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HEALTH SYSTEMS BOTTLE-NECKS AND EVIDENCE-BASED DISTRICT HEALTH PLANNING

Experiences from the district health system in Uganda

EBA

Health systems bottlenecks and evidence-based district health planning: Experiences from the district health system in Uganda

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ABSTRACT

Well-functioning health systems are key to the reduction of treatable, preventable and premature deaths, achievement of Universal Health Coverage and attainment of Sustainable Development Goal 3, ensuring healthy lives and promoting well-being for all at all ages.

In many low-income countries where majority of preventable deaths occur, interventions proven to be effective and affordable often do not reach the people who need them the most even with the decentralized health system in Uganda. This is due to constraints and bottlenecks both within and outside the health system and failure to use context-specific evidence to prioritize effective interventions.

Use of district-specific evidence in the planning process is not an end in itself but only a part of the process to improve prioritization of interventions. In order to prioritize high impact interventions at the district level, a multifaceted approach needs to be taken that not only focuses on use of evidence, but takes into account broader aspects of the health system for example governance and leadership which were a major influence in the use of this evidence; limited decision and fiscal space and inadequate health information systems were barriers to the use of evidence.

BACKGROUND

Health system building blocks, relationships and interactions

Well-functioning health systems are key to the reduction of treatable, preventable and premature deaths (Organization, 2004), achievement of Universal Health Coverage (UHC) and attainment of Sustainable Development Goal (SDG) 3, ensuring healthy lives and promoting well-being for all at all ages (A/RES/70/1, 2015). Purposeful efforts to improve the health system's performance will also contribute to poverty reduction and gender equality and is a cost-efficient investment in the long run (Kieny et al., 2017, Kutzin and Sparkes, 2016).

Health systems consist of all organizations, people, and actions whose primary intent is to promote, restore or maintain health (World Health Organization, 2007). According to the World Health Organization (WHO), the health system's goals are 'improving health and health equity in ways that are responsive, financially fair, and make most efficient use of available resources' (World Health Organization, 2007).

The WHO analytical framework disaggregates the health system into six core components (De Savigny and Adam, 2009):

1. service delivery
2. health workforce
3. health information systems
4. medical products such as vaccines and technologies
5. health system financing, also referred to as building blocks
6. leadership and governance (stewardship)

Another analytical framework, the health system dynamics framework (Van Olmen et al., 2012) incorporates components of the WHO building blocks and considers governance and leadership and interaction with the population and actors being central to service delivery. This framework also draws upon the concepts of systems thinking (De Savigny and Adam, 2009, Peters, 2014) by taking into account the dynamic relationships and interactions between the components of the health system. According to De Savigny and Adam (2009), the interactions between the various health system components and how they affect each other is what converts them into a health system (De Savigny and Adam, 2009).

Maternal, newborn and child mortality – Globally and in Uganda

Although significant progress has been made globally and in Uganda in relation to health outcomes, maternal, newborn and child mortality remains a global health challenge. Maternal, newborn and child mortality which is one of the areas of focus for SDG 3 (A/RES/70/1, 2015) is still unacceptably high. About 15,000 children under the age of five die every day – 10 each minute, approximately 5 million every year mainly from preventable causes. About 46 percent of these deaths occur during the first 28 days of life, that is the neonatal period (United Nations Children's Fund, 2017). Countries in Sub-Saharan Africa (SSA) and South-East Asia disproportionately account for high numbers of child mortality (United Nations Children's Fund, 2017, You et al., 2015). SSA also accounts for roughly 66% (201 000) of all maternal deaths, with a maternal mortality ratio (MMR) of 546 deaths per 100 000 live births in 2015 compared to 12 for high-income settings (World Health Organization, 2015).

Uganda, which is the empirical focus in my doctoral research, saw a decline in MMR from 438 deaths per 100,000 live births in 2011 to the current 336

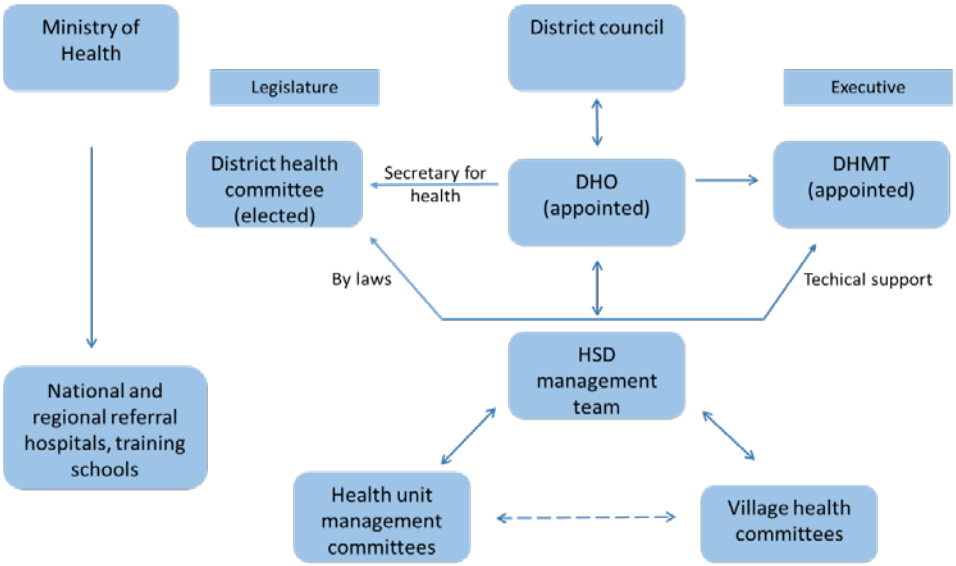
deaths per 100,000 live births (Uganda Bureau of Statistics, 2017). According to the Uganda demographic health survey conducted in 2016, the U5MR also decreased from 147 deaths per 1000 live births in 1995, to 64 in 2016 (Uganda Bureau of Statistics, 2017). However, the majority of these deaths are preventable or avoidable through the provision of timely interventions proven to be effective and affordable (World Health Organization, 2004, De Brouwere et al., 1998). Yet due to constraints and bottlenecks both within and outside the health system (Dickey et al., 2014), effective interventions often do not reach the people who need them the most even with the decentrallized health system in Uganda.

The district health system and decentralization in Uganda

Health systems in many African countries have undergone significant reforms, with decentralization of health services being central to these changes (Bossert and Beauvais, 2002, Meessen and Malanda, 2014). Decentralization is the transfer of authority and responsibilities for governance and public service delivery from the central government to subnational levels of governments (regional, district or local) (Independent Evaluation Group, 2008). The intention is to promote accountability, local preference (World Bank, 2003), and to make health systems more equitable, inclusive and fair (World Health Organization, 2008). In 1997, Uganda took on political, administrative and fiscal decentralization, thereby transferring authority from the central government to the local government authorities, mainly in the form of devolution (Government of Uganda, 1995, Government of Uganda, 1997).

