Operational health service management: Understanding the role of information in decision-making

Authors:

Vera Scott[i]

Ntombomzi Dinginto[ii]

Zethu Xapile[iii]

Operational health service managers play a key role in strengthening the health system at the level of implementation, particularly with increasingly decentralised processes such as those introduced by the devolution of human resource and quality management to facility level. Yet the nature of operational management is poorly understood. This chapter presents an in-depth multi-case study developed over a number of years which explores the nature of routine decision-making at primary care facility level and demonstrates its importance to facility and health system performance. The use of different types of information in decision-making is described, including information from the health management information system (HMIS) and information about the local setting and management experience.

The first step towards supporting facility managers' routine decision-making for HR management and quality improvement is to acknowledge the value of informal information and experience-based knowledge, together with formal information. These offer complementary value in strengthening health care management: local information and experience-based knowledge supports managers in adapting and innovating locally to ensure successful policy implementation, and formal information supports greater accountability in service delivery.

A health systems framework is used to suggest an approach to building the capacity to generate and use the range of information required for local decision-making. This includes lessons for strengthening the HMIS and a discussion of its role in relation to experiential and organisational learning.

The first step towards supporting facility managers' routine decision-making for HR management and quality improvement is to acknowledge the value of informal information and experience-based knowledge, together with formal information.

i   School of Public Health, University of the Western Cape
ii   City Health, City of Cape Town
iii Metro District Health Services, Western Cape Department of Health

Introduction

Within the current context of health system reform in South Africa, as articulated in the 10-Point Plan for 2009 to 2014,[1] strengthening the public health sector is seen as a foundation for moving towards National Health Insurance (NHI). The key initiatives include strengthening management, addressing human resource performance and improving the quality of health services. This ultimately involves managers at the operational levels of the health system: those managing within the district structures and in health facilities. While the strategic importance of district management is often stated, the nature of, challenges to and opportunities for management strengthening at this level are generally not very well understood.[2,3] Indeed, the particular role of primary care facility managers is often overlooked in health management discussions about this setting. Yet the current South African Strategic Human Resources for Health Plan[4] notes their importance:

> The future of Human Resources for Health and the quality of the health care system will be determined by how well the system is led and managed at all levels, especially at the level of facilities which enable an optimal environment for patient care.

Decentralisation of human resource management is a focal point of this plan. In Cape Town Metro District, falling under the Western Cape Provincial Department of Health, where this work was conducted, functions such as recruitment, selection and appointment began to be decentralised to sub-district offices in 2010, with clinical and managerial training following later in 2013. Performance management and management of absenteeism was decentralised to facility managers from late 2011, together with greater responsibility for staff selection and development. In parallel, the Policy on Quality in Health Care for South Africa[5] set up a number of structures and processes to support quality improvement, including the development of national core standards for health facilities between 2008 and 2011[6,7] and the establishment of an Office of Health Standards Compliance and provincial inspectorates for health establishments in 2012. Facility managers are responsible for ensuring that the core standards are met and that quality improvement processes are instituted to address issues arising from, among others, the national complaint procedure, patient satisfaction surveys and clinical audits. A key complaint across the country has been that of long waiting times,[6] and the facility-level management of waiting times is considered in this chapter.

This chapter aims to provide a detailed representation of primary care facility managers' routine decision-making in HR management and quality improvement. It builds on the limited available work focused on Primary Health Care (PHC) facility managers, such as that of Leon, Bhunu and Kenyon[8] which gives voice to some of the experiences of primary health managers and, more recently within the same project, work by Daire and Gilson[9] which explores how professional identity shapes managerial competence and practice, and how the transition from nurse to primary care manager can be supported.

We demonstrate how operational decision-making is vital to facility and health system performance. Empirical research from a multi-case study conducted over three years is presented to indicate the type of decisions that facility managers are required to make and their information needs. The value of health information systems (HIS) in supporting local management emerges as a key finding, and some gaps in the current Human Resource Information System (HRIS) are identified. In addition, the findings suggest that primary care facility managers need rich local information on their particular context, facility setting and the staff members they manage in order to strengthen performance management and service delivery. They also need to be able to develop and use experience-based knowledge. Their information thus needs to span formal data (information that has been recorded for management use, such as that generated by the HIS or documented in HR procedures) and informal data (information that is not formalised by the health system, which is often qualitative, not aggregated or recorded, and which includes the applied information that is expressed in explicit and tacit knowledge). The discussion considers how, within the organisational context of the health system, formal and informal information can be generated and used in combination to strengthen local management. This includes a focus on experiential and organisational learning.

Methods and Approach

This study is nested within the District Innovation and Action Learning for Health System Development (DIALHS) project.[3] This is a long-term partnership project between the health departments of the City of Cape Town and the Provincial Government of the Western Cape and two South African universities, which seeks to generate new understanding of local innovation and health system strengthening through a process of co-production,[10] that draws on action research and reflective learning. The geographical learning site is the Mitchells Plain Sub-district, which is served by both health departments, and the project partners are on both management teams.

