
The everyday practice of supporting health system development: learning from *how* an externally-led intervention was implemented in Mozambique

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Accepted on 21 May 2018

Abstract

Health system strengthening (HSS) has often been undertaken by global health actors working through vertical programmes. However, experience has shown the challenges of this approach, and the need to recognize health systems as open complex adaptive systems—which in turn has implications for the design and implementation approach of more ‘horizontal’ HSS interventions. From 2009 to 2016, the Doris Duke Charitable Foundation supported the *African Health Initiative*, establishing *Population Health Implementation and Training* partnerships in five African countries (Ghana, Mozambique, Rwanda, Tanzania and Zambia). Each partnership was designed as a large-scale, long-term, complex health system strengthening intervention, at a primary care or district level—and in each country the intervention was adapted to suit that specific health systems context. In Mozambique, the *Population Health Implementation and Training* partnership sought to strengthen integrated health systems management at district and provincial levels (through a variety of capacity-development intervention activities, including in-service training and mentoring); to improve the quality of routine data and develop appropriate tools to facilitate decision-making for provincial and district managers; and to build capacity to design and conduct innovative operations research in order to guide integration and system-strengthening efforts. The success of this intervention, as assessed by outcome measures, has been reported elsewhere. In this paper, the *implementation practice* of this horizontal HSS intervention is assessed, focusing on the key features of *how* implementation occurred and the *implementation approach*. A case study focusing on HSS implementation practice was conducted by external researchers from 2014 to 2017. The importance of an accompanying implementation research approach is emphasized—especially for HSS interventions where the ‘complex adaptive system’ (complex and constantly changing context) forces constant adaptations to the intervention design and approach.

Keywords: Implementation, health systems, Mozambique, health system strengthening, intervention, Africa

Key Messages

- Health system strengthening intervention design and implementation needs to take into account complexity, on-going contextual changes and the everyday stressors and shocks that are likely in low- and middle-income country health systems.
- In judging the success of a complex health system strengthening intervention, what is implemented cannot be divorced from how it was implemented. These two dimensions of the experience should be considered as inextricably linked.
- Understanding the extent to which the intervention is ‘embedded’ in the health system should form an important part of this assessment.
- Global health actors including donors should enable contextualized approaches, a long-term perspective in funding, and should seek to work as equal partners with health system stakeholders.

Introduction

In global health, the term ‘health system strengthening’ (HSS) has been widely associated with interventions implemented in low and middle income countries (LMICs) by global actors working through vertical programmes (Travis *et al.* 2004). However, given that health systems are open and complex adaptive systems, experience has shown the challenges of this approach (Marchal *et al.* 2009). New approaches to intervention have been called for—ones that adopt a ‘systemic’ approach, working through multiple entry points and actors to tackle the interconnected web of challenges that underlie weaknesses in service delivery generally, as well as in specific health programmes (De Savigny and Adam 2009).

From 2009 to 2016, the Doris Duke Charitable Foundation (DDCF) supported the *African Health Initiative* in five sub-Saharan African countries. The AHI funders set out to encourage intentionally *systemic* intervention towards HSS, working horizontally at primary health care (PHC) and district levels. Within the AHI, *Population Health Implementation and Training* (PHIT) partnerships were established in Mozambique, Ghana, Rwanda, Tanzania and Zambia. Each partnership was designed as a large-scale, long-term, complex HSS intervention—each intervention adapted to the country’s health systems context (Bassett *et al.* 2013; Gilson 2013; Hirschhorn *et al.* 2013; Sherr *et al.* 2013b). In addition, DDCF supported a process of parallel, implementation research to track and understand the PHIT partnership implementation practice in Mozambique and Zambia. This research was led by an external group from the University of Cape Town, who were not involved with the actual implementation or outcomes evaluation—with the intention of bringing an additional outsider perspective to understanding the implementation experience and approach. This paper reports on the Mozambican experience from this latter study—that set out to better understand these AHI interventions and their HSS implementation practice.

In Mozambique, in the central-eastern Sofala province, the PHIT partnership sought to strengthen integrated health systems management at district and provincial levels, improve the quality of routine data and develop appropriate tools to facilitate decision-making for provincial and district managers, and build capacity to design and conduct operations research to guide integration and system-strengthening efforts (Sherr *et al.* 2013a), all with a view to strengthening Sofala’s health system and, ultimately, improve the health status of the population. The outcomes of this HSS intervention were evaluated by assessing the intervention’s impact on health system performance and progress over time in population-level health service coverage, utilization and health status indicators. These outcomes are not the focus of this study or paper, instead we describe and explain the *everyday implementation practice* of the

Mozambican PHIT partnership—considering both the key features of practice, and how and why they supported this HSS intervention which was overwhelmingly and unequivocally reported as being appreciated and accepted by district and provincial managers and staff within the Sofala health system (below). Although still early to judge, during this research, we saw indications of sustained and (reportedly) sustainable change in routine decision-making processes and practices. Such changes in the routines of the health system were at the heart of this HSS intervention and offer the potential of wider service delivery improvements (Sherr *et al.* 2013a). Understanding the Mozambican PHIT implementation practice, thus, assists in thinking through the intervention’s lessons for other settings, including about how to manage the implementation of HSS interventions over time and in ways likely to support goal achievement (Gilson 2013; Peters *et al.* 2014). Again, the PHIT partnership’s ultimate outcomes are *not* the focus of this paper, and will be reported elsewhere—instead the focus here is on the everyday implementation practice and approach that provided the environment or foundation for the targeted intervention activities.