The district health system received political endorsement as the key strategy to achieve 'Health for all' during an interregional meeting in Harare, Zimbabwe in 1987, organized by WHO (World Health Organization, 1987). With the decentralized system of governance in Uganda, the District Health System (DHS) is part of the district local government (Government of Uganda, 1997) and is a self-contained segment of the national health system. The DHS is headed by a district health officer (DHO), in collaboration with appointed officials who constitute the district health management team (DHMT) (Ministry of Health Uganda, 2015). The DHS is governed by a district council of elected officials (Assimwe D, 2007, Government of Uganda, 1997, Ministry of Health, 2013), as shown in Figure 1 below.

Figure 1: Governance structure of the district health system in Uganda



At the district level, the DHMT is responsible for the planning, organizing, monitoring and evaluation of services in the whole district, and effective coordination between all health-related stakeholders in the district (Ministry of Health Uganda, 2015).

District health systems and the planning process

Planning is one of the key functions of the DHMT. The planning process at the district level takes both a bottom-up and a top-down approach. The bottom-up approach is designed to involve input from community members through health facility management committees, as shown in Figure 1 (Ministry of Health Uganda, 2016). At the same time the Ministry of Health sets the national priorities which are communicated to the district local governments, who then make their work plans according to these priorities, thus making the planning process both bottom-up and top-down (Ministry of Health Uganda, 2016). During the planning process, the DHOs together with the DHMT are increasingly making decisions regarding the performance of health services and health system, thus playing a pivotal role in the planning and implementation of health interventions, the management of health services, and the delivery of health outcomes (Faguet and Sánchez, 2014, Green, 2008, Ministry of Health Uganda, 2015).

Use of evidence in the planning process

Evidence-based planning (EBP) is the process of basing decisions about ways to address a problem on information to achieve the best results (Andersson, 1996). Oxman et al. define evidence as concerned with actual or asserted facts intended for use to support a conclusion (Oxman et al., 2009). Decisions are not made solely based on evidence, but other factors are considered as well, such as the priorities at the time of decision making, the context and financial

resources, and the actors involved (Walt and Gilson, 1994). Therefore, the use of evidence in planning for health services involves a complex process of interactions between various actors and different powers, interactions and agendas (Walt and Gilson, 1994), and can be affected by institutional characteristics and the political process.

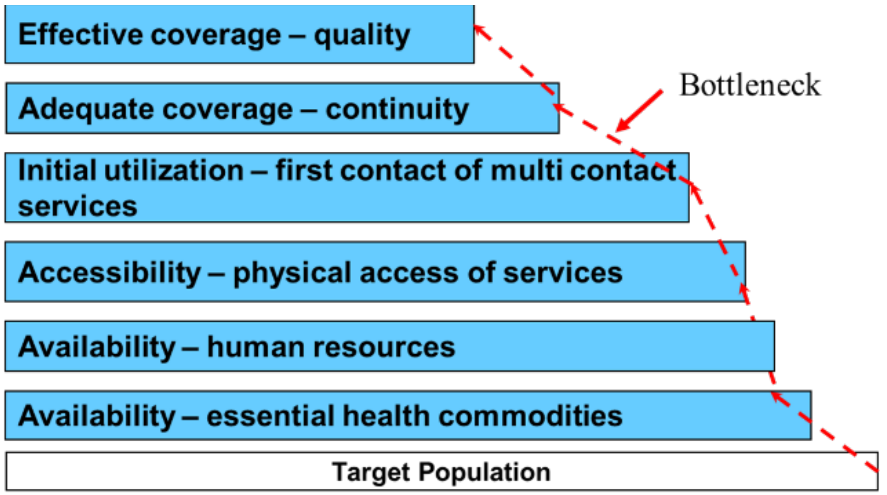
Although planning should be increasingly evidencebased in order to prioritize activities (Brownson et al., 2009, Ham, 1997), context-specific evidence is not always used (Odaga et al., 2016, Rudan et al., 2010). The poor use of evidence has been attributed to the lack of tools to aid priority setting and decision making, amongst other things (Odaga et al., 2016, Rudan et al., 2010). Even when tools are available, they are not always used by decision makers in LICs (Youngkong et al., 2009) as they lack credibility for priority setting in these settings (Kapiriri et al., 2004, Youngkong et al., 2009). One of the tools that can be used to inform the planning process based on district-specific data is the bottleneck analysis tool (Henriksson et al., 2017b, Tanahashi, 1978).

The bottleneck analysis tool to identify gaps in service delivery

The bottleneck analysis tool used in my doctoral research was modified from the original Tanahashi model (Tanahashi, 1978) to enable LICs at the national level to plan for, cost, and budget marginal allocations to health services, and assess their potential effect on health coverage (Soucat et al., 2002). The Tanahashi model for bottleneck analysis displays bottlenecks in the health system with a focus on quality and effectiveness of interventions (Tanahashi, 1978). The model emphasizes the importance of effective coverage, which is coverage of sufficient quality to reach a defined health impact (World Health Organization, 2001, Soto et al., 2013). The modified Tanahashi model has six deter-minants for effective coverage. The first three determinants – accessibility, availability of human resources, and availability of essential

health commodities – are supply-side determinants in the health system while initial utilization and continuous utilization focus on the demand-side, and effective coverage on the quality of service provided as shown in Figure 2.

Figure 2: The modified Tanahshi model for bottleneck analysis



RATIONALE FOR THE RESEARCH

In Uganda and many other low-income settings, the district health system is responsible for implementation of interventions and is the first point of contact with users of the health system. Resources within the district health system in these settings are limited and yet at the same time countries are expected to achieve ambitious targets like UHC and SDGs. Meanwhile, local contexts at the district level are different, and local priorities and 'bottlenecks' in implementation may differ between districts. However, there is a limited understanding of health system barriers to delivery and utilization of

affordable and effective interventions at the district level in low-income countries (Tomlinson et al., 2007), where the bulk of service delivery takes place (Dickey et al., 2014). There is also limited knowledge about planning that is driven by the use of district-specific evidence and identification of bottlenecks to service delivery within the district health system. Most studies focus on the global and national levels (Campbell and Graham, 2006, Ranson et al., 2003). Therefore, the challenge is to identify strategies that address the issues of health systems strengthening and delivery of system-oriented interventions that focus on local contextual needs and the important influences on service providers and users (De Savigny and Adam, 2009).