Four facility managers (one from Metro District Health Services, Provincial Government of the Western Cape and three from City Health, City of Cape Town) and an academic researcher have been co-researchers in a multi-case study which involved cycles of data collection and collaborative analysis with individual and peer reflective learning over a period of three years. The three cases were chosen because they are vital to facility and health system performance, and provide an insight into how the health system works at the point of primary care implementation. Further, the sub-district managers saw these cases as having the potential to act as levers of local health system strengthening in:

➢ managing planned and unplanned leave;

➢ managing the intake and flow of clients through the facility, including allocation of work to respond to client needs (impacts on waiting times); and

➢ managing priorities within and between programmes

Ortiz Aragón's framework[11] presents a useful approach to thinking about the development of organisational or health system capacity. It has already been used in the South African context in exploring the complexities of sub-district management[3] and is used in another chapter in this *Review*.[12] In this chapter, it is applied as an analytical lens to understand how to support the primary care managers' information needs. The framework unpacks the 'hardware' and the tangible and intangible 'software' needed for a system to perform, and was found to be valuable in understanding primary care facility information needs. The hardware comprises the finances,

Figure 1:   Health system hardware and software
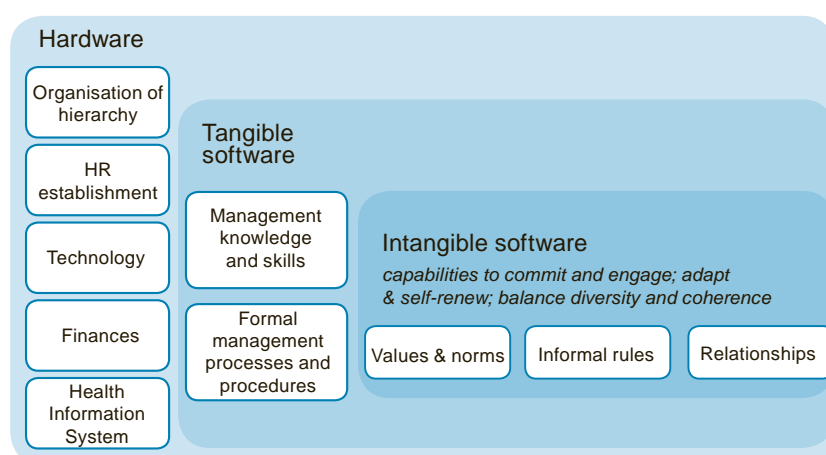
Source: Ortiz Aragón, 2010.[11]

infrastructure, human and other resources and technology that form the physical framework of the health system. The tangible software comprises the knowledge and skills of managers, the processes of communication and decision-making, and the routines and procedures of the system. The intangible software of values and norms, informal rules and expectations underpins the relationships that exist between and within levels of the health system and between those working in the health system: managers, staff and other actor groups such as communities and clients. These intangible factors shape the behaviours of actors and underlie the ability of the health system to perform. It is the interaction between the tangible and intangible dimensions that gives rise to organisational capacity.

Results

The scope and nature of facility-level decision-making

Across the three cases in this study, the primary care facility managers were mainly concerned with managing the implementation of services and managing the people delivering them. The scope of decision-making is shown in the sort of questions they sought to address during their routine practice. Their key decisions were, for the most part, framed as assessing *if/whether* intervention (such as implementing a deferment policy because a clinic was too full to deal with the workload on a particular day) was necessary and, if it was, in deciding *how* to intervene, as shown in Table 1 through the use of italics. In addition, there were decisions to do with scheduling tasks, such as in the development of annual leave and training schedules. Most of the decision-making that emerged during the observations, interviews and workshops was operational: the decisions were routine day-to-day choices about the running of the facility and the management of staff. However, these decisions reflected sub-district policy such as the newly introduced decentralisation of human resource management, the prioritisation of certain programmes (such as HIV, TB and child health) reflected in a deferment policy and the increased focus on quality improvement. Very little decision-making at facility level was strategic in terms of setting new direction and introducing or expanding services. Attempts to involve facilities in priority-setting in prior years had set unrealistic timelines which undermined the process.