Methods

Our overall research questions were: what were the key features of implementation practice and why was this practice adopted; which contextual factors influenced the implementation of the intervention; and how did the context and implementation practice influence the course of the intervention and the experience of implementation (in particular the reactions of country-based health system actors)?

Initial exploratory work in 2013 included establishing collaboration between the external researchers and Mozambican PHIT team, and developing an understanding of the partnership, the history of the HSS intervention and implementation plans based on review of project documents and engagements with the PHIT team during DDCF annual meetings. A protocol for primary empirical research in Mozambique was then developed and ethical approval was secured from the University of Cape Town (Ref 668/2013) and the Ministry of Health (MoH) in Mozambique in early 2014.

Primary data were collected in Sofala in June 2014 and May 2015. This spacing was to allow changes in the intervention over time to be captured. Fieldwork was timed to coincide with key intervention activities. Within a flexible research design (Robson 1993; Gilson 2012), the initial ‘theory of implementation practice’ was developed as a ‘baseline’ for the first data collection which informed tool development, represented our understanding of the intervention at that time, and was used as a heuristic to test the intervention implementers’ assumptions about the intervention (initial diagram in *Supplementary Data*). These assumptions were tested and

adapted—also necessary as the intervention evolved over time (although not the implementation approach, discussed below).

Data collection included 23 in-depth interviews, a focus group discussion, observation of intervention activities and primary project documentation. Participants and observed activities were purposively selected. Participants included members of the Health Alliance International (HAI) intervention team (e.g. the Mozambique-based Country Director, Coordinators, Advisors and Assistants); provincial- and district-level health officials (Programme/Department Managers, Programme Supervisors, District Health Directors, Chief Medical Officers, District Health Statisticians); health workers in facilities; and other partners (e.g. staff from the Beira Operations Research Centre, CIOB). Observations included full duration attendance at routine intervention activities such as training on the management of the routine Health Information System, facility supervision visits, and data quality review workshops (DPREMs). Where possible, interviews were conducted before or after activity observations, or were conducted where respondents were routinely based, generating added insights into the intervention context. Participants were assured that this was not evaluation research, that the research was being conducted by external parties, and therefore no funding decisions were connected to this research (as agreed by DDCF).

By the end of the research period (late 2016), the research team (and implementation partners) felt that saturation had been achieved: a range of relevant participants had been interviewed, all possible activities had been observed, and thematic repetition was appearing in the materials. Analysis and literature review continued into 2017, including synthesis of primary documents such as intervention reports and publications by the evaluation team, as well as secondary materials.

Three HPSR researchers from the University of Cape Town (UCT) collected data in collaboration with implementing partners (from HAI)—observing relevant ethical procedures. Respondents provided informed consent, and confidentiality was observed during data collection and publication. Interview notes were securely stored electronically, were only available to the University of Cape Town researchers, and were given coded names. Paper-based records were also kept in a secure location and were only accessible to personnel involved in the study. Personal identifiers were removed from all research-related information. During fieldwork, translators provided translation from Portuguese to English—as well as back-translation. All research materials were made available to participants in both languages.

Data were analysed iteratively and reports developed after each fieldwork phase. Following framework coding principles (Ritchie *et al.* 2013), data were, first, organized and analysed according to intervention activities to allow the description of key intervention activities and changes over time. Second, the data were analysed thematically, enabling the inductive identification of key implementation practices and principles.

Throughout the research, information was analysed collaboratively with implementation actors to enable cross-checking and validation. For example, the Mozambican implementation team provided input on initial descriptions of the HSS intervention; the Cape Town team reflected together on the fieldtrip summary reports and initial lines of analysis; during the 2015 fieldwork visit, the UCT researchers and in-country collaborators reflected together to make meaning of experiences during data collection; and in 2016 a 2-day analysis workshop was held for the UCT and HAI teams to interrogate, correct and validate the ideas in a report written for this

purpose and jointly generate key themes reflecting the intervention experience.

Results

Description of the Mozambican district HSS intervention and the change it planned¹

The AHI-PHIT intervention was a partnership between the Sofala Provincial Directorate of Health (PDoH), based in Beira, and the international non-governmental organization HAI, which is affiliated with the University of Washington (USA). The other key partnership institutions were the Eduardo Mondlane University's School of Medicine and the Ministry of Health's (MoH) CIOB. HAI has extensive experience working in this region of Mozambique, including in general primary health care, reproductive health, malaria and HIV-related programming (Micek *et al.* 2009; Sherr *et al.* 2009). The PHIT partnerships were funded after a letter of intention process and 6-month planning grant, which included participatory activities with the Sofala PDoH in 2007 and 2008. Thereafter, the intervention began with further engagement and joint planning during 2009 and 2010, and intervention activities were implemented from 2010 to 2015, with some activities ending in 2015, and others continuing beyond that point. The 2007–2010 period was characterized by the negotiation and shaping of specific activities, and the careful establishment of the relational aspects of the partnership (see below).

Sofala Province, the intervention site, has a population of about two million people and an estimated 146 health facilities (Sherr *et al.* 2013a). The facilities comprise 1 central referral hospital in Beira, 4 rural hospitals, 114 health centres and 27 health posts. According to research participants, rural hospitals usually have a total staff complement of around 50, while health posts could have a maximum of three staff (which could include a Clinical Officer, Maternal and Child Health Nurse and Cleaner), while others have approximately five (including pharmacy and preventive medicine health workers). We observed that some health centres and posts operate in difficult circumstances, including being physically remote and cut off, not having access to piped water, and having limited electricity provided via solar panels. Each district had a few medical doctors (two or three in one district we visited). In addition to their clinical work within the hospital, one of these doctors would also be appointed as the Chief Medical Officer (CMO) for the district. Sofala Province has 13 districts, each with a district management team comprising of a District Health Director, CMO, Statistician and Administrator and heads of programmes when they exist, such as HIV, MCH, laboratory, pharmacy, Tuberculosis (TB) and vaccinations.