The planning processes in a low-income country like Uganda has been described as ad hoc and seldom evidence-based (Kapiriri et al., 2007, Maluka et al., 2010b). The poor use of evidence has been attributed to the lack of tools to aid priority setting and decision making (Odaga et al., 2016, Rudan et al., 2010) and not always using available tools are, they are not always used by decision makers in LICs as they lack credibility in these settings (Kapiriri et al., 2004, Youngkong et al., 2009).

Furthermore, the understanding of health system bottlenecks at the district level is limited, with most studies focusing on the global and national levels (Campbell and Graham, 2006, Ranson et al., 2003). Therefore, there remains a knowledge gap on using local data to identify bottlenecks within and outside the health system, and on the use of district-specific evidence in the planning process at the district level in low-resource settings and decentralized systems like Uganda. Additionally, while district health managers are entrusted with the role of planning and ensuring implementation of effective services (Ministry of Health Uganda, 2010, Ministry of Health Uganda, 2015), there is limited knowledge on their ability to carry out evidence-based planning. What happens in the intersection between the technical and the political

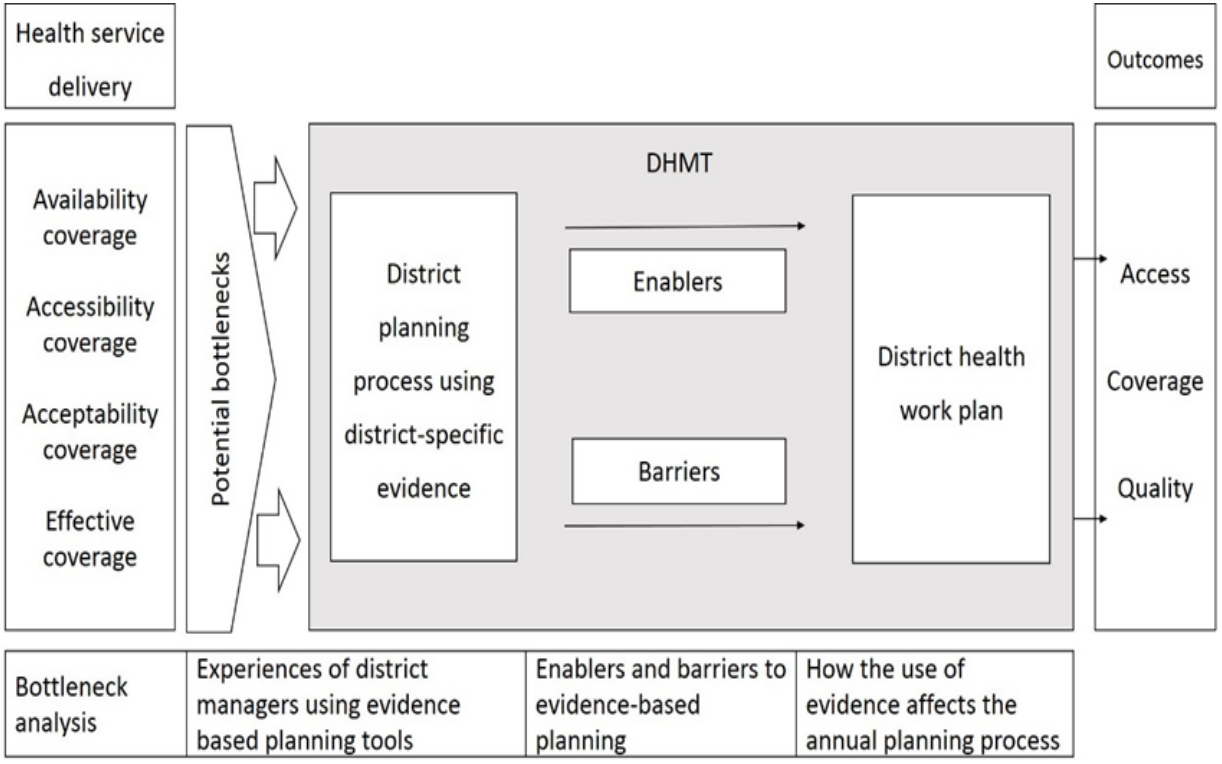
decision makers, and how does the interaction between the technical and the political decision makers influence the use of evidence in the planning process?

Maternal, newborn and child survival interventions were used in my doctoral research as a departure point to investigate the use of district-specific evidence in the planning process. Thus, findings are relevant for prioritizing maternal, newborn and child survival interventions. However, planning for maternal, newborn and child survival interventions does not take place in isolation, but is part of the overall district planning process, which implies that the findings could apply for the district health planning process as a whole.

Findings from my doctoral research (Henriksson, 2017a) contribute knowledge on the utility of the modified Tanahashi model for bottleneck analysis at the district level; how tools that utilize district-specific evidence for decision making and priority setting can be adopted into the district planning process; understanding the barriers and enablers to use of district-specific evidence in the district planning process; and how the use of district-specific evidence affects the planning process and service delivery within the district health system as shown in Figure 3 below.

For policy and program implementation, the knowledge is important to inform the design of future strategies to promote use of context-specific information in the planning process and inform health system strengthening programs in a decentralized health system.

Figure 3. Conceptual framework adapted from Tanahashi T: "Health service coverage and its evaluation", and De Savingy and Adam: "Systems thinking for health systems strengthening"



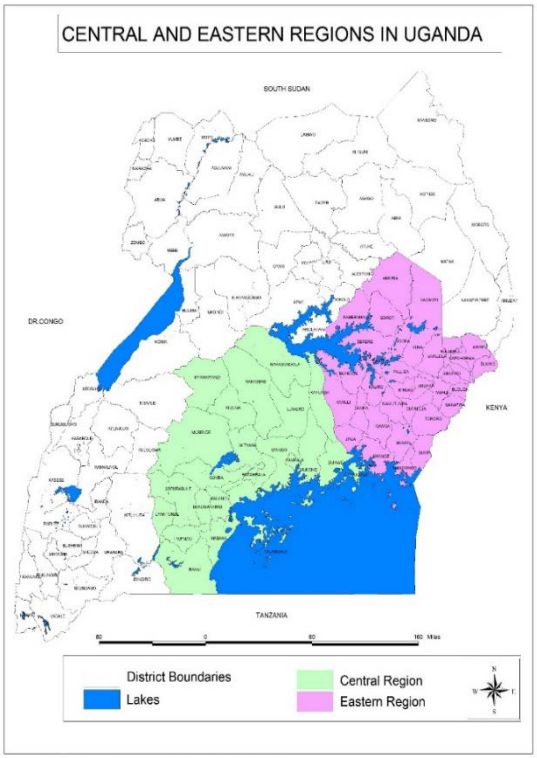
STUDY DESIGN AND SETTING

Both qualitative and quantitative study designs were used and studies were conducted in seven districts in the eastern and central region of Uganda (see Figure 4). The tools that were introduced to the district managers to facilitate evidence-based planning were; Lot Quality Assurance Sampling (LQAS), bottleneck analysis, causal analysis, continuous quality improvement (CQI), and community dialogues based on citizen report cards (CRC) (Katahoire et al., 2015, Waiswa et al., 2016).