Table 1:   Key decisions in each case

Case	Key decisions
Service delivery efficiency	*Is* the anticipated workload too much for the staff on duty today?
	Should the deferment policy be implemented now?
	How should the deferment policy be implemented?
	Is intake and flow efficient?
	How can intake and flow be improved?
	Are certain staff members not adequately productive?
	How can workload productivity be improved?
	How best can work be allocated to maximise efficiency and quality?
Priority programmes	*Is* programme coverage adequate or improving?
	Is programme quality adequate or improving?
	Are the routine data complete and of good quality?
	How can programme coverage be improved?
	How can programme quality be improved?
	How can the routine data collected in the HIS be corrected?
Leave (unplanned)	*Can* permission for unplanned leave be given?
	Should a leave request be categorised as paid or unpaid?
	Does individual leave usage suggest excessive use or abuse?
	How can individual staff members be managed effectively to reduce unplanned leave?
	Is there excessive use of unplanned leave at facility or department level?
	How can individual staff members be managed effectively to reduce unplanned leave?
	How can the collective staff be managed to reduce unplanned leave?

Much of the decision-making was responsive in the face of client and staff demands, rather than being proactive. In managing service delivery efficiency, most decisions required immediate problem-solving in the face of client demand for services, congestion, delays and complaints.

Facility managers intended to be proactive in planning annual vacation leave and training, but even these schedules were subject to last-minute change as more information emerged (such as timing of training programmes, additional ad hoc courses on offer, other staff members being on sick leave). Management of service inputs (such

as ordering pharmaceutical stock and supplies) was more proactive, as these were embedded in monthly management routines, but much management attention and energy was still directed towards dealing with orders that were not met as expected and equipment that was faulty. Some proactive planning for programmes was achieved in monthly reviews of routine data in sub-district meetings, where facility managers discussed service delivery in relation to targets and devised strategies to increase delivery if targets were not met.

The nature of information in decision-making – informal and formal dimensions

Across the cases, facility managers used formal data from the HIS in combination with other forms of information: (a) rich local information about their staff, facilities and the communities they serve; and (b) their experience-based knowledge. The nature of decision-making in small facilities (and mirrored in departments in the larger facilities) required information that was particular to the individual staff members, teams, services and circumstances, which was attuned to local context and which offered explanation. Formal data did not provide this type of information, and facility managers instead drew on intelligence gathered during their routine management practices which involved meetings and daily interactions with staff, heads of department and clients, which provided opportunity for observations. This information is informal, yet vital to effective management at facility level. Some of the informal information gathered was in an applied form, expressed in knowledge. Different types of knowledge were observed to be important.

An example of how formal information is generated and used in HR management

The four main sources of formal information used by facility managers in managing unplanned leave are shown in Table 2. Each data source had certain uses, but fell short of what facility managers required for managing leave.

The national HR information database used in the province to record leave usage in each category (vacation, training, sick, family responsibility) was not reliable. When facility managers requested information on remaining leave entitlements, they found that the

information was often not updated as leave applications were yet to be captured, or because in some cases, leave application forms were lost in transit. This induced facility managers to consult other sources. A parallel sub-district electronic Facility Leave Register was piloted in one organisation, and one facility kept its own Excel spreadsheet of the dates of leave taken. However, as indicators were not yet standardised, the data were not summarised into a form that facility managers could use to identify individuals who had used excessive leave. The leave application forms became an important source of formal information in its own right and copies were stored in the facility and in the sub-district/sub-structure offices.

Staff leave profile forms (a pre-prepared grid of days of the month for each staff member) have long been used to monitor individual staff attendance in the sub-district. These have been modified by introducing coding signified by highlights in different colours to represent being on duty or absent due to sickness, family responsibility, training or vacation. The colour patterns were used to detect patterns of leave usage suggestive of abuse, and the reliability was under the control of the facility manager.

As part of the decentralisation of HR management, a step-wise approach to managing absenteeism was used (informal followed by formal counselling and disciplinary processes as necessary), which produced a paper trail of information regarding the reason and circumstances of the leave, the underlying causes, and interventions implemented to support the staff member. This information was formalised in the process of documentation and was useful for the ongoing management of the individual staff member's absenteeism. City Health (which provided services in addition to those of the provincial Department of Health) instituted a further procedure requiring facility managers to conduct and document a back-to-work interview after any unplanned leave of absence. Many of the facility managers found that the template provided by the sub-district office for the back-to-work interview was a useful tool for documenting and subsequently tracking the amount of unplanned leave taken, the reasons for each episode, the counselling and/or information given, or supportive strategies devised by the facility manager in consultation with the staff member to reduce unplanned leave. They also used the interview record to keep a tally of leave days taken from one interview to the next. However, those with larger

Table 2: The usefulness and limitations of formal information available for managing leave of absence

Source of data	Usefulness	Key limitations
National HR database of staff establishment, leave and payroll	Identifies the number of days absent per leave category Useful data source when investigating a single staff member	Data unreliable due to transit and capture of leave forms Data reports rudimentary with counts per staff member per leave category; no indicators or graphical presentation at facility level; data do not allow comparison between staff members or facilities, nor identification of patterns of possible abuse
Leave application form	Legal document from which leave data were captured Authorisation process gives facility managers an opportunity to identify high leave-users, but relies on facility managers' memory	Raw, unsummarised individual data
Staff leave profile form	If accurately kept, the number of days absent per leave category could be counted Easy visual representation of leave usage to identify patterns suggesting abuse	Time-consuming in larger facilities Not always completed accurately Parallel data
Communication book detailing informal counselling, formal counselling records, Incapacity Hearing records	Documents reasons for leave of absence, underlying problems and strategies planned to support the staff member to reduce leave of absence	No formal system for collating and storing this confidential information at facility level

staff complements experienced these interviews as an administrative burden, and complained that they were often behind in conducting the interviews.