In an early phase of implementation (Sherr *et al.* 2013a), the HSS intervention had three core focus areas, around which intervention activities organized. These were:

1. Strengthening district and provincial level leadership and management through a variety of capacity-development activities, including in-service training and mentoring;
2. Improving the data system and data use by improving the quality of routine data and facilitating improved decision-making by district and provincial managers; and
3. Building capacity to design and conduct operations research in order to guide integration and system-strengthening efforts.

In a nutshell, the intervention's logic was that it would be possible to improve both the quality of the routine data system, and *ad*

Table 1 Main intervention activities targeting data system and use (Source: authors)

Intervention area	Activity description
Supporting the provision of computers, internet connectivity and electricity	Equipping certain district offices with computers and internet connectivity for electronic data entry and transmission. Training workshops for various staff, including District Health Directors and CMOs, in basic computer skills. A generator was also provided to one of the districts.
Regular data assessments	Monthly checks of data reports by district and provincial health information system staff, with feedback given to fix gaps and mistakes.
Annual data assessments	Annual surveys of data quality conducted by CIOB and HAI. This was used to judge the functioning of the health information system across all health system levels, using information generated by selected health facilities. Results were fed back to the health facilities and districts.
Supportive supervision	Supporting province-district and district-facility quarterly supervision visits in order to increase the coaching and mentoring of managers and to support accountability in the system.
In-service training	Training courses for health managers, based on a MOH curriculum covering the use of data in decision-making. At first, the supportive supervision was linked to the in-service training, as a form of post-training coaching. Later, they were commonly linked to DPREM (see below). Another independent team from the Provincial Statistics Department carried out supervision visits to complement programmatic supervision.
District Performance Review and Enhancement meetings (DPREM)	Initially conceived for the Maternal and Child Health (MCH) programme, these meetings became key to intervention implementation and were ultimately also offered across Malaria, Pharmacy and TB programmes. They involved a series of activities culminating in a 2-day workshop, including training on data use, generating ideas for service improvements based on data, as well as other inputs (e.g. malaria workshops may include refresher clinical training).

hoc information (primarily operations research). By working with managers, more could then be done to analyse this information and to use it to: plan better, improve the allocation of material, human and financial resources, and identify and resolve service delivery problems. This would lead to better-integrated, more responsive and higher quality services which, in turn, would impact population health indicators. The partnership with the PDoH was central to the intervention's intended system-wide effects, as it was the access point to all the districts in Sofala. The district-level focus was relevant because decentralization had given districts important planning and management tasks and authority, although still characterized by underfunding, limited capacity to undertake the transferred tasks, weak data systems, and limited know-how in using data for planning and management decisions.

As the intervention did not focus on the direct delivery of services or medical care (perhaps the most direct route to influencing population health indicators), a key question for the intervention logic (also for the HAI implementation leaders), was whether the activities being implemented and the changes being observed would, within the lifecycle of the intervention, proceed along the anticipated causal pathway to influence the population health-focused evaluation indicators. Similarly, there were concerns about how other 'real wins' of the intervention, of the kind discussed in this paper, would be recorded and valued, especially if population health indicators did not change or changes could not clearly be attributed to the intervention.

Research respondents understood that the core logic of the project design emerged as a combination of the DDCF funding call for HSS interventions at a district/primary level, and the designers' (primarily HAI and University of Washington staff) prior experience working in Mozambique. DDCF encouraged intervention adaptation to the local context and provided significant flexibility to the grantees.

Early in the intervention life-cycle, the PIs noted mid-stream adaptations to the intervention activities. Resulting from '... shifts in national programs, available funding, and iterative learning, there have been a number of notable changes to the PHIT intervention design over time' (Sherr *et al.* 2013a, p. 6). One of the most significant changes reported to the team of researchers undertaking this

research, was how, over time, more focus and resourcing was devoted to data system strengthening and use by district and provincial managers.

The data-piece turned out to be much bigger as we went along—and much easier to do than the leadership part ... The planning and leadership part was so much more difficult—so we did much less, and rather directed some of those funds to the districts ... Then the leadership training, we did some, and then decided not to do it, to do different training, you just can't change leadership after a week-long workshop, so we adapted the plan there ... and focused instead on data meetings, and on using information in a leadership way (201406r HAI Team).

In other words, instead of offering formal management and leadership training, the focus on data use and analysis included a focus on the strengthening of management systems through using data for decision-making. Table 1 depicts the main intervention activities that targeted data system strengthening and data utilization.

In addition to the above, in support of the generation and use of better 'non-routine' information, technical and financial support was provided to CIOB to support local operations research and capacity development (Sherr *et al.* 2013a). Discretionary funds were also channelled through the PDoH to the districts, ranging from US\$350 000 to US\$500 000 per annum, depending on population size, workload, and annual plans for the use of the funds. The funds were intended to be 'flexible discretionary funds' and could be used for various district priorities (except staffing), payment of bills between budgetary disbursements (such as fuel, internet, electricity payments); or repairs and maintenance (of district offices, health facilities and vehicles).

It is in this context of adapting intervention activities that this paper highlights key implementation practices and approaches underpinning these activities—as well as important factors such as contextual change that influenced the implementation practice.

