

## **Documenting the experiences of health workers expected to implement guidelines during an intervention study in Kenyan hospitals.**

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## **Abstract**

### **Background**

Although considerable efforts are directed at developing international guidelines to improve clinical management in low-income settings they appear to influence practice rarely. This study aimed to explore barriers to guideline implementation in the early phase of an intervention study in four District Hospitals in Kenya.

### **Methods**

Based on literature review we developed a conceptual framework that incorporated the intervention process and informed development of initial interview guides. In-depth interviews, non-participatory observation and informal discussions were used to explore perceived barriers to guideline introduction and general improvements in paediatric and newborn care. Data were collected 4-5 months after in-service training in the hospitals. Data were transcribed, themes explored and revised in two rounds of coding and analysis using NVivo 7 software and finalized after being subjected to a layered analysis and review and discussion with four hospital staff who acted as local facilitators to the intervention.

### **Results**

A total of 29 health workers were interviewed. Ten major barriers were identified acting at three levels. The individual level; (1) incomplete training coverage, (2) low outcome expectancy, (3) reluctance to accept new practices, (4) generally poor health worker motivation and (5) negative attitudes and beliefs; the social level: (6) lack of recognition/appreciation, (7) incompatible health worker norms, and (8) poor communication; and the organizational level: (9) poor organizational culture, and (10) organizational and system level challenges.

### **Conclusions**

The barriers to practicing guidelines are many and exist at multiple levels. Guidelines, job aides and in-service training are a necessary starting point for introducing new practice but are unlikely to be of major value unless barriers are overcome. Supervision, feedback and facilitation being provided during the intervention study may help overcome some of these barriers.

## **INTRODUCTION**

Evidence-based medicine (EBM) is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.[1] At its heart lies the logic that if the best research identifies a form of practice that improves patient or health system outcomes then it should be adopted by rational health care practitioners. Evidence based guidelines are a means by which the best evidence is aggregated to define optimal and sequential decisions in providing clinical care, for example to a child presenting with pneumonia. Although EBM has been widely adopted in theory problems persist with implementation.[2]

In accompanying papers or in previously published work we have described: 1) the development of evidence based clinical practice guidelines (CPGs), job aides and a training course based around these called Emergency Triage Assessment and Treatment plus Admission Care (ETAT+) in Kenya [3, 4] the design of a study to test the implementation of these guidelines [4]; 3) details of the context within which the intervention is taking place (English, accompanying paper); and 4) the approach to implementation that combined initial training with limited reinforcement training, supervision, feedback and local facilitation over a period of 1.5 years (Nzinga, accompanying paper). This package of interventions was felt likely to optimize practice change and was offered to four hospitals while a very limited intervention, comprising a dissemination seminar on the guidelines and written feedback after survey visits, was provided to four control hospitals [4]. The aim of the intervention was to ensure that health workers with limited pediatric training appropriately assess and manage seriously ill children and newborns admitted to Kenyan government district hospitals. Such hospitals are an important component of Kenya's health system although their performance has previously been shown to be poor [5]. In particular, such hospitals have not adopted WHO guidelines on practice although these are endorsed by the Kenyan Ministry of Health [6].

The aim of this report is to describe the barriers reported by health workers that might impede the delivery of care in line with CPGs and thus prevent improvement in quality of care.

### Theoretical Considerations

Psychological models have been developed to understand, predict and influence individual behavior and recent applications have explored the possibility of applying these models to clinicians' behavior. For example, Walker examined a range of psychological models including the Social Cognitive Theory, Operant Conditioning, Implementation Intention, and the Self-Regulation Model [7]. In particular investigators have used the theory of planned behavior and / or social cognitive theory to show that attitudinal and control beliefs are important predictors of health workers' intentions and actions [8-10].

Studies in developing countries have more often focused on personal, structural or organizational factors that influence practice. For example studies on the management of malaria [11] and diarrhea [12] found that health workers with higher pre-service training were less likely to prescribe recommended treatments while others [13] found lower adherence to guidelines to be associated with lack of supervision and reported lack of equipment and medicines. Other relevant studies in low-income country settings have focused on health worker performance, satisfaction and motivation [11, 14, 15], the concept of heuristics and more recently 'mindlines' [16, 17].