Uganda is a LIC located in East Africa with an estimated population of about 34.6 million, with an average annual growth rate of 3.0%. About 48% of the total population is below the age of 14 years. Life expectancy at birth is estimated to be 63 years. About three-quarters of the population live in rural settings, and about 80% of the population are involved in agriculture. Uganda has a gross national income per capita of 690 US dollars (Uganda Bureau of Statistics, 2017).

The health system in Uganda is made up of the public and the private sectors. The public sector consists of government health

Figure 4: Map of Uganda



facilities and the private sector, Private-Not-For-Profit (PNFP), Private-For-Profit (PFP), and complementary health service providers (Ministry of Health Uganda, 2010). Public health facilities account for 55% of care facilities, while PFP and PNFP account for 29% and 16% respectively (Ministry of Health, 2014b). In the public sector, health services are provided by the national referral hospitals, the regional referral hospitals, and health facilities within the district health system as shown in Table 1 (Ministry of Health Uganda, 2015, Ministry of Health, 2014b). The health services are structured by national referral hospitals, regional referral hospitals, general hospitals, health centre (HC) IVs, HC IIIs, HC IIs and village health teams (Ministry of Health Uganda, 2010, Ministry of Health Uganda, 2015), as shown in Table 1.

Table 1: Health facilities and their administrative levels

Health service level	Number of facilities	Population ratio standard	Current situation	Administrative/political level
National referral hospital	2	1: 10 000 000	1: 30 000 000	National (MoH)
Regional referral hospital	14	1: 3 000 000	1: 2 307 692	National (MoH)
General hospital	114	1: 500 000	1: 263 157	District
HC IV	197	1: 100 000	1: 187 500	County
HC III	1289	1: 20 000	1: 84 000	Subcounty
HC II	2947	1: 5 000	1: 14 940	Parish
HCI/VHT	-	1: 1 000 or 1 per 25 households	-	Village

FINDINGS AND DISCUSSION

Findings from my doctoral research show that district health management teams were able to adopt and implement tools, including the bottleneck analysis tool, to facilitate the use of district-specific evidence to prioritize and plan for interventions. However, the limited decision and fiscal space, limited financial resources and inadequate district-specific information were considered barriers to the use of district-specific evidence in the planning process. Due to the decision-making dynamics related to the planning process in the decentralized system, governance and leadership within the district health system was considered a significant influence on the use of district-specific evidence in the planning process. This influence was due to the fact that the elected officials of the district council were perceived to have power over resources and therefore more influence in the planning process. In addition elected officials sometimes had different priorities from those backed by evidence, and the relationships between the elected and appointed officials also influenced the use of district-specific evidence.

Health information systems and identification of bottlenecks to service delivery

Bottleneck analysis can be used to identify constraints in service delivery; this can support the use of district-specific evidence in the planning process at the district level. Identification of constraints that can be potential bottlenecks to service delivery can then inform the planning process as illustrated in the conceptual framework in Figure 1. However, the use of the modified Tanahashi model for bottleneck analysis is highly dependent on the availability of accurate information for each of the determinants. This information may not be routinely collected, especially for the demand-side of the health system. Therefore, the routine health information system needs to be strengthened to enable collection of timely and accurate data that can be

used in the planning process (La Vincente et al., 2013, Soto et al., 2012). Alternatively, the Tanahashi model could be modified to use data that is already being collected by the routine health facility data.

Routine health information systems may not capture information on populations that do not access services for various reasons, like poverty or other forms of exclusion. Additionally, in Uganda and other LICs, routine health information systems capture information from the public health facilities yet a large proportion of services are provided through the private sector (Ministry of Health, 2014a). Furthermore, additional emphasis needs to be placed on ways to adequately capture the user perspective (demand-side) of the health system.

Adopting tools to facilitate use of district-specific evidence

Although district health management teams were able to adopt and implement tools to facilitate the use of district-specific evidence in the planning process, using the tools required a more critical analysis of the evidence which was considered time-consuming and sometimes difficult to synchronize with the already existing planning cycle, especially for the demand-side tools. Furthermore, the community dialogues, which were the demand-side tools were not integrated into already existing structures at the district level, which brought into question their sustainability. To ensure sustainability, dialogues should be integrated into already existing structures at the district level –for example the community based services department. Community dialogues should be aligned to the planning cycle to ensure that the information can be used to inform the planning process (Katahoire et al., 2015).

These findings imply that tools that facilitate the use of district-specific evidence can be used to inform the planning process in the district health system in Uganda and similar settings. However, their implementation should be cognizant of the already existing planning cycles and should in as much as possible be integrated into already existing district structures. In a decentralized system like Uganda, where priority setting is also done at the central level, an approach to utilize district-specific evidence that actively involves the central level (MoH) could facilitate the use of district-specific evidence in the planning process. One way of doing this could be to increase the proportion of funding to the districts through the unconditional grants (Ministry of Health Uganda, 2015).

Decision space in the planning process

Limited decision space was considered a barrier to the use of district-specific evidence in the planning process. Decision space is the term used to describe the range of choice, or authority and responsibility, which decentrallized organizations have been granted by central authorities to make decisions about or influence a range of functions and resources (Bossert, 1998). On paper, Uganda has the deepest mode of decentralization: devolution. In this mode of decentralization, authority, responsibility and accountability are shifted from the central government to the local government (Bossert and Beauvais, 2002). In spite of the extensive decentralization process, where the intent was to enhance local decision-making (Government of Uganda, 1997), findings showed that limited decision space was perceived as a barrier to use of district-specific evidence in the planning process. Therefore, even if tools are available to facilitate the use of district-specific evidence in the planning process, the limited decision space can affect their use as is illustrated in Figure 1. The perceived lack of decision space is not unique to districts in

Uganda as it has been documented in other LICs like Ghana, Zambia, and the Philippines (Bossert and Beauvais, 2002, Kwamie et al., 2015, Somanje et al., 2012, Wickremasinghe et al., 2016), and as a shortcoming of decentral-ization (Bossert and Mitchell, 2011, Hipgrave et al., 2014, Roman et al., 2017).

The perceived limited decision space was described by the district managers largely as a result of priority setting at the central level (Curtale et al., 2016, Ministry of Health Uganda, 2015). As central-level priority setting is a way of rationing health services and allocating resources (Mahapatra, 2002, Ssengooba, 2004, World Bank, 1993), national priorities may not necessarily be those of the district. However, some DHMT members reported that they were able to set district priorities within the broader national priorities. The limited decision space raises the question of the effectiveness of using district-specific evidence within the context of central-level priority setting. Theoretically, for the use of district-specific evidence to have benefits for interventions for women and children, the decision space at the district level should be expanded.