Key features of the HSS implementation practice

We found the implementation practice of this HSS intervention to be characterized by four distinctive features, which were mainly geared towards generating *ownership* of the intervention by the

Table 2 Forms of integration

Form of integration	Examples
The intervention's activities were integrated/aligned with the priorities of the health system	Improving data quality and use was expressed as a priority of the national and provincial health system, so that the intervention was perceived to have a substantively relevant focus.
The intervention was physically integrated into the health system	The HAI team had a small office in the PDoH building, an important allowance in the context of very limited space. HAI provided small resources such as coffee, printing, a computer and the internet, ensuring a routine 'drift' of PDoH staff in and out of the office, opening communication channels and demonstrating the intended cooperation.
The intervention was financially integrated into the health system	Per diems paid out at meetings were set at government rates (significantly lower than other NGO rates).
The intervention was operationally integrated with the health system	There was joint decision-making with PDoH at all stages of implementation, and joint planning for events such as DPREMs. Documents and events were branded as belonging to the PDoH (rather than HAI or the other intervention partners), even if these documents were originally generated by HAI. Also, the HAI intervention team only engaged with districts or facilities if they were accompanied by public health system staff.

public health system (in this case the PDoH) and strengthening existing routine practices and procedures.

Integration of the HSS intervention into the health system—and working with the system

A central characteristic of this intervention approach was the extent of its integration with the public health system. All interviewed personnel (HAI and PDoH) shared the assumption that the intervention should be fully and deeply integrated into the provincial and district health system. The intervention was therefore not perceived as a classic 'partnership' between funding, implementing and health system parties, but was understood as being 'different' because it was seen to be 'co-owned' by the public health system in which it was implemented—although supported by external parties such as HAI and DDCF. *'It's about the way that we work together. DPS [PDoH] is open to the ideas of HAI and HAI is open to the ideas of DPS. HAI is inside DPS'* (201406 b PDoH Manager).²

The HAI team put considerable energy and resourcing into sowing and feeding this understanding of implementation practice—that the intervention activities should be fully integrated in the provincial and district health system—and it characterized *all* activities. For example, new HAI implementation staff were briefed on how they needed to 'behave as part of the system' before they carried out intervention activities. Interviews with provincial and district-level health system actors confirmed that this implementation practice was applied strongly, visibly affecting the way activities were carried out. All respondents displayed a high sense of 'ownership' of the HSS intervention, and all HAI implementation staff showed a strong awareness of their 'expected appropriate behaviour' for ensuring that the intervention was understood to be 'owned' by the health system. Table 2 outlines the various forms taken by this integration, with brief examples.

Linked to the intervention's integration with the health system was the idea that it would seek to stimulate change while working *with* the system (so not leading the change from outside). In other words, it would use its closeness to and integration with the health system to support it; not to lead it, direct it or impose change on it. This principle found expression in two ways. First, relating to the overall intervention, the actors in the Mozambican health system were accustomed to outsiders giving money accompanied by directives on what needed to be done. However, this intervention proceeded from the assumption that what the public health system actors wanted to do was important, interesting and valuable, and so it was not directive about what specifically needed to be done or

how it needed to be done. Second, with respect to specific intervention activities such as supervision and data quality review workshops (DPREMs), care was taken not to be seen as criticizing the health system or health system actors—with engagement driven by sentiments such as 'what are your challenges' and 'how can I help you', rather than 'this is what is wrong' and 'this is what you must do'.

This was described by HAI implementation team members as an 'intentionally humble and courteous' approach, and was seen as central for facilitating partnership, strengthening relationships between multiple stakeholders, and ensuring the intervention's acceptance into the routine system. It was apparent in all interviews and observations that implementers were extremely sensitive to issues of power and positionality in all engagement; and were seeking to practice a culturally and contextually appropriate approach in the Mozambican health system (see below). Humility and courtesy were characteristics of the implementation practice, and were intervention features that were deliberately operationalized within intervention activities. For example, the HAI and PDoH leadership modelled this behaviour during observed activities, and the activities themselves had specific design features which gave space for acknowledgement and appreciation of each other. When respondents described challenges to the intervention overall, they usually foregrounded failures in this implementation practice. For example, if tension arose between the international partners (DDCF/University of Washington) and the implementing organization (HAI), or between HAI and the PDoH, this was usually described in terms of the partner utilizing their power inappropriately, and 'not having a humble approach'. Tensions at a facility-level were also usually described as a failure of courtesy and humility, for example whether the health worker was expected to stop attending to clients to participate in the intervention activities or not.

Flexibility, adaptation, responsiveness

The intervention was sustained over 7 years, and in 2018, 2 years after the project end and formal evaluation, there are signs of core activities being sustained, routinized use of evidence in meetings and decision-making, and aspects of the intervention approach remaining relevant to the local health system. According to participants, the *flexibility* of the implementation practice was key to this sustainability. Central to flexibility was how the intervention adapted its own structures and activities to changing circumstances and difficulties. For example, while the initial plan was to train health system staff in leadership and management, when this proved difficult and

Table 3 Dimensions of trust, with implementation practice examples

Key dimensions of trust	Examples: implementation practice
Integrity	<ul style="list-style-type: none"> • HAI leaders ensured that per diems paid were aligned with MoH levels • DPREMS were always jointly planned
Benevolence	<ul style="list-style-type: none"> • Intervention decisions were generally made after joint discussion • Mutual openness to ideas from PDoH and HAI intervention staff; in planning, seeing activities from all perspectives, not just that of the intervention • Being flexible in how resources such as cars are used; and trying to respond positively to specific requests such as printing forms to see the MOH through shortages
Competence	<ul style="list-style-type: none"> • Practicing the ethos of ‘doing what you said you were going to do’

likely ineffective, a stronger focus on DPREMs was developed. In DPREMs, data analysis and use in decision-making became a practical way of improving leadership and management by encouraging managers to pay attention to data and own it, judge progress against it and use it for generating ideas about improving health system functioning—a way of doing leadership differently. ‘Doing’ is a key word because it signals another key aspect of implementation practice: a preference, expressed by implementation actors from HAI and the PDoH, for learning-through-doing, in contrast to didactic training.