As it was understood that changing health worker behavior and not just imparting new knowledge was the intention in the Kenyan study we were therefore interested in using behavioral models to inform an investigation of the barriers to implementing guidelines. We took as our starting point the Theory of Planned Behavior[18]. This theory states that a person's behavior is determined by his/her intention to perform the behavior and that this intention is, in turn, a function of his/her attitude toward the behavior and his/her subjective norms. The best predictor of behavior is intention, the cognitive representation of a person's readiness to perform a given behavior. However, intention cannot be the exclusive determinant of behavior and is also subject to "perceived behavioral control", a person's perception of their actual ability to perform a given behavior.

Such theories indicate that in addition to assessing individual attitudes toward the behavior, there is a need to assess people's subjective norms, i.e., their beliefs about how people they care about will view the behavior in question. Based on this theory and other insights from the literature [7, 19] and applying these to the nature, process and context of the intervention delivered, a

conceptual framework was developed (Figure 2) to guide our exploration of how health workers responded to the intervention.

## **METHODOLOGY**

### **General study approach**

We wished to identify the nature, type and range of experiences health workers have that influence their adoption and practice of the new guidelines in Kenyan hospitals. We therefore used an in-depth case study approach of four hospitals making up the intervention arm of a comparative study.

The particular question being explored was;

*What contextual and behavioral barriers to practice change and implementation of new guidelines seem important at three levels; the organizational, social and individual levels?*

### **Study Sites**

Four intervention hospitals (H1, H2, H3, H4) involved in the parent hospital intervention study and all in the government sector were studied. The selection and the degree to which these hospitals are representative of many other Kenyan hospitals have been discussed in detail elsewhere (English, 2008a, English accompanying).

### **Study Population**

Health workers recruited for this study were selected based on the following criteria:

1. Health worker type – Medical Officer (MO), Clinical Officer (CO), MO intern, CO intern, and nurses.
2. Health workers directly involved in pediatric care at the time of the visit working in the pediatric ward, the maternity unit, the Out-Patient Department (OPD) and the Maternal & Child Health department (MCH).

3. Administrative staff involved in implementation of new policies such as the hospital's Medical Superintendent, Senior Nurse, Senior Clinical Officer (DCO), Health Administrative Officer (HAO) and those in charge of the various pediatric departments.
4. The hospital selected local facilitators (whose selection and role is described elsewhere, English, accompanying).

### **Sampling Procedure**

We used a multi-stage sampling procedure. Initially health workers in hospitals whose duties involved working in or management of the pediatric areas at the time the investigator (JN) visited were considered eligible. Within this sample health workers of the cadres listed above were purposively selected with the intention that this sample should include some health workers who had attended the ETAT+ training or other introduction to the guidelines. The aim of sampling was to ensure that the maximum variation in opinion might be captured and thus continued until the point of saturation (when little new was being offered by new interviewees). The data collection was undertaken in March 2007, approximately 4-5 months after provision of a 5.5 day training for approximately 32 hospital staff to introduce the CPGs.

### **Tools for data collection:**

We reviewed literature on adherence to guidelines and in particular those that incorporated psychological models or were conducted in developing countries. We used constructs identified as relevant to develop a semi-structured interview guide to explore health workers' perceptions about the intervention and reasons underlying non-adherence. This guide also drew on the development of a conceptual framework underlying the hypothesized impact of the intervention (Figure 2). The guide was piloted at the Kenyatta National Hospital, a non-study hospital, and responses were analyzed and questions revised to develop the final interview guide for the first phase of data collection. Where appropriate additional questions and themes were explored as different contextual issues emerged. All the interviews were conducted in English, each lasting between 20-50 minutes. Additional data sources included informal discussions, non-participant observations of clinical management or hospital organized mortality or educational meetings where possible. Field diaries were kept during visits to hospitals to record these observations.

## **Data Analysis**

All the interviews, group discussions and field notes were transcribed and cleaned by the principal researcher (JN). In the first instance these data were separately coded into themes felt to emerge from the data by 2 researchers after which the results were compared and discussed before arriving at an agreed set of themes for coding and analysis using NVivo 7 software (QSR International Pty Ltd 1999-2006). While the themes explored were informed by the literature review and conceptual framework they were not limited by these considerations. A second round of coding the data then followed according to identified themes with free nodes representing broad categories. Further nodes were created by grouping some of the free nodes into tree nodes by making logical connections and incorporating any emerging themes. The final stage was a layered analysis that entailed the identification of the main and then the underlying causes of reported experiences and observations.