In managing planned and unplanned leave, most facility managers maintained a set of files of leave profile sheets, leave applications, copies of formal counselling and copies of disciplinary records stored in their office filing systems. They also held a summary record of disciplinary hearing dates and outcomes. Many had a rudimentary filing system for storing this information. In addition, they kept a staff communication book in which they entered details of informal counselling or instructions to staff; this book captured evidence of conversations which facility managers could use in dealing with subsequent infractions related to unplanned leave of absence. Some facility managers began to develop an individual-based filing system for storing leave and counselling records, but this was not standardised and was evolving organically. Little thought had been given to how the confidential storage and adequate retrieval of this information could be managed at facility level.

An example of how informal information and knowledge is generated and used in HR management

Managing HR is fundamentally about managing people, and this requires a range of rich, local information about particular staff members which cannot be reduced and captured in a formal HR system. In this study, facility managers were aware of staff members' personal preferences and circumstances, their cultural identities, when they took unplanned leave and their reasons for doing so, and how they responded to various forms of corrective action. This information was generated during interactions with staff both individually or collectively, in a variety of processes. Some were informal processes, such as in conversation with staff over tea in the staff room. Even formal processes such as counselling generated informal information, typically in the form of impressions and nuanced understandings of how well an individual coped with stress. The following case vignette describes how a facility manager successfully managed a user of excessive sick leave by annotating the formal information on the staff leave profile form with such informal information.

This vignette also demonstrates the different kinds of knowledge that emerged across the cases, as shown in Table 3.

Table 3: Examples of different types of knowledge used in managing absenteeism

Procedural knowledge	Know-how: knowing how to perform a task or work within the system e.g. the practical understanding of how to conduct a counselling session or how to interpret and apply the leave policy
Causal knowledge	Know-why: an understanding of causes and consequences e.g. knowing why absenteeism is high in a facility; knowing why an individual is taking excessive leave and why he is behaving and reacting in a certain manner
Conditional knowledge	Know-when: an understanding of when particular knowledge applies, and of the related circumstances and configurations of time/place/person/intention e.g. knowing when to use a supportive approach and when to be more confrontational in corrective counselling

Box 1:   Case vignette: Management of a staff member who took excessive sick leave

Staff Member X had a chronic chest condition and soon used up most of his three-year leave entitlement. Facility Manager A kept track of his leave profile form and began to identify patterns of prolonged usage. In particular, the employee used up any new sick leave entitlement as soon as it became available. As part of a sub-district-wide strategy to reduce unplanned leave, Facility Manager A first focused on ensuring that Staff Member X phoned in to ask for her permission each time he wanted to take unplanned leave. She made a point of learning about his domestic and social circumstances. From around May 2012, she began to encourage him to have acute treatment when his chest was bothering him in the early mornings, and to report for duty later in the morning. When Facility Manager A felt that the employee was staying off work for unnecessarily long periods, she began to confront him. In July 2012, she refused him paid sick leave as he had not phoned in to request permission for taking it. She found that he responded well to an approach that combined active, personal supervision; an ongoing conversation each time he was off sick or in late; clear setting of boundaries; and the introduction of penalties within a carefully managed process.

Facility Manager A had learnt a great deal about the Staff Member X's circumstances, and had developed very specific knowledge of *how* to manage him. She learnt to interpret his patterns of sick leave usage so that she could discern the appropriate conditions under which she should be strict with him (*when* to apply this knowledge). She used his staff leave profile as a tool for monitoring his behaviour regarding sick leave and providing him with feedback on his performance.

An example of how informal information is generated in managing waiting times in facilities

The facility managers valued their personal observations done early in the morning (at approximately 08h00) and further rounds (at about 10h00 and 14h00 on busy days if required) to identify points of congestion or delay and to act immediately:

Doing rounds…when it is very busy you hardly get to the end where you wanted to get to because at all points there are people stopping you, they are asking questions, there are things that you are noticing: the BP machine is not working, the thermometers are not enough in the prep room or whatever. So those are the things that will keep you so you were actually not doing the equipment audit but you end up doing it because you see now there are long queues because people are not moving; they can't actually get their blood pressures done because there is only one blood pressure machine working instead of four.