As noted earlier, the intervention funder (DDCF) supported this flexible implementation approach (which allowed some leeway for adaptation of intervention activities, if not final outcome measures), described in all DDCF’s documentation as being ‘responsive’ to the unique characteristics of the local health system. Respondents noted the funder’s support of flexibility as being critically important (and highly appreciated), especially in the face of implementation challenges that were faced during the 5 years of intervention. Nonetheless, challenges also arose as a result of this flexibility. For example, when staff became concerned about how they would report to the funders based on the original intervention indicators:

[Being flexible] ... rather than going and saying, this is what you need to do on a vertical program ... that was a good thing ... Living it and being it is the right thing to do, but at the end of the day, that makes the targets much more difficult ... [and more] difficult to explain to the donors ... (201505f HAI Team).

Said differently, a flexible implementation approach, resulting in flexibly adapted intervention activities, can create challenges down the line, if agreed original outcome measures are no longer totally aligned with the intervention activities (more below).

Relational trust-building

All the above ways of working—integration, working with the system and flexibility—crystallize a final important feature of the implementation practice: the focus on and success with relational trust-building. From the initial conceptualization of this research, a key hypothesis was that both interpersonal and institutional trust, for example reflected in transparency, inclusive processes and fairness (Gilson 2003), would be key to implementation experience. On the one hand, a measure of trust was an important ‘input’ into the intervention. Without it, it would have been impossible to integrate the intervention into the system or to act flexibly to support the intervention and health system. On the other hand, trust-building was not a once-off event or limited to the start of the intervention, but rather a continuous focus and an ‘output’ that was generated and reinforced over the years—and which became important to how the intervention was perceived.

Our indicators of progress [for the whole HSS intervention]? I think that is best shown through the story of the data meetings [DPREMS], how many we did from 2010 to 2012, and how many requests we got to do them ... and the trust we built with DPS [PDoH] (201406r HAI Team).

The reasons we work well together, it is not only HAI, but the DPS [PDoH] too—we are all open in our communication. It’s about the way that we work together. DPS is open to the ideas of HAI, and HAI is open to the ideas of DPS. We work and trust. HAI is inside DPS (201406b PDoH Senior Manager).

Table 3 presents key dimensions of institutional trust (Gilson 2003), followed by examples of relevant intervention implementation practices. In this conceptualization, integrity can be seen through transparent rules, consistent procedures, and fair and impartial decision-making; benevolence can be demonstrated through inclusive procedures; and competence can be demonstrated by sanctions for rule-breaking and being seen to achieve fair results. The intervention’s key implementation practices are illustrated through the example of the Malaria DPREM in Table 4.

Factors influencing implementation practice

We turn to key factors that *influenced* the implementation practice of this intervention, as understanding these factors allows consideration of whether and how such practice might be enabled elsewhere.

HAI organizational culture and history

At the outset of this research, it was anticipated that organizational culture—the shared assumptions that organizations learn as they solve their problems that have worked well enough to be considered valid and taught to new members of the organization (Schein 2010)—would be a key factor in the intervention implementation experience. Through this research it was confirmed that the organizational culture of HAI was indeed critically important to the *approach* of working with the system, being integrated in it, and building trust (see below). This organizational culture was, in turn, influenced by HAI’s own institutional history and experiences.

At inception in 1987, HAI was known as the Mozambique Health Committee, a ‘solidarity organization that shared the public sector, socially minded approach of the Mozambique government’ and supported work to build the primary health care system, while campaigning against the pernicious influence of neighbouring apartheid South Africa in Mozambican affairs.³ HAI was conceived as a ‘service delivery support organization’, not a research institution, so before the DDCF-funded intervention it had been operating in the region for many years, focusing on primary healthcare, MCH, malaria control, TB control and HIV service provision. Respondents described how HAI’s senior leaders had emphasized integration with the PDoH, engaging the PDoH and bending one’s activities

Table 4 DPREM—bringing together the different implementation practices—with inserted key feature indications in italics (Source: synthesized interview transcripts, authors' emphasis)

For Malaria, DPREM began in 2013 when the Provincial Malaria Programme Manager took it on board, focussing on improved data use for the malaria programme [*integration*]. The activity proved useful and became part of the system [*integration/working with the system*]. The initial idea was that an integrated PDoH-HAI team would visit each district twice per annum [*integration/trust*] complemented by more frequent supervision activities. However, implementation scope was limited by factors such as the remoteness of some districts and civil unrest in Sofala during the implementation period, which required some re-planning [*flexibility*].