Preliminary analyses and interpretations were then the subject of a meeting with all the four facilitators and the principal investigator (JN) held in Nairobi at the offices of the research team. In this meeting the research team's initial formulation of the findings was presented to the facilitators who had all worked in the intervention hospitals for more than 3 years as Ministry of Health employees. During and after this presentation each of the facilitators gave their accounts of and comments on the research team's reports from their perspective as a staff member in an intervention hospital. This discussion was used to inform subsequent analyses and interpretation of the data.

## **RESULTS**

A total of 29 health workers were studied across the different sites (Table 1). From the analysis, we found barriers to practicing guidelines could be grouped, for ease of interpretation, at three levels; the individual level, the social level and the organizational level. At the individual level, barriers included (1) incomplete training coverage,(2) low outcome expectancy, (3) reluctance to accept new practices , (4) generally poor health worker motivation and (5) negative attitudes and beliefs . At the social level the barriers were found to include (6) lack of recognition/appreciation, (7) incompatible health worker norms, and (8) poor communication. At

the organizational level identified barriers included (9) poor organizational culture and (10) organizational and system level challenges.

### ***Individual level barriers***

#### **Incomplete Training Coverage**

The most common response from the health workers on what barriers they faced in the implementation of guidelines was that not everyone was trained resulting in a lack of knowledge and skills to use the guidelines. Although the initial ETAT+ training targeted 32 health workers per site this still represents a modest proportion of a hospital's staff and trained staff were often lost from pediatric areas through frequent staff internal rotations or external transfers. Compounding this health workers have routinely placed very low value on methods to disseminate guidelines locally such as continuous medical education (CME), on-the-job training (OJT) and peer education that are offered by colleagues. A particular problem seems to be the attitude that senior staff can't accept teaching from the more junior staff. Consequently, health workers who did not attend the initial training might only be aware of the guidelines as a concept. In the intervention hospitals this problem might be addressed in part by supervision, facilitation and CME.

*“They are our colleagues so I am sure they think that we are not capable of training them on anything. You know like there is that kind of attitude like ‘what can she tell me..’ may be that is why they have looked down on the training”.*

*“We are usually told they are clinical things and doctors should have them (guidelines) so we thought maybe we are not part of it”*

#### **Poor or altered outcome expectancy**

The aim of the guidelines is to improve care in the hope that this will improve health outcomes. Again, rationally, one would expect health workers to be supportive of such outcomes and therefore the guidelines. However, developing a sense of ownership of the guidelines was rather slow. Health workers initially regarded the programme as ‘an external KEMRI affair’, with supervision and local facilitation only slowly breaking down this perception. At the start another common perception was that practicing the guidelines ‘for KEMRI’ should be rewarded

monetarily. The expectation of financial incentives was linked to the desire for further formal ETAT+ training which potential participants expected should provide out-of-pocket attendance allowances (*per diems*). Health workers even on occasions expected payment for providing information during interviews with the study team. These challenges almost certainly reflect the long-term practice of non-governmental and governmental organizations, especially where supported by vertical programmes, of providing participants with *per diems* for attending training. Thus although intended as reasonable compensation such payments have unintended consequences and can be a cause of considerable disenchantment.

In most hospitals the notion that the guidelines and training would improve health outcomes was accepted, particularly after health workers experienced the intensity of the training. However, in one site the clinicians initially felt that the guidelines and training were rather shallow and more so for rural peripheral health facilities than hospitals. This feeling was subsequently altered after the clinicians reported seeing positive outcomes for very sick children.

*“They did not see the impact of the CMEs we hold within the hospital, what they wanted was to be taken outside like that one week that we went, get paid the same amount of money and be paid certificates”*

*“To me, that attitude was only there when we started, especially the CO’s who were thinking like you said it was too shallow, probably because they thought that was all that was there in IMCI, they did not know there was in-patient and out-patient and that it was targeting the referrals or non-referrals. But I think the attitude is now changing, even the medical officers are training for it, things are changing and you know even the guidelines are targeting the common, the killer diseases and so we started where the mortality was higher.”*

*“Well actually what has kept me going is the results....the changes that are brought from the management of these children in the wards.”*

### **Inertia of previous practice**

One emerging theme was the difference in adoption of the guidelines across the different clinician age groups. Senior or older clinicians were often reported to be stuck in the patterns of previous practice, although there were also exceptions to this observation. This problem was attributed to the lack of experience of being challenged to change by new knowledge. Practices and pre-service teaching have essentially remained static over periods of many years.