Workshop 2B, Nov 2013

Through informal observation, the facility managers saw whether queues were moving (one manager noted that she recognised faces in the queues and therefore knew if the same clients were still waiting) and where congestion was occurring. Irate clients who felt that they had been waiting too long, or who felt that other clients had moved ahead in the queue, used this opportunity to make a complaint.

They find it easy to come and knock on the door and tell me. In this community they don't believe in writing notes, they believe in face-to-face contact, and screaming and shouting or I have to hear from the staff, this one was complaining or whatever.

Interview A1, Aug 2012

Although these complaints did not necessarily enter the formal complaint system, they were given high priority. The clients were listened to and their particular problems were investigated immediately.

Facility managers expressed the need to be an active and accessible presence on their facility work-floors; it was not possible to know what was happening – 'to have a finger on the pulse beat" – if they remained behind locked office doors or if they spent too much time attending meetings in the sub-district office.

How formal and informal information work together

Across all three cases, facility managers used formal and informal information in combination. For example, in quality improvement processes, formal information was often used to identify a problem and informal information was used to validate the data, interpret their meaning in the particular facility context, and inform the development of intervention strategies. At times, information was used differently across different timeframes, often with different objectives in mind. For example, when a clinic was congested and waiting times were unacceptably long, facility managers had to problem-solve on the spot, and drew on informal information that was immediately available – their observations and conversations with staff and clients. They used formal information later, beyond the crisis moment, to assess the adequacy of staffing levels generally and to improve the efficiency of client flow.

Learning from experience and reflective practice

The value of experience in generating knowledge was a common theme across the cases. However, experience without support did not always generate positive learning opportunities. For example, one manager reported that the experience of conducting formal counselling and disciplinary hearings with staff was negative and that she would have benefited from more support and mentorship. This highlights the role of supervision in supporting on-the-job development of the knowledge and competencies required.

Facility managers found that peer meetings to discuss common problems generated useful information to improve service delivery. Creating such meeting spaces was particularly important when novel interventions or intractable problems were in play. The learning was supported if the meetings were structured and facilitated to allow for sharing of experience and reflection. In expressing and uncovering lessons through peer discussion, new knowledge was made explicit and collective (as it was generated and acquired by the group rather than by particular individuals). The following case vignette illustrates this.

The sub-district engaged in a reproductive health project to improve family planning coverage. Each facility manager appointed a 'champion' within her facility to motivate other staff, and to support her in introducing new strategies. The facility managers and their champions met each month to learn from one another's experiences. The meeting was facilitated by a sub-district manager.

Box 2:   Case vignette: The Sub-District Reproductive Health Project

In the first meeting, facility managers identified the factors that deterred clients' access to family planning: long waiting times and poor staff attitudes. This information came from clients who complained directly to the facility managers or other facility staff, who in turn reported this to the facility manager. These issues were confirmed by information from the formal complaints systems at facility and sub-district level, and a district-wide community survey. One facility reported having had great success in reducing waiting times in their antiretroviral therapy (ART) clinic by giving clients appointment times. Learning from this experience, the Reproductive Health (RH) Project team decided to introduce appointment times in the family planning service across all the facilities. It was decided that clients should be asked what time of the day was most convenient for them to attend the facility and given a corresponding appointment time.

At the next meeting, the facility managers reported disappointing results from this initiative. Most found little difference in client flow. Only one facility reported that the introduction of appointments times was working well, but in the ensuing discussion, it became apparent that they had implemented the strategy a few months ahead of the other facilities. In seeking to understand why the intervention was working in this clinic and not in others, a lesson emerged: the strategy required a few months before it would yield the desired outcomes, because clients only return after two or three months for their next appointment. Some facility managers reported that clients chose to come early in the morning, even if they had been given an appointment for later because they preferred to come early. Others in the meeting contested this idea. One facility manager reported that she had instructed her staff not to see the clients arriving early until their appointment time, as this demonstrated to clients that the appointment time was important. Because the intervention was intended to reduce obstacles to clients' access to services, the managers agreed on the importance of giving the clients an appointment time that was convenient to them. Facility managers reminded one another of the organisation's client-centred approach which seeks to accommodate client preferences. A suggestion was made, which resonated with many present and became an hypothesis, that clients ignore appointments because they do not trust the facility staff to keep to the appointment times and because they feared being turned away if they arrived later in the day; (on busy days, a system of deferment is implemented, such that clients who arrive later and are not emergency cases are deferred). A further hypothesis was put forward: the ART clients quickly learnt to trust in and adhere to appointment times because they were used to the practice of appointments as part of the ART clinic's routine procedures, and because the ART appointments occur more frequently (initially every two weeks when the client is being prepared to initiate ART), whereas the family planning clients have appointments only every two or three months. This hypothesis could only be tested over time and as the intervention was transferred to other services with different time intervals between appointments.