Governance and leadership for evidence-based planning

Governance and leadership within the district health system were considered to be a significant influence on the use of district-specific evidence in the planning process. This influence was due to the power and decision-making dynamics of the planning process, where the elected officials, the district council were perceived to have power over resources and therefore more influence on the planning process. The relationships between the elected and appointed officials and the fact that elected officials sometimes had different priorities from those backed by evidence also influenced the use of evidence in the planning process.

According to the planning guidelines for the local government in Uganda, the district council has the autonomy to approve district work plans, which gives them power over resources (Government of Uganda, 1997, Ministry of Health Uganda, 2016). This is similar to other decentralized systems, as in Tanzania, where the councils also have the authority to approve work plans (Maluka et al., 2010a, Maluka et al., 2010b). In Uganda, the elected politicians were therefore considered to have more power and influence in the planning process, than the appointed officials, but at the same time, were perceived to have limited knowledge and skills about the use evidence, which was considered a barrier to use of district-specific evidence (Henriksson et al., 2017a).

The second source of influence was the relationships between the elected officials and the appointed officials, (DHMT), here referred to as the "sociopolitical context". In one of the participating districts the socio-political context was considered an enabler for using district-specific evidence, and in another, it was seen as a barrier. It can therefore affect the planning process in different ways as shown in the framework in Figure 1. DHMT members reported that where the relationships were perceived as positive and transparent, not only was evidence used in the planning process, but the process was less time consuming than when there were perceived tensions between the DHMT and the elected officials (Henriksson et al., 2017a).

Tension between elected and appointed officials in local governments in Uganda were also documented as a challenge to governance in the decentralized system by Assimwe and Musisi (Assimwe D, 2007). The tension stemmed from politicians who were sometimes said to have different priorities from those backed by evidence. This is related to the political nature of decision-making and priority setting which is not unique to the districts in

Uganda. Bryant et al. and Goddard et al. also documented politics as a primary consideration in the decision-making pro-cessses (Bryant et al., 2000, Goddard et al., 2006). However, efforts to facilitate the use of evidence in the planning process at the district level (Maluka et al., 2010a, Soto et al., 2012, Waiswa et al., 2016) and health systems as a whole (Pyone et al., 2017) have either had no component that addresses the role and involvement of politicians and their influence in the district health system or an insufficient component. These studies have assumed a linear relationship between what is considered evidence and its use in policy making and planning, many times not paying much attention to the political nature of decision-making.

Findings from my doctoral research (Henriksson, 2017b) point to the need to have a multifaceted approach to the use of district-specific evidence, which not only focuses on the generated evidence and its quality, or the tools that are needed, but also on the decision making process, the actors involved, their relationships and their level of influence in the decision-making and the planning process.

Financial resources and utility of district-specific evidence

Inadequate funding was mentioned as one of the significant barriers to use of district-specific evidence in the planning process. Inadequate funding has also been cited both as a shortcoming of decentralization, and as a barrier to health service delivery, especially in LICs like Uganda (Hampwaye, 2008, Xu et al., 2007). The limited funding that was available in the study districts was often earmarked for certain activities that were not always the districts' priorities, leaving the DHMT members little authority over budgetary allocation, indicating a lack of fiscal space. This has been documented in other decentralized systems, like Ghana, Indonesia, and Zambia (Asante et al., 2006, Hanson et al., 2002, Heywood and Choi, 2010).

Further, the DHMT members stated that the delayed release of funds from the central level was also a barrier to using district-specific evidence. The delayed release of funding and its negative effects at the district level has been documented in other studies (Abimbola et al., 2014, Asante et al., 2006, Frumence et al., 2013). On the one hand, this could be a strong argument for the use of evidence in the planning process, i.e., to ensure that the limited resources are used for district specific priorities. On the other hand, it raises the question of whether the use of district-specific evidence can lead to meaningful results in resource-limited settings that primarily depend on central funding for the district health system. This therefore calls for firstly, timely release of funds from the central government to the districts and secondly availability of non-earmarked funding from both the central government and donors that district managers can allocate according to the district priorities.

Child survival activities accounted for between 4% and 5.5% of the total planned expenditure on health services, with the per capita funding of 0.3 USD per year in one district and 0.1 USD in the other during the financial year 2015/16. Over the four years, donors and other partners contributed most of the funding for child survival activities, between 47% and 94% of the funding. As was demonstrated by another study in Uganda (Kapiriri et al., 2004), many times the donors have their own priorities that may not always be those of the districts.

This again brings into question the usefulness of using district-specific evidence, this time with regards to the limited fiscal space and the absence of adequate resources to finance and operationalize the work plans. Another concern is whether district managers prioritize activities that reflect their local needs as opposed to the interests of the donors. These findings again call for a multifaceted approach to using district-specific evidence in the planning

process. This approach should address the limited fiscal space and what responsibilities the DHMT can take on vis-a-vis the financial resources available to them. These approaches would entail not only focusing on the district level and the DHMT, but the central level and other stakeholders, such as the donors and the private sector as well.

Health system implications

As mentioned earlier, utilization of district-specific evidence in the planning process was influenced by the relationships, interactions and power dynamics of the actors involved in the governance and leadership of the district health system, i.e., the politicians and the appointed technical officers. In some districts, the relationships and interactions were considered an enabler to the utilization of district-specific evidence while in others they were considered a barrier. Other barriers were the inadequate routine health information system and the limited financial resources at the district. Addressing any one of these components of the health system may not necessarily lead to the use of district-specific evidence in the planning process, as each one of them affects the others. Furthermore, other upstream or central level barriers such as the limited range of decision and fiscal space also affected the use of district-specific evidence in the planning process. The wide variety of factors that influence the use of district-specific evidence calls for systems thinking, as was documented by De Savigny and Adam (2009) and Peters (2014) (De Savigny and Adam, 2009, Peters, 2014), that addresses the interactions and relationships between the components of the health system (Frenk, 1994). The broader context within which the health system functions and the relationships and behavior of the various actors also needs to be taken into consideration, as was previously documented by Gilson in 2003 (Gilson, 2003).

CONCLUSIONS

Findings from my doctoral research showed that prioritizing interventions for child survival using district-specific evidence was influenced by several factors and did not depend only on the identification of health system bottlenecks or the ability for district managers to use tools that facilitate the use of evidence in the planning process. Therefore, a simplistic approach focusing on the planning process at the district level alone, which focuses only on the health information building block in the absence of interventions at other levels of the health system and other building blocks is insufficient to address the needs to improve care and service delivery for women and children.