DPREM centred around a 2-day workshop where health workers from primary healthcare facilities presented secular trends in their programme data and were provided with refresher training. Each DPREM included pre-planning and add-on activities; all implemented through an integrated approach. Annually, HAI and PDoH staff constructed a timetable for the DPREMs [*integration/trust*]. Before the scheduled meeting dates, a HAI-PDoH joint meeting planned schedules, logistics, and budgets [*integration/trust*]. These plans were communicated to district officials. One month in advance, a printed PowerPoint template was sent to each health facility in the district [*working with the system*] for staff to review their facility registers, extract relevant data, and transfer these onto printed slides. A week before the meeting, members of the HAI-PDoH team travelled to the district capital to prepare the logistics for the meeting [*integration/trust*]. Before the workshop, one or two health workers from each facility travelled to the district capital where they were assisted by HAI-PDoH staff to enter the data from the template into the electronic PowerPoint version [*integration/trust/working with the system*]. They also received coaching in presentation skills if necessary [*working with the system/trust*]. Before or after the workshop, joint district and provincial teams travelled to health facilities to conduct supervisory visits for that particular programme.

Typically, during the first day of the workshop, a health worker from each facility presented the PowerPoint slides—including summarized data, ideas for health service improvements in response to the data, and a comparison between the data and the existing electronic health information system data to allow for an assessment of data quality. There were usually three to four presentations, followed by questions and suggestions for each health facility. Health workers therefore learnt by example and by doing. Once the presentations were complete, other workshop activities included refresher training on clinical protocols, group-based reviews of patient charts from complicated or fatal cases, and group-based data concordance exercises where a variety of data sources were compared with enable a deeper understanding of data processes and data quality issues. The workshop culminated in an action plan for improvement in each health facility. Post-workshop, a report and agreed action plans were drafted.

It was observed that participants understood this to be an activity run by their own public health system managers, not an external organization [*integration*].

around the local health system. Although not explicitly codified, this philosophy has endured, for example in staff instructions on how to engage with the PDoH or written instructions on facilitating DPREMs. As an intervention leader commented: "... *I just stressed 'this is how we work'. We kept saying 'we are here to help the ministry'...*" (201406r HAI Team).

HAI's organizational culture fitted with and strengthened the required DDCF-AHI approach for HSS interventions and the integrated and relational approach resulting from this culture was also preferred by the PDoH, who noted they had been badly burned by other funders and institutions, who tended to 'charge in and demand'. Consequently, there was often mutual distrust between these other funders, their chosen implementers, and the PDoH, which made the implementation of interventions generally challenging.

The approach of the funder towards HSS

The intervention's flexibility clearly relates to the intervention team and their responsiveness—it is also an inevitable part of working with a complex health system. However, credit is also due to DDCF's approach to funding these HSS interventions. Two issues are most relevant here. First, the length and size of the funding: DDCF funded each AHI country between \$8-\$15 million over at least 5 years.⁴ This amount of money and length of time supported intervention flexibility. Second, DDCF's attitude was supportive of adaptation and flexibility. As the then programme director of DDCF wrote in 2014:

Assessing the delivery strategy can get tricky, as a number of interdependent events during the implementation process will determine the eventual outcomes. As the PHIT Partnerships began implementation, many modified their strategies to address gaps, obstacles and previously unrecognized issues that were identified once intervention efforts got underway. This iterative process made sense and, in the foundation's view, showed a responsive team that was attentive to the implementation process. Teams should respond to experience.⁵

DDCF also encouraged flexibility in interventions' scheduling, for example allowing for lengthy set-up phases, which (in Mozambique), took over a year. Not only was adaptation from the original intervention design allowed, but DDCF encouraged implementation teams to engage reflexively on the implementation process, as evidenced by their support of implementation research, and the design of and commitment to annual meetings and engagement with implementation teams.

In Mozambique, this flexibility and the size and length of funding commitment was highly valued by all stakeholders, who noted repeatedly that complex health system interventions required all these factors for successful implementation—but this was not often possible in the context of other funder/implementer partnerships. '*DD was a little vague, intentionally so, it is a good thing ... the project was made big, where it could appear flexible ...*' (201505f HAI Team). The length and flexibility of the intervention were key factors that allowed the intervention to 'stick' in the health system—becoming more fully integrated in routine health system functioning.

Culture(s) of the public health system

As noted by various respondents and confirmed by observations, the Mozambican health system, underpinned by notions of age and seniority, has a strong hierarchical bureaucratic culture. This cultural factor appeared to provide a resource that supported implementation. The provincial level of the health system was the key entry point for the intervention. The province, in turn, 'controlled' or oversaw the districts, and in the districts, health workers and officials generally adhered to what their superiors asked. Therefore, the hierarchical culture contributed to uptake of the intervention activities. At the same time, however, respondents felt that the focus on data and decision-making, for example, was of genuine interest and relevance because it was an important national priority and directly relevant to their work. This encouraged their engagement with the intervention activities.

However, in some respects, the hierarchical culture did not fit well with how the intervention wanted to work and what it sought to achieve. For example, the culture had the potential to undermine supportive supervision, as well as the atmosphere of constructive peer engagement at the DPREMs. Some respondents also thought that the culture undermined team-based decision-making because processes were concentrated with certain actors and that it sometimes inhibited operational research because people did not feel that they had the autonomy to make decisions based on the research results. However, the intervention team appeared to actively work to mitigate these risks—for example, attempting to involve a District Statistician in more decision-making, or pre-briefing and encouraging senior officials to act in ways that supported the ‘implementation spirit’ of the DPREMs.