Emerging trends

Formal and informal information are both used in decision-making

This multi-case study shows that primary care facility managers value and require both formal information from the HMIS and informal, local information and experience-based knowledge in their routine management practices. These two forms of information are often used interactively in decision-making, or in sequence over time.

The finding that informal information is used by primary care facility managers in management decisions is not new. Williamson and Kaasbøll[13] and others[14] have observed this, and provided examples of how local information about communities is sometimes used to replace formal information when the reliability of the HIS is

questionable. However, this study shows that even where relatively strong HIS systems exist, the decision-making work of facility managers often requires informal, local, particular information and knowledge because of the nature of management at this level. Much of the decision-making takes the form of on-the-spot problem-solving which requires readily accessible and current information – which is generally only available as informal information. Furthermore, at this level, management is fundamentally about managing people, which requires personal information about individuals that is only useful in its particular rather than aggregated form. In an age where increasing emphasis is being placed on automation of data collection and information systems, informal information and experience-based knowledge remain crucial in local decision-making.

Informal information has also been shown to be important in decision-making in district management teams.[15] This suggests that, in supporting local health managers, a re-framing of what is conventionally understood to be 'health management information' is needed. The health information policy in South Africa[16] follows the WHO's[17] lead in understanding health management information systems as collecting the quantifiable information about health needs (epidemiological information such as disease prevalence, incidence, mortality, morbidity statistics), health service administration (resource inputs and processes such as drug, procurement, finance and human resource management) and service delivery. This projects a conceptualisation of health management information as exclusively formal information. This study shows that such data repositories should be extended to recognise the importance of informal, local and particular information, and experience-based knowledge in decision-making.

Strengthening information available to facility managers for decision-making

Generating formal information

In South Africa there has been a substantial investment in Health Information System (HIS) strengthening[18] through policy development, software and infrastructure development, appointment and development of health information officers and managers, a review of minimum data sets to refine indicator sets, and development of procedures to improve the quality and timeliness of routine information. Attention has also been given to generating formal information in quality assurance processes required and supported by the Policy on Quality in Health Care for South Africa[5] and National Core Standards for Health Establishments in South Africa,[7] which require detailed supervisory checklists and facility and clinical audits. In contrast, there has been little progress in developing a coherent Human Resource Information System (HRIS), another component of the overall HMIS, despite the gaps being identified and possible solutions being posited as early as 2005.[19] The data on leave usage needed to manage absenteeism remain unreliable, basic indicators are not finalised and little is available in report format to identify high leave-users. This undermines the ability of facility managers to manage absenteeism in their facilities. The development of an HRIS in South Africa should be aligned with the current needs of primary care facility managers if it is to strengthen the devolved HR management.

Generating informal information and knowledge

It is important to stress a self-evident point: the rich, local, informal information that facility managers require can only be generated locally, through facility managers observing and engaging with facility processes, staff, clients and communities. Similarly, this knowledge must be acquired by the local managers and cannot be imposed by actors operating beyond the local experience of practice. The experience of managing has the potential to produce rich knowledge, and supervision could support this. Interestingly, in this study, procedural and causal knowledge is not only acquired by personal experience, but from collective discussion around others' experiences in supportive peer group settings. This is particularly productive for the newly appointed facility managers, and when the problem under discussion is novel or recalcitrant. New initiatives that allow experimentation and emergent planning (exemplified in the reproductive health project) are rich learning opportunities. The addition of a facilitated meeting space to reflect on experience can deepen the collective learning. A willingness to look beyond success and failure also allows for deeper reflection which produces knowledge on what works, why and when (causal and conditional knowledge respectively). This approach is closely aligned with the principles of a learning organisation[20] which, while not mainstream, are evident in some national and provincial policy documents:[5,21]

> Being able to adapt organisations for change requires skilled managers with a commitment to creating learning organisations seeking excellence, focused on users and working with clinicians.

A systems approach to supporting the generation and use of information

Ortiz Aragón's framework provides a system lens for thinking about how to develop organisational or health system capacity to generate and use both forms of information in decision-making.[11] Through this framework, the common system 'hardware' to support information use by facility managers is seen to include the managerial staff in organisational hierarchies and district organograms with prescribed lines of reporting and accountability. For the formal information system, the HIS being one example, 'hardware' is also the health information staff, database infrastructure and supporting technology, and physical resources invested in HIS training and development.

Important differences emerge between the software required to support formal and informal information generation and use. Broadly, 'tangible software' consists of management processes and practices. Formal information is generated in management processes and systems, and is used in formal planning, performance management and supervision processes. Its use is supported by standard operating procedures for data management and the managers' ability to interpret and communicate information. In contrast, informal information is generated through a different set of management practices, such as observations, engagements with staff, experimentation and reflective practice, and requires a different set of management skills, including the ability to engage, problem-solve, share experiences and learn collectively.