*Q: “ok. For these clinicians that are resistant yet attended the ETAT+ training, why do you think they are resistant?”*

*(Facilitator): “ I can’t tell why but I mentioned that the ones who have been in service for long are resistant to ETAT+ and the clinicians who are in OPD, almost all of them are the older clinicians in the hospital who really do not want to listen to anyone.”*

*“ in my opinion....ah its just the usual business of ‘I have been doing this thing for many years.. I have treated these conditions for many years..so what do you mean by telling me a child who has diarrhea does not necessarily need antibiotics’...mainly I think it is it.”*

### **Lack of motivation**

Motivation is a critical factor in influencing the performance of health workers and is discussed in much greater detail in an accompanying paper (Mbindyo, submitted). Health workers reported lack of motivation for their work generally and, by extension, for practice according to the guidelines. Contributing factors included heavy workload, lack of supplies, frequent staff rotations, staff shortages and incompetence of some colleagues. Local institutional factors included the lack of recognition and appreciation for work done by the hospital administration or senior staff and lack of, or unfair distribution of, training opportunities, at seminars or workshops that provided allowances and per diems (as discussed above).

*“ lack of motivation is an issue, you see like a person who is trained in IMCI you stay from 8 to 5 the you go home, the next day you... you become a stereotyped person, you lack motivation because you cannot even run elsewhere to do ABCD..to make you earn a living outside your job”.*

*“sometimes when you have to resuscitate a child, and you don’t have the right something at the right time, that can be demoralizing”.*

*“ you know even when I say motivation I do not mean we should be given money...ok we should be paid well but even at the hospital level we should be recognized , you know even a certificate, even given an ward to show that we are hard working.”*

### **Negative Attitudes and beliefs**

Attitudes and beliefs expressed towards practicing the guidelines likely to negatively influence their uptake ranged from ignorance, arrogance, impatience, laxity, lack of confidence, and an initial perception that the guidelines were too basic. Arrogance, the sense that a ‘well-trained’

health worker does not need guidance, was often combined with a feeling that the particular guidelines being implemented were too simple, not capturing the complexity of care. There were additional specific aspects of guideline content that were contested. These included, for example, specific recommendations for drug dosages (Phenobarbitone, Gentamicin and Quinine), and advice to withhold antimalarial drugs from those who were not severely ill and who had a negative malaria diagnostic test. Such lack of acceptance was despite the fact that the guidelines were based on the most up to date evidence[3]. Interestingly very few health workers expressed any interest in the evidence behind the new recommendations.

While there was reluctance to accept national guidelines direct observations, especially in the outpatient areas, indicated that local pharmaceutical industry representatives were able to influence the choice of drugs so that clinicians ignored the guidelines. This was reportedly because the clinicians believed that using a ‘new drug’ proves their competence and also because they sometimes accrued direct monetary benefits from this activity.

*“unless ...it’s... you see at time it looks as though you do not know what you are doing when you say very severe pneumonia or very severe disease, it does not sound....as a clinician I should say that this is pneumonia. As I was telling you I will not come too low to say this is severe pneumonia or very severe disease, I don’t classify because I feel I know what I am doing”*

*“we feel like we have to use something else like an expectorant like a bronchodilator or an expectorant rather than just salbutamol[salbutamol is the guideline specified drug].”*

### ***Social level Barriers***

#### **Lack of Recognition and Appreciation**

Health workers reported the lack of appreciation and recognition for work done well as a major barrier to encouraging correct practice not just for implementing the new guidelines. They complained that there was more emphasis on work done badly, explaining that this was a major cause of loss of morale.

*“ (laughs) you know sometimes it’s good to encourage your colleagues when they do well...but many are times people only go to look for faults...that is the most unfortunate bit such that even when one small mistake has taken*

*place it can be blown out of proportion...and everything else you have done is forgotten...that's the most unfortunate bit about human beings".*

*"the community really appreciates what we do, like the milk for the children in the ward, in ward 7, it never lacks. The administration does not; it is only there to enforce things. Unless your fellow colleagues recognize, no one else does. Sometimes they are not even aware of these things, the big bosses, they are only involved in the business side of things"*

### **Incompatible Health Worker Norms**

Reports indicated that the medical officers and the nurses showed greater zeal in the uptake and practice of the guidelines than clinical officers, a cadre of Kenyan substitute doctor with a three year basic training who are major clinical service providers in district hospitals. Reports of poor task performance amongst clinical officers were not restricted to guideline implementation. It appears nurses' active role in guideline implementation may reflect that the training and guidelines empowered them with knowledge and skills they did not previously have. For example, they reported feeling able to correct inaccurate prescriptions although they very rarely committed themselves to documenting their corrections nor confronting clinicians with their mistakes.