Wider context, shocks and stressors

Finally, a range of wider contextual factors influenced implementation practice. At the organizational level for example, a different but related intervention grant (from another funder) to HAI ended early in the DDCF funding cycle, leading to a major change in implementation structures. Meanwhile, another NGO operating in the same region doubled their per diem rates for meeting attendance and increased their salaries, resulting in a loss of key staff from the AHI-PHIT intervention, as well as increasing tensions relating to meeting practices in the AHI-PHIT intervention. The health system also faced major shocks over the implementation period. Political and civil violence flared up in the Gorongosa district from around 2013, which forced implementation adaptation (several health centres were shut down to ensure staff safety). A major contextual factor and routine health system stressor was the high level of staff turnover in the health system (at the provincial level, between districts and the province, and between rural and urban areas). Not only did this result in new staff needing to be trained or inducted into the implementation practice, but it also put stress on the trust—and relationship-building at the core of this intervention.

Implementation staff noted that in hindsight, insufficient attention was paid to routine health system stressors in the early design stages (2009–2010). For example, they had not accounted for how some areas lacked basic elements such as running water and electricity, and many health workers did not have basic computer skills, making the more advanced concepts of data improvement and use a challenge. Such factors required that the implementation practice (and activities) adopt a ‘basics first’ approach. In 2011–2012, the intervention adapted its initial plans and supported the provision of computers, basic computer skills-training, internet connectivity, and a generator to some districts. While supporting the strategic rationale of placing resources at district level, it was also simply necessary to be able to progress the data strengthening and utilization elements.

Discussion

Overall, this implementation approach (and the practice thereof) resulted in an external intervention with activities that can be characterized as ‘integrated’ or ‘embedded’. The notion of embeddedness is increasingly being used in both HSS and HPSR to reflect on the extent to which large-scale health system change initiated externally is owned by and integrated with local health systems (Olivier *et al.* 2017). This type of implementation practice influenced the positive reception of the intervention—as supportive and respectful of the health system—by all the PHIT partners and all health workers

interviewed. Even though this research did not seek to assess the success of intervention activities—it did show how closely perceptions of *intervention activity* success were tied to *implementation practice* success. For example, when discussing implementation practice, respondents also reported improved data quality and data use in decision-making; facility and district managers taking greater responsibility for analysing information; the improved use of information, especially at district level; improved reporting of data from district to provincial level; and a generally improved information system, with the system in Sofala described as the best in the country;

At the national level, they had a meeting and the National Director of Planning and Cooperation said that Sofala is number one in terms of activities. The first thing is that you have to work hand in hand—between HAI and DPS [PDoH]—make your plans together. The organisation that is implementing and DPS should work hand in hand, make plans together, solve problems together. The success of this project is working together from beginning to the end, all activities to be carried out as one single team ... At national they are always talking about Sofala—if you want to do something positive go and learn from Sofala in terms of those data review meetings [DPREMS] (201505b PDoH Manager).

Participants perceived the tangible intervention successes to be closely tied to the more intangible implementation practice elements. This was seen at the level of the intervention as a whole, and also at the level of specific intervention components such as the flexible budgets allocated to districts, which was specifically noted and valued.

The implementation *practices* meant the intervention could seek to make an impact at scale. The PDoH was this intervention’s key health system entry point. At this level, managers routinely consider and work with province-wide systems and all the districts in the province. The intervention’s principles of integration and working with the system meant that it therefore also addressed the province at scale, rather than being limited to vertical programmes or selected districts.

The key implementation practices around integration and working with the system likely affected the scheduling and pace of the intervention’s work. Some implementation leaders reflected that this work required the courage to push for innovation where possible, as well as patience, because working with the system means that the innovation’s ‘clock’ is set to the pace of the routine health system, which can be slow and irregular in comparison with more closely controlled programmatic interventions. It was noted, for example, that the annual planning for DPREMs could only be a ‘loose guide’ as the PDoH changed plans rapidly and with limited warning, with visitors tending to be a major disruption to routine activities at both provincial and facility level. Had the intervention worked differently, it might have had more control over the schedule or worked at a faster pace to implement more activities, although it is not clear that this would have resulted in better outcomes. Sacrificing speed by working with the system likely supported the routinization of the intervention’s activities (see above), by fostering ownership among health system actors and creating demand for the activities from within the health system, thereby supporting the sustainability of the activities over time and after the end of the intervention.

The contextual factors that influenced intervention implementation highlight the importance of implementation practice features such as adaptability, flexibility, and trust-building. The more the health system and the intervention faced shocks and stressors, the

more relevant it was that the intervention was flexible, or that trust had been built as a resource to sustain implementation. The intervention was likely more resilient to everyday contextual shocks and stressors because of the implementation practice (Gilson *et al.* 2017).

Arguably, this also augers well for sustainability. While, it is not possible to make a definitive judgement about sustainability yet, there are promising signs. First, the intervention was sustained over a long time and weathered significant health system and contextual changes. Second, there are signs of the intervention ‘sticking’ on, or more accurately, *in* the health system—through capacity being developed at several levels, system strengthening occurring across the health system building blocks, and indications of implementation practices being taken up in the health system. For example, it was reported that several other funders had taken up and were applying the tools developed in the data review meetings (DPREMs). Furthermore, provincial managers had adopted some of the DPREMs into their routine cycle of reviews, and when the funded intervention was closing down, there were several discussions about how to reallocate existing health system resources towards supporting the continuation of activities, particularly the DPREMs.⁶

Conclusion

The analyses of the population health gains from this intervention are published elsewhere, and are considered to be a cautious success in HSS—with a second round of long-term HSS intervention activities being funded by the DDCF AHI. This second round is being managed from the central Ministry of Health level, and is thus being implemented in more provinces beyond Sofala Province. This research focused on the implementation practice (with a health policy and systems research lens) within this complex HSS intervention in Sofala Province, Mozambique. We focused in particular on implementation practice—which all involved local parties reported to be highly appreciated and an under-considered ‘hero’ of the intervention.