District managers were able to adopt and implement tools to facilitate the use of district-specific evidence for improved targeting and planning of interventions designed to improve child survival.

Governance and leadership within the district health system were considered a significant influence on the use of district-specific evidence in the planning process. This influence could be a barrier or enabler to the utilization of district-specific evidence.

The limited decision and fiscal space within the district health system, limited financial resources and inadequate routine district health information systems are important barriers to the use of district-specific evidence in the planning process.

The modified Tanahashi model is an analysis tool that can be used to identify bottlenecks to effective coverage within the district health system in LICs like Uganda. However, it requires accurate and timely data, which may not exist in the routine district health information system.

RECOMMENDATIONS

The use of tools to identify system bottlenecks and facilitate the use of district-specific evidence in the planning process is not an end in itself but only a part of the process to improve service delivery for women and children. With that in mind, I propose the following recommendations for policy, program implementation, and future research.

Policy implications

The central government should revisit and potentially adjust the decision space and fiscal space available within the decentralized health system, vis-a-vis the responsibilities and outputs expected from the district for both program implementation and service delivery.

Program implementation

While promoting new approaches or programs at the sub-national level for example within districts, multifaceted approaches should be used that take into account the broader aspects of the health system, like the overall capacity at the district level, decision and fiscal space available at the district level, and the governance and leadership within the district health system. The approaches should also take into account the various levels of the health system and their interactions, for example, the central level and how decision making at the central level can affect the implementation of new approaches or programs at the district level.

The political nature of decision making and the governance and leadership within the district health system should be taken into account while designing and implementing programs. Programs should actively involve the elected officials (politicians) and provide them with information on the program.

This is important because politicians within a decentralized health system influence the prioritization and resource allocation process.

Innovative ways of including the user perspective or the community into the district planning process should be promoted, such as the use of community dialogues. However, for this innovation to be sustainable, it needs to be embedded in already existing district structures. One way of enabling sustainability is to collaborate and work with other sectors and departments at the district level, like the community based services department.

The district health information system should be strengthened to provide accurate information within the right time frame that is necessary to inform the planning process. A starting point could be to look at the kind of information that is currently collected by the routine health information system to determine if it is sufficient for use in decision making and the planning process or if other data collection methods could be used to inform the planning process.

Future research

Research on the governance mechanisms within the district health system is needed. This should include identifying mechanisms for efficiently and meaningfully involving elected officials in the use of district-specific evidence in not only the district planning process, but also the health system as a whole, since they are important actors in the decision-making process at the district level.

More research is needed to find innovative and sustainable ways of routinely including the health system user perspective (the com-munity) in the planning process at the district level.

Ways to further simplify the bottleneck analysis tool for its use at the district level need to be identified, especially in relation to the routine health facility data that is collected within the district health system. However, there is also a need to validate the use of routine health facility based data for conducting bottleneck analyses.

REFERENCES

A/RES/70/1, R. 2015. *Transforming our world: the 2030 agenda for sustainable development. In: Seventieth United Nations General Assembly, New York, 25 September 2015. [cited 2016 Mar 20].* [Online]. New York: United Nations. Available: http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E [Accessed April 30 2018].

ABIMBOLA, S., NEGIN, J., JAN, S. & MARTINIUK, A. 2014. Towards people-centred health systems: a multi-level framework for analysing primary health care governance in low- and middle-income countries. *Health Policy and Planning,* 29**,** ii29-ii39.

ANDERSSON, N. 1996. Evidence-Based Planning: The phyilosophy and methods of sentinel community surveillance. New York: CIETinternational and the World Bank.

ASANTE, A. D., ZWI, A. B. & HO, M. T. 2006. Getting by on credit: how district health managers in Ghana cope with the untimely release of funds. *BMC Health Services Research,* 6**,** 105.

ASSIMWE D, M. N. 2007. *Decentralisation and Transformation of Governance in Uganda,* Kampala, Fountain Publishers.

BOSSERT, T. 1998. Analyzing the decentralization of health systems in developing countries: decision space, innovation and performance. *Social science & medicine,* 47**,** 1513-1527.

BOSSERT, T. J. & BEAUVAIS, J. C. 2002. Decentralization of health systems in Ghana, Zambia, Uganda and the Philippines: a comparative analysis of decision space. *Health Policy Plan,* 17**,** 14-31.

BOSSERT, T. J. & MITCHELL, A. D. 2011. Health sector decentralization and local decision-making: decision space, institutional capacities and accountability in Pakistan. *Social Science & Medicine,* 72**,** 39-48.

BROWNSON, R. C., FIELDING, J. E. & MAYLAHN, C. M. 2009. Evidence-based public health: a fundamental concept for public health practice. *Annu Rev Public Health,* 30**,** 175-201.

BRYANT, J. H., COULTER, A. & HAM, C. 2000. Health priority dilemmas in developing countries. *The global challenge of health care rationing***,** 63-74.

CAMPBELL, O. M. & GRAHAM, W. J. 2006. Strategies for reducing maternal mortality: getting on with what works. *Lancet,* 368**,** 1284-99.

CURTALE, F., MUSILA, T., OPIGO, J., NANTAMU, D. & EZATI, I. A. 2016. District health planning at a time of transition: a critical review and lessons learnt from the implementation of regional planning in Uganda. *Int Health,* 8**,** 162-9.

DE BROUWERE, V., TONGLET, R. & VAN LERBERGHE, W. 1998. Strategies for reducing maternal mortality in developing countries: what can we learn from the history of the industrialized West? *Trop Med Int Health,* 3**,** 771-82.

DE SAVIGNY, D. & ADAM, T. 2009. *Systems thinking for health systems strengthening,* Geneva, World Health Organization.

DICKEY, C., O'CONNELL, T., BEDFORD, J. & THIEDE, M. 2014. Integrating an approach to assess UHC access barriers into district health systems strengthening in Uganda, Ghana and Rwanda. New York: United Nations Children's Fund

FAGUET, J.-P. & SÁNCHEZ, F. 2014. Decentralization and access to social services in Colombia. *Public Choice,* 160**,** 227-249.

FRENK, J. 1994. Dimensions of health system reform. *Health Policy,* 27**,** 19-34.

FRUMENCE, G., NYAMHANGA, T., MWANGU, M. & HURTIG, A.-K. 2013. Challenges to the implementation of health sector

decentralization in Tanzania: experiences from Kongwa district council. *Global Health Action,* 6**,** 20983.

GILSON, L. 2003. Trust and the development of health care as a social institution. *Soc Sci Med,* 56**,** 1453-68.

GODDARD, M., HAUCK, K., PREKER, A. & SMITH, P. C. 2006. Priority setting in health–a political economy perspective. *Health Economics, Policy and Law,* 1**,** 79-90.

