M&E issues; - Ensure programme-specific M&E aligns with district M&E.	Conduct audits to verify ART data quality at health facilities (facility managers check completeness of ART data and submit. HIV programme managers at district and provincial levels verify the quality).
HIV data use tasks	No data use tasks specified for either district or programme managers	No data use tasks specified for either district or programme managers

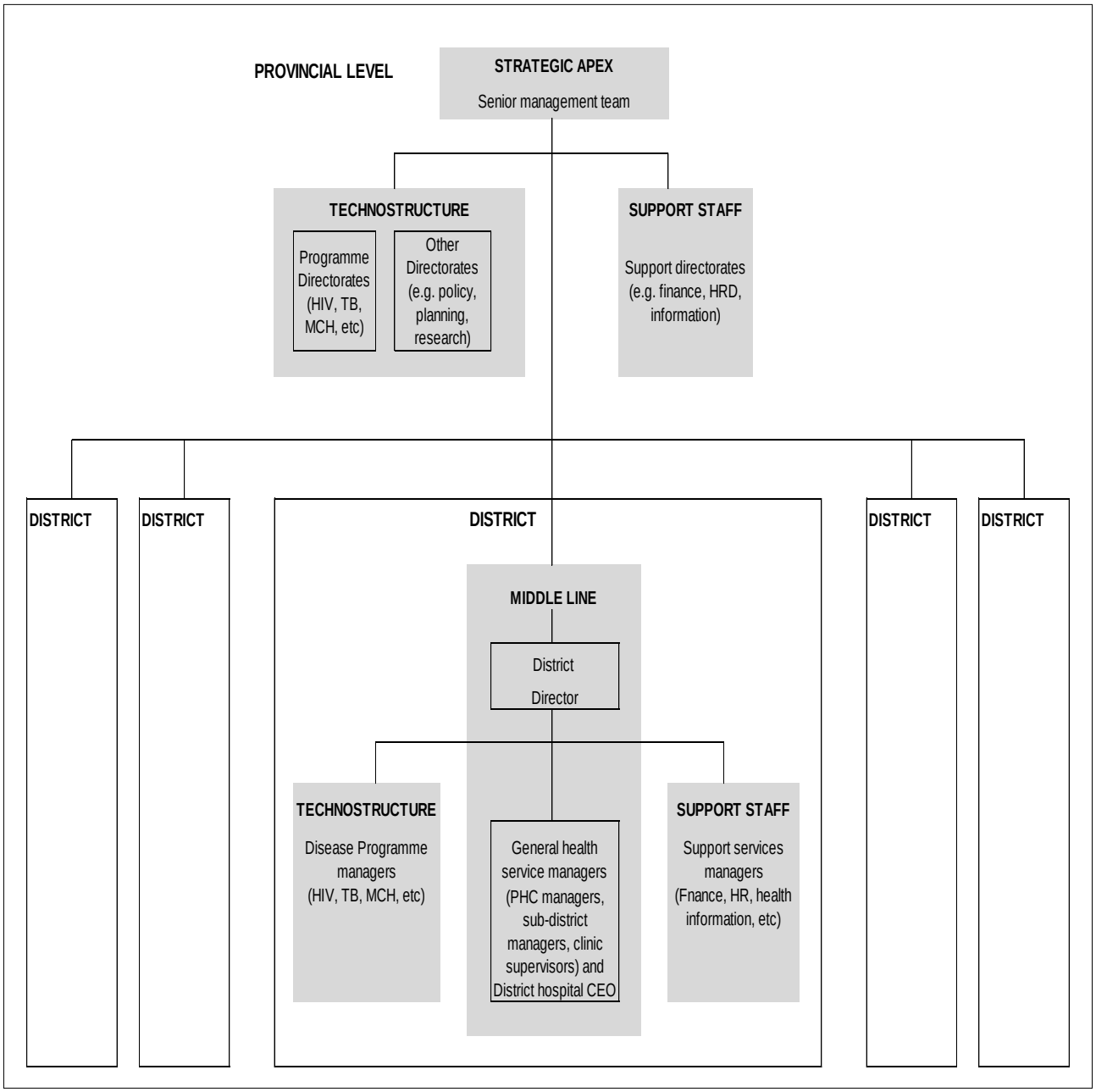

Figure 1: Provincial health system organisational components (parts)