Some might consider these highlighted implementation practice issues ‘obvious’. The need to develop ownership of an intervention, of building trust, adapting to contextual change, and for funders to consider long-term-adaptive support for complex systems change *is* obvious. However, implementation practice in HSS is rarely reported in close detail, and these ‘obvious’ issues are rarely intentionally managed, reported or measured. This case study shows how important implementation practice can be as it underpins HSS intervention activities and their success—and suggests that it may need to be taken more seriously into account by funders, intervention designers, implementers, and researchers—as a key element of intervention design, management, and evaluation.

Even in this case, HAI staff and PDoH partners consistently noted that they had not actively considered the implementation practice features and influences described above (before the external researchers began asking questions about it). Most of the implementation practice was ‘instinctual’—based on deeply ingrained and shared organizational culture assumptions about how to work. In this case, there was quite a lot of ‘happy circumstance’, such as the coming together of HAI, health system and DDCF cultures and implementation approaches. A key conclusion is how important organizational cultures are in HSS intervention success (of all engaged institutions), and that organizational culture therefore needs to be actively considered, especially for interventions involving multiple

parties, and that intervention design might need to include intentional cultural change.

As is to be expected for an HSS intervention in a complex adaptive system, this intervention was *highly complex*: it had multiple objectives and focus areas, many different activities at different health system levels, various actors, and faced multiple contextual influences. However, while the intervention activities and context were complex and adaptive, the implementation practice remained relatively consistent. This case study suggests that the implementation practice was the stabilizing ‘glue’ that held the intervention together, and enabled it to ‘stick’ more effectively, and it was also a key enabler of scaling up of the intervention (see Hanson *et al.* 2010). The implementation practice, as an inseparable part of individual activities and the achievement of their objectives, played a significant role in the reported success of the intervention. The implementation practice was clearly central to the buy-in that the intervention received; it promoted innovation in the health system without disrupting it; it communicated messages that were central to the success of individual activities (e.g. how the DPREMs stimulated health worker learning and initiative, and counteracted the hierarchical culture); and laid the foundation for the sustainability of activities.

This experience stresses the importance of taking implementation practice more deliberately into account in HSS interventions and of being more strategic about strengthening implementation practice for complex interventions. It also suggests that a consistent implementation approach and practice might provide some welcome stability to an otherwise complex and adaptive long-term HSS intervention. Finally, the experience of this research, and the insights gained from it, reiterates that there is value in supporting Implementation Research that *accompanies* HSS interventions throughout their intervention life-span.

It is also important for funders and intervention implementers to think very carefully about what indicators of success should be built into future large-scale HSS interventions. In this case, it was critically important to the success of the intervention that trust was built and maintained, that the intervention could be responsive to shocks and stressors, and that there was a strong alignment between funders and grantees. However, this was not formally measured, evaluated, or celebrated within the main intervention (until this research)—therefore potentially missing a big part of the picture, especially since the ‘what’ and the ‘how’ can be so inescapably intertwined in determining if an activity or intervention works (see Gilson 2013).

This case of a large-scale complex HSS intervention provides empirical evidence supporting several well-known arguments in the HPSR literature. For example, that global health donors and recipient organizations need to work as *equal partners* with local health system actors—and that strong and diffuse leadership capacity is needed among low- and middle-income country (LMIC) health system actors (Swanson *et al.* 2015), especially if equal partnership is to be achieved. Capacity-building in health systems almost always requires major personal and institutional change—which usually takes time, and means there are no quick fix solutions. In addition, LMIC health systems face everyday stressors and major shocks ‘routinely’—and being responsive to these requires ‘governance plus’ in HSS interventions (see Balabanova *et al.* 2013), and intentional leadership practices and strategies to improve the resilience of the system (see Gilson *et al.* 2017), and the sustainability of the HSS intervention. This all substantiates funder approaches (such as the one taken by the DDCF here), which have adopted and resourced contextualized and long-term approaches to supporting national actors and strengthening health systems from within. It also substantiates the call for attention to be paid to the ‘routine’, the ‘every day’, and the

‘seemingly obvious’ in health systems functioning, and in complex health system strengthening interventions.

Supplementary data

Supplementary data are available at *Health Policy and Planning* online.

Notes

1. Unless explicitly stated otherwise, this section is drawn from a synthesis of primary intervention documentation, and confirmed through analysis of interviews and by implementation actors.
2. DPS stands for ‘Direcção Provincial de Saúde’ (direct translation ‘Provincial Health Directorate’)—in this paper, we use the common usage acronym PDOH (Provincial Directorate of Health).
3. <http://www.healthallianceinternational.org/history/> accessed 2 June 2016.
4. <http://www.ddcf.org/what-we-fund/african-health-initiative/> accessed 2 June 2016.
5. <http://www.ddcf.org/what-were-learning/the-african-health-initiative-on-understanding-implementation/> accessed 2 June 2016.
6. The DDCF has funded a second round in Mozambique (2017–2022)—but the focus is no longer on Sofala province, but rather working with the central (national) MOH. It remains to be seen what intervention elements have ‘stuck’ more permanently in the Sofala health system.

Acknowledgements

We thank the interviewees for their valuable contributions to this work and the in-country staff of Health Alliance International for their care, courtesy and hospitality. This research was funded via grant 201834 of the Doris Duke Charitable Foundation.

Conflict of interest statement. None declared.

Ethical approval was secured from the University of Cape Town (Ref 668/2013) and the Ministry of Health (MoH) in Mozambique in early 2014 and renewed as required.

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