Several comments also suggested subtle inter-cadre conflicts. Thus CO's and the MO's disregard the nurses' and CO interns' opinions. Generally, all cadres rarely discussed mistakes made by colleagues, reporting that they avoid unnecessary confrontations by making corrections but not following the mistake through to its source.

*"Most of our clinical officers are trained but even after the training, they are not practicing, they just have a funny attitude, I think they feel that they know or that they knew (laughs), I don't know".*

*"The MO's are a bit more receptive of the guidelines...I think mainly because they worked in big centers like Kenyatta where you are exposed to... your inadequacies...often and there is always that encouragement that you need to learn and you can always learn new things so they have no problem. The CO's ...yeah...sort of..but I think that is probably because of their training , the training that they have, they are not taught these things so there is conflict , that is number one.'*

*"I don't want to discuss the CO's.....simply because I do not even want to think about them... because they are the ones who make me do more work than I am supposed to be doing.....as simple as that"*

*“there is this one clinician in OPD who is trained, but she is just a bad one...she sends me queer diagnoses to the ward and she is not ready to be corrected, you can't talk to her and of course she is my boss, she is above me so there is nothing I can do.”*

*“But the idea of following somebody and telling them here you made a mistake ...I thought that was not right to confront someone over such small things because maybe they were just tired.”*

### **Lack of communication**

There are in general no forums or opportunities for health workers from all the hospital's pediatric areas and all cadres to meet and discuss issues. As a result there is little opportunity to develop widely supported and coherent standards for pediatric care in hospitals. Consequently the teamwork among health workers in the pediatric departments is scant and in some situations completely missing. One effect of the intervention's supervision and facilitation was a considerable improvement in cross-cadre and cross-departmental communication that remained largely absent in control hospitals.

*“well sometimes she (facilitator) calls us as clinicians then at other times she calls the nurses and I even remember if there is a communication breakdown from up there then she will come to us and tell us that ‘these people aren't doing 1 or 2’, so she has been updating us.”*

*“ let me also add that the CME's are very good because you do not work in the same place throughout so they provide a chance for updates of what is happening in the other wards, so if you are to go to new rotation, you will not mismanage patients, you will know what to do.”*

### **Organizational level barriers**

#### **Poor institutional culture**

Across all the hospitals there was considerable variation in the role of departmental in-charges with only a few displaying clear leadership in the implementation of the new guidelines in their respective departments even if delegated this task. Senior management in the hospital were rarely directly involved in leading implementation in control hospitals but in intervention hospitals they at least had a role in the provision of the necessary drugs, supplies and equipment to some degree and in re-enforcing the authority of the facilitators.

Health workers also reported limited attention given to local dissemination of the new guidelines illustrating a lack of organizational structures and processes aimed at changing the hospital's practices. Interestingly this appeared to be accepted – that anyone receiving training was under no obligation to share their new knowledge with no mechanisms for such knowledge-sharing offered. This lack of any specific attempt to define a local 'culture of practice' extended to how newly arriving staff were handled with newcomers expected to slowly pick up local practice habits (accepting that these might be both good and bad). To some extent this problem was tackled in intervention hospitals by supervisory visits combined with ongoing CME and facilitation. The lack of attention to establishing agreed local practices also caused particular problems if different authorities provided different guidance, there being no means to establish a unified practice approach.

*“...between the CO's and the nurses there is even hate-love relationship over time, the CO's and the MO's have the kind of relationship that is pull and push always. So I can't call it a dream team, there is no team, we work together but there is a system of working.”*

*“The Med Supt delegates to the CO in charge and the CO in charge does not take the job seriously because I know like some of the CO's can be very problematic. So the CO in charge has been delegated but then he becomes very protective and so what I am saying is that the Med Supt was required to come and say 'this is the way it should be' and then he puts a very strong authority.....”*

*“ they never even come to see how we work here, to ask what challenges we encounter, they don't even come..... So they never come to see how we are doing, they just depend on hear say and rumors, and may be they say we are doing good work because they have never heard complains that we are not doing the work. We need them to come here so that they can see the work that we are doing, the challenges we are facing...(talking about senior management supervision)”.*