The values (part of the 'intangible software') supporting the use of formal information actively champion rational data-driven decision-making and build vertical accountability between levels of the health

system. In contrast, the values underpinning the use of informal information appreciate the softer, less prescriptive and formal approaches to management, and enable experimentation towards learning rather than a stringent focus on success and failure. These values build trust and more horizontal accountability between peers.[22]

While management practices and routines are located in the software dimension, they are shaped by the organisational hardware.[3] In part, the investment in HIS expresses and shapes the dominant role that formal health information plays in health system governance. There is a need to consciously value and support the principles of a learning organisation if facility managers are to be supported in gaining the experience-based knowledge required to manage facilities and staff, and thus bringing about the strengthened human resource management and quality improvement envisioned in the 10 Point Plan.[1]

Table 4 summarises some of the key hardware and tangible and intangible software that supported information use in this case study.

Supporting facility managers' use of information in decision-making

The first step towards supporting facility managers' routine decision-making for HR management and quality improvement is to acknowledge the value of informal information and experience-based knowledge, together with formal information. These offer complementary value in strengthening health care management: local information and experience-based knowledge supports managers in adapting and innovating locally to ensure successful policy implementation, and formal information supports greater accountability in service delivery. Within the current management context, there is a need to legitimise the use of informal information, which is currently not appreciated or systematically developed within the health system.

Secondly, there is a need to build the system software required to generate and use formal and informal information in combination, being mindful that this software is different for the two types of information, as shown in Table 4. Importantly, the practices required

Table 4: Applying a systems lens to understanding differences in system hardware and software required to support formal and informal information use

	Formal information	Informal information
Hardware		
Generic	• Managerial staff • Organisational organograms	
Specific	• Health information staff • Database infrastructure and technology • HIS training and development	
Tangible software		
Facility-level management practices which generate and use information	• Formal data collection, collation, validation and submission standard operating procedures • Routine review of facility reports • Control and rational planning processes	• Observation of facility processes • Active engagement with staff and communities through structured meetings and one-on-one sessions • Active and accessible managerial presence on facility work-floor to allow for spontaneous interaction • Experimentation and emergent planning processes (as an alternative to upfront planning processes) • Individual and collective reflective learning practices
Sub-district management processes	• Target-setting practices • Routine review of sub-district reports • Performance management system • Supervisory processes using checklists and routine health information	• Peer learning and support meetings • Individual and collective reflective learning practices • Supportive supervision and mentoring tailored to individual needs
Management knowledge and skills	• Ability to interpret information represented in data tables and graphs, including trends over time • Ability to interpret information in relation to local context • Ability to communicate information	• Ability to engage • Ability to observe, problem-solve and experiment • Ability to reflect, to share experiences and learn collectively
Intangible software		
Values and norms	• Valuing the use of formal information in monitoring and evaluation • Rational decision-making processes	• Valuing information that is local and particular to context • Valuing experimentation and emergent planning • Being prepared to learn from failure as well as success
Relationships	• Building accountability through reporting	• Building trust to improve the quality of communication and learning • Enabling supportive peer and supervisory relationships which nurture experiential learning

to generate and use informal information need to be deliberately embedded within the routines of management practice of facility managers. At sub-district level, leadership from sub-district managers in seeing the value of both formal and informal information – which is fundamentally a sense-making role[3] – is required, in a form that enables them to resist false dichotomies that present either/or options.

Thirdly, use of informal information has to be underpinned at all levels of the health system by a broader set of values that acknowledge and appreciate locally responsive management and organisational learning as well as increased accountability as critical to improving performance. There is some evidence that this may require a re-orientation of the HIS at district level towards supporting organisational learning, as well as structures for accountability.[23] This would mean a shift in practices around the review of routine health information. Instead of focusing on the review of routine health information as a yardstick against performance targets, facility managers should be supported in considering the interventions they have developed and implemented to improve facility performance, and in reflecting on what they are learning about the challenges and opportunities in implementing these interventions, and their relative success and failure. This will allow facility managers to develop the necessary 'know-why' and 'know-when' to adapt and innovate to improve facility performance.

Key lessons

➢ The development of the HMIS data is uneven, so whilst facility managers might know their facility's immunisation rate, they do not have reliable information on the staff absenteeism rate.

➢ The nature of operational management requires facility managers to use rich, local particular information about processes, staff, clients and the community context, in addition to formal HMIS data.

➢ At facility level, HR management requires skills in people management and knowledge about particular staff members and staff collectives.

➢ In order to adapt and innovate in improving service delivery, facility managers need to learn from their experience and generate experience-based knowledge.

➢ Attention to governance and values across all levels of the health system is needed to support facility-level practices that generate and use local information and experience-based knowledge, as well as formal information from the HMIS.

References

1   South African National Department of Health. National Strategic Plan 2010/11-2012/13. Pretoria: National Department of Health; 2010.