GOVERNMENT OF UGANDA 1995. Constitution of the Republic of Uganda. Kampala: Government of Uganda.

GOVERNMENT OF UGANDA 1997. Local Government Act 1997 Kampala: Government of Uganda.

GREEN, E. 2008. *District creation and decentralisation in Uganda*, Citeseer.

HAM, C. 1997. Priority setting in health care: learning from international experience. *Health Policy,* 42**,** 49-66.

HAMPWAYE, G. The limits of decentralisation in urban Zambia. Urban Forum, 2008. Springer, 347-361.

HANSON, K., ATUYAMBE, L., KAMWANGA, J., MCPAKE, B., MUNGULE, O. & SSENGOOBA, F. 2002. Towards improving hospital performance in Uganda and Zambia: reflections and opportunities for autonomy. *Health policy,* 61**,** 73-94.

HENRIKSSON, D. K. 2017a. *Health systems bottlenecks and evidence-based district health planning: Experiences from the district health system in Uganda.* Uppsala University.

HENRIKSSON, D. K., AYEBARE, F., WAISWA, P., PETERSON, S. S., TUMUSHABE, E. K. & FREDRIKSSON, M. 2017a. Enablers and barriers to evidence based planning in the district health system in

Uganda; perceptions of district health managers. *BMC Health Serv Res,* 17**,** 103.

HENRIKSSON, K. D. 2017b. Health systems bottlenecks and evidence-based district health planning: Experiences from the district health system in Uganda. *Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine* Uppsala Uppsala University.

HENRIKSSON, K. D., FREDRIKSSON, M., WAISWA, P., SELLING, K. & SWARTLING PETERSON, S. 2017b. Bottleneck analysis at district level to illustrate gaps within the district health system in Uganda. *Glob Health Action,* 10**,** 1327256.

HEYWOOD, P. & CHOI, Y. 2010. Health system performance at the district level in Indonesia after decentralization. *BMC International Health and Human Rights,* 10**,** 3.

HIPGRAVE, D. B., ALDERMAN, K. B., ANDERSON, I. & SOTO, E. J. 2014. Health sector priority setting at meso-level in lower and middle income countries: Lessons learned, available options and suggested steps. *Social Science & Medicine,* 102**,** 190-200.

INDEPENDENT EVALUATION GROUP 2008. Decentralization in Client Countries : An Evaluation of World Bank Support, 1990-2007. . Washington DC: World Bank.

KAPIRIRI, L., ARNESEN, T. & NORHEIM, O. F. 2004. Is cost-effectiveness analysis preferred to severity of disease as the main guiding principle in priority setting in resource poor settings? The case of Uganda. *Cost Effectiveness and Resource Allocation,* 2**,** 1.

KAPIRIRI, L., NORHEIM, O. F. & MARTIN, D. K. 2007. Priority setting at the micro-, meso- and macro-levels in Canada, Norway and Uganda. *Health Policy,* 82**,** 78-94.

KATAHOIRE, A. R., HENRIKSSON, D. K., SSEGUJJA, E., WAISWA, P., AYEBARE, F., BAGENDA, D., MBONYE, A. K. & PETERSON, S. S. 2015. Improving child survival through a district management strengthening and community empowerment intervention: early implementation experiences from Uganda. *BMC Public Health,* 15**,** 797.

KIENY, M. P., BEKEDAM, H., DOVLO, D., FITZGERALD, J., HABICHT, J., HARRISON, G., KLUGE, H., LIN, V., MENABDE, N. & MIRZA, Z. 2017. Strengthening health systems for universal health coverage and sustainable development. *Bulletin of the World Health Organization,* 95**,** 537.

KUTZIN, J. & SPARKES, S. P. 2016. Health systems strengthening, universal health coverage, health security and resilience. *Bull World Health Organ,* 94**,** 2.

KWAMIE, A., AGYEPONG, I. A. & VAN DIJK, H. 2015. What Governs District Manager Decision Making? A Case Study of Complex Leadership in Dangme West District, Ghana. *Health Systems & Reform,* 1**,** 167-177.

LA VINCENTE, S., ALDABA, B., FIRTH, S., KRAFT, A., JIMENEZ-SOTO, E. & CLARK, A. 2013. Supporting local planning and budgeting for maternal, neonatal and child health in the Philippines. *Health Res Policy Syst,* 11**,** 3.

MAHAPATRA, P. 2002. Priority-setting in the health sector and summary measures of population health. *Summary measures of population health: concepts, ethics, measurement and applications***,** 83-90.

MALUKA, S., KAMUZORA, P., SAN SEBASTIAN, M., BYSKOV, J., NDAWI, B. & HURTIG, A. K. 2010a. Improving district level health planning and priority setting in Tanzania through implementing

accountability for reasonableness framework: Perceptions of stakeholders. *BMC Health Serv Res,* 10**,** 322.

MALUKA, S., KAMUZORA, P., SAN SEBASTIAN, M., BYSKOV, J., OLSEN, O. E., SHAYO, E., NDAWI, B. & HURTIG, A. K. 2010b. Decentralized health care priority-setting in Tanzania: evaluating against the accountability for reasonableness framework. *Soc Sci Med*, 71**,** 751-9.

MEESSEN, B. & MALANDA, B. 2014. No universal health coverage without strong local health systems. *Bulletin of the World Health Organization*, 92**,** 78-78A.

MINISTRY OF HEALTH 2013. Guidelines for governance and management structures Kampala: Ministry of Health.

MINISTRY OF HEALTH. 2014a. *eHMIS* [Online]. Kampala: Ministry of Health. Available: http://www.health.go.ug/oldsite/node/76 [Accessed July 2017].

MINISTRY OF HEALTH 2014b. Uganda Hospital and Health Centre IV Census Survey. Kampala: Ministry of Health Uganda.

MINISTRY OF HEALTH UGANDA 2010. Health Sector Strategic & investment Plan 2010/11-2014/15. Kampala: Ministry of Health.

MINISTRY OF HEALTH UGANDA 2015. Health Sector Development Plan 2015/16 - 2019/20. Kampala: Ministry of Health.

MINISTRY OF HEALTH UGANDA 2016. Guidelines to the local government planning process Health Sector Supplement. Kampala: Ministry of Health Uganda.

ODAGA, J., HENRIKSSON, D. K., NKOLO, C., TIBEIHAHO, H., MUSABE, R., KATUSIIME, M., SINABULYA, Z., MUCUNGUZI, S., MBONYE, A. K. & VALADEZ, J. J. 2016. Empowering districts to target priorities for improving child health service in Uganda using

change management and rapid assessment methods. *Glob Health Action,* 9**,** 30983.

ORGANIZATION, W. H. 2004. World report on knowledge for better health: strengthening health systems.