*“mmmmm..... ....if you don't know...nobody orientated us. It is probably expected that from my training this patient requires a surgical clinic so I will send him there or this and that and I will do the necessary, but nobody comes and tells you, you learn as you go along”.*

*“[This hospital] is a training facility, so the turnover of staff and especially the clinicians it too high. As much as the rest of the people like Dr. (Med Supt) and Dr. (in pediatric ward) are here, almost all the time I am the one who has the first contact with the new clinicians who come to the ward so I have to orientate them on what we are doing....”.*

## **Organizational and System level Challenges**

Health workers describe barriers at the organizational level to include; staff shortages, high staff turnover, heavy workload, frequent staff rotations, and poor workflow structure. For example in larger hospitals with medical officer and clinical officer interns staffing wards, outpatient staff often take to simply sending all seriously ill children to the ward for clinical admission after nothing but a cursory review. Consequently outpatient staff were often not as conversant with the new guidelines. There is also a sense that things are tolerated in paediatric care that would not be tolerated in other departments. For example, at the time of one visit clinical officer interns were the only clinical staff available in the pediatric ward of one hospital responsible (inappropriately and illegally) for all clinical decision making. Rather than attempt to change (and confront) systems however, ward and senior staff simply continued to complain about the provision of sub-standard care to children in, for example, outpatients and during the night shifts.

*“So I think this kind of change over’s are not the best. Because if you are trained in something, then you really need the chance to work on it, have experience at least 2, 3-4 years and then move on when you are satisfied that you have done the best. It’s like I have moved out of pediatrics but I have not done the best out of my training I am not satisfied.”*

*“people try and then this other thing of shortage of staff, we are overworked so you find that some things are not done at the end of the day and you cannot help it.”*

## **DISCUSSION**

The data collection tools used in this study aimed to help us understand the root causes of poor guideline adherence among health workers. Direct non-participatory observations allowed for triangulation of the data collected but it was noted that often health workers appeared more open, relaxed and engaged during informal chats with the researcher (JN). This and the fact that this was not an ethnographic study with limited amounts of time spent in these hospitals should be borne in mind when interpreting our results and comparing them with those of other studies. However, we feel the major contribution of this study is the inclusive description of the perceptions and experiences of medical officers, clinical officers, nurses and hospital administrators in implementing new pediatric guidelines in a Kenyan hospital setting. The

findings from this study indicate that the barriers to changing practice exist at multiple levels; the individual, the social and the organizational level, and are multi-faceted and inter-linked. The barriers identified in this study are consistent with those in the literature [2, 10, 16, 20] but in addition, results reveal a difference in uptake of guidelines across the different cadres of health workers, lack of demand for evidence behind new policies and guidelines, pronounced human resource constraints in the hospitals, and poor health worker expectations related to implementation.

Generally, the guidelines were well received but met with some negative attitudes from individuals. Most interestingly health workers expected to gain monetarily for adhering to guidelines or for attending training. While making guidelines simple and specific is recommended [21] this runs the risk of some clinicians feeling the approaches are ‘too simple’. Although an explicit link between guidelines and the evidence behind them is reported to be important in their acceptance [22] in developed country settings this was not clearly apparent in our study. This perhaps reflects a basic lack of routine exposure to any form of evidence in Kenyan district hospital settings.

The results of this study clearly highlight the effect of human resource constraints on changing practice. Health workers reported heavy workloads, shortage of staff, and a high number of patients as challenges to strictly adhering to the guidelines. At night there might be only 1-3 nurses per shift in a pediatric ward with between 20-70 patients. In hospitals with high client turnover and shortage of staff, health workers focus on accomplishing tasks in the specified time at the expense of quality care. However, it is clear that this situation is often exacerbated by frequent movement of trained staff irrespective of their recent training (see English, submitted) and, based on health worker reports, the feedback, supervision and facilitation provided were important in encouraging adherence despite these challenges (see Nzinga, submitted).

In Kenya great use is made of substitute physicians (called clinical officers) to provide essential first line clinical services in small hospitals and larger health centres, Somewhat worryingly our data suggest some clinical officers are the slowest and most resistant to adopting the guidelines. This may be because clinical officers have also often been in practice longer than the newly qualified doctors often found in more rural areas as they often remain in the same place for many

years perhaps developing entrenched routines. Worryingly it is also clear that mistakes or failure to follow guidelines are often tolerated and ignored by all cadres, apparently to avoid confrontation with colleagues, and not used as a learning opportunity.

Health care institutions are often characterized by poor