2   Gilson L, Daire J. Leadership and Governance within the South African Health System. In: Padarath A, English R, editors. South African Health Review 2011. Durban: Health Systems Trust; 2011:69–80.

3   Elloker S, Olckers P, Gilson L, Lehmann U. Crises, Routines and Innovations: The complexities and possibilities of sub-district management. In: Padarath A, English R, editors. South African Health Review 2012/13. Durban: Health Systems Trust; 2013:161–173.

4   South African National Department of Health. Human Resources for Health South Africa: HRH Strategy for the Health Sector:2012/3 – 2016/7. Pretoria: National Department of Health; 2012. p.57.

5   South African National Department of Health. A Policy on Quality in Health Care for South Africa. Pretoria: National Department of Health; 2007.

6   Marshall C, Jitsing A. Regulating the Quality of Health Services: Benchmarking of Approaches, Institutions and Systems. Pretoria: National Department of Health; 2013.

7   South African National Department of Health. National Core Standards for Health Establishments in South Africa. Pretoria: National Department of Health; 2011.

8   Leon N, Bhunu F, Kenyon C. Voices of Facility Managers. In: Ntuli A, editor. South African Health Review 2001. Durban: Health Systems Trust; 2001. p.207–220.

9   Daire J, Gilson L. Does identity shape leadership and management practice? Experiences of PHC facility managers in Cape Town, South Africa. Health Policy Plan. 2014 Sep;29 Suppl 2:ii82-97.

10 Lehmann U, Gilson L. Action learning for health system governance: the reward and challenge of co-production. Health Policy Plan. 2014. [Internet] [Cited 23 August 2015]. URL: http://heapol.oxfordjournals.org/content/early/2014/08/26/heapol.czu097.abstract

11 Ortiz Aragón, A. A Case for Surfacing Theories of Change for Purposeful Organisational Capacity Development. IDS Bulletin. 2010.41(3), 36–46. doi:10.1111/j.1759-5436.2010.00135.

12 Cleary S, Schaay N, Botes E, Figlan N, Lehmann U, Gilson L. Re-imagining community participation at the district level: lessons from the DIALHS collaboration. In: Padarath A, King J, English R, editors. South African Health Review 2014/15. Durban: Health Systems Trust; 2015.

13 Williamson L, Kaasbøll J. Health information and managerial work: exploring the link. In: Byrne E, Nicholson B, Salem F, editors. Proceedings of the International Conference on Social Implications of Computers in Developing Countries, Dubai, UAE, May 2009. Dubai: Dubai School of Government; 2009. p.291–305.

14 Damtew Z, Kaasbøll J, Williamson L. From information for decision-making to information for keeping core knowledge updated – Health managers who know their population. In: Byrne E, Nicholson B, Salem F, editors. Proceedings of the 10th International Conference on Social Implications of Computers in Developing Countries, Dubai, UAE, May 2009. Dubai: Dubai School of Government; 2009. p.381–389.

15 Mutemwa RI. HMIS and decision-making in Zambia: re-thinking information solutions for district health management in decentralized health systems. Health Policy Plan. 2006;21(1):40–52. doi:10.1093/heapol/czj003.

16 South African National Department of Health. District Health Management Information System (DHMIS) Policy. Pretoria: National Department of Health; 2011.

17 World Health Organization. Developing health management information systems: a practical guide for developing countries. Manila: World Health Organization, Regional Office for the Western Pacific; 2004.

18 English R, Masilela T, Barron P, Schonfeldt A. Health Information Systems in South Africa. In: Padarath A, English R, editors. South African Health Review 2011. Durban: Health Systems Trust; 2011:81–90.

19 Mathews V. Information for Human Resource Management. In: Ijumba P, Barron P, editors. South African Health Review 2005. Durban; Health Systems Trust; 2005. p.190–200.

20 Garvin D. Building a Learning Organization. In: Drucker P, editor. Harvard Business Review on Knowledge Management. Boston: Harvard Business Press; 1998. p.47–80.

21 Western Cape Department of Health. Healthcare 2030 The Road to Wellness (draft). Cape Town: Western Cape Department of Health; 2013.

22 Cleary SM, Molyneux S, Gilson L. Resources, attitudes and culture: an understanding of the factors that influence the functioning of accountability mechanisms in primary health care settings. BMC Health Serv Res. 2013;13:320. 23.

23 Cecez-Kecmanovic D, Janson M, Zupancic J. Relationship between Information Systems and Organisational Learning – Lessons from the Field. In: Spencer S, Jenkins A, editors. Thought Leadership in IS – Proceedings of the 17th Australasian Conference on Information Systems, Adelaide, South Australia, 6-8 December 2006. Australasian Association for Information Systems; 2006. URL: http://aisel.aisnet.org/about.html