OXMAN, A. D., LAVIS, J. N., LEWIN, S. & FRETHEIM, A. 2009. SUPPORT Tools for evidence-informed health Policymaking (STP) 1: What is evidence-informed policymaking? *Health Research Policy and Systems,* 7**,** S1.

PETERS, D. H. 2014. The application of systems thinking in health: why use systems thinking? *Health Res Policy Syst,* 12**,** 51.

PYONE, T., SMITH, H. & VAN DEN BROEK, N. 2017. Frameworks to assess health systems governance: a systematic review. *Health Policy and Planning,* 32**,** 710-722.

RANSON, M. K., HANSON, K., OLIVEIRA-CRUZ, V. & MILLS, A. 2003. Constraints to expanding access to health interventions: an empirical analysis and country typology. *Journal of International Development,* 15**,** 15-39.

ROMAN, T. E., CLEARY, S. & MCINTYRE, D. 2017. Exploring the Functioning of Decision Space: A Review of the Available Health Systems Literature. *International Journal of Health Policy and Management*, -.

RUDAN, I., KAPIRIRI, L., TOMLINSON, M., BALLIET, M., COHEN, B. & CHOPRA, M. 2010. Evidence-based priority setting for health care and research: tools to support policy in maternal, neonatal, and child health in Africa. *PLoS Med,* 7**,** e1000308.

SOMANJE, H., BARRY, S. P., DRAME´, B. & MWIKISA-NGENDA, C. 2012. Health systems strengthening: improving district health service

delivery and community ownership and participation. *African Health Monitor*, 48-54.

SOTO, E. J., LA VINCENTE, S., CLARK, A., FIRTH, S., MORGAN, A., DETTRICK, Z., DAYAL, P., ALDABA, B. M., KOSEN, S., KRAFT, A. D., PANICKER, R., PRASAI, Y., TRISNANTORO, L., VARGHESE, B. & WIDIATI, Y. 2013. Investment case for improving maternal and child health: results from four countries. *BMC Public Health,* 13, 601.

SOTO, E. J., LA VINCENTE, S., CLARK, A., FIRTH, S., MORGAN, A., DETTRICK, Z., DAYAL, P., ALDABA, B. M., VARGHESE, B. & TRISNANTORO, L. 2012. Developing and costing local strategies to improve maternal and child health: the investment case framework. *PLoS Med,* 9, e1001282.

SOUCAT, A., VAN LERBERGHE, W., DIOP, F., NGUYEN, S. & KNIPPENBERG, R. 2002. Marginal Budgeting for Bottlenecks: A new costing and resource allocation practice to buy health results. Washington DC:: World Bank.

SSENGOOBA, F. 2004. Uganda's minimum health care package: rationing within the minimum?

TANAHASHI, T. 1978. Health service coverage and its evaluation. *Bull World Health Organ,* 56, 295-303.

TOMLINSON, M., CHOPRA, M., SANDERS, D., BRADSHAW, D., HENDRICKS, M., GREENFIELD, D., BLACK, R. E., EL ARIFEEN, S. & RUDAN, I. 2007. Setting priorities in child health research investments for South Africa. *PLoS Med,* 4, e259.

UGANDA BUREAU OF STATISTICS 2017. Uganda Demographic and Health Survey 2016. Kampala: Uganda Bureau of Statistics.

UNITED NATIONS CHILDREN'S FUND 2017. Levels and trends in Child Mortality Report 2017. New York: United Nations Children's Fund.

WAISWA, P., O'CONNELL, T., BAGENDA, D., MULLACHERY, P., MPANGA, F., HENRIKSSON, D. K., KATAHOIRE, A. R., SSEGUJJA, E., MBONYE, A. K. & PETERSON, S. S. 2016. Community and District Empowerment for Scale-up (CODES): a complex district-level management intervention to improve child survival in Uganda: study protocol for a randomized controlled trial. *Trials*, 17, 135.

WALT, G. & GILSON, L. 1994. Reforming the health sector in developing countries: the central role of policy analysis. *Health Policy Plan*, 9, 353-70.

VAN OLMEN, J., CRIEL, B., BHOJANI, U., MARCHAL, B., VAN BELLE, S., CHENGE, M., HOERÉE, T., PIRARD, M., VAN DAMME, W. & KEGELS, G. 2012. The Health System Dynamics Framework: The introduction of an analytical model for health system analysis and its application to two case-studies. *Health, Culture and Society*, 2, 1-21.

WICKREMASINGHE, D., HASHMI, I. E., SCHELLENBERG, J. & AVAN, B. I. 2016. District decision-making for health in low-income settings: a systematic literature review. *Health Policy Plan*, 31 Suppl 2, ii12-ii24.

WORLD BANK 1993. World Development Report 1993: Investing in Health Washington: World Bank.

WORLD BANK 2003. World Development Report 2004 : Making Services Work for Poor People. Washington: World Bank.

WORLD HEALTH ORGANIZATION 1987. Declaration on Strengthening Health Systems based on Primary Health Care. Harare: World Health Organization.

WORLD HEALTH ORGANIZATION 2001. Background paper for the Technical Consultation on Effective Coverage of Health Systems Rio de Janeiro, Brazil. Geneva: World Health Organization.

WORLD HEALTH ORGANIZATION 2004. Beyond the numbers: reviewing maternal deaths and complications to make pregnancy safer. Geneva: World Health Organization

WORLD HEALTH ORGANIZATION 2007. Everybody's business--strengthening health systems to improve health outcomes: WHO's framework for action. Geneva: World Health Organization.

WORLD HEALTH ORGANIZATION 2008. The World Health Report 2008: Primary Health Care Now More Than Ever. Geneva: World Health organization.

WORLD HEALTH ORGANIZATION 2015. Trends in maternal mortality: 1990-2015: estimates from WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division: executive summary. Geneva: World Health Organization

XU, K., EVANS, D. B., CARRIN, G., AGUILAR-RIVERA, A. M., MUSGROVE, P. & EVANS, T. 2007. Protecting households from catastrophic health spending. *Health affairs,* 26**,** 972-983.

YOU, D., HUG, L., EJDEMYR, S., IDELE, P., HOGAN, D., MATHERS, C., GERLAND, P., NEW, J. R. & ALKEMA, L. 2015. Global, regional, and national levels and trends in under-5 mortality between 1990 and 2015, with scenario-based projections to 2030: a systematic analysis by the UN Inter-agency Group for Child Mortality Estimation. *The Lancet*, 386**,** 2275-2286.

YOUNGKONG, S., KAPIRIRI, L. & BALTUSSEN, R. 2009. Setting priorities for health interventions in developing countries: a review of empirical studies. *Tropical Medicine & International Health,* 14**,** 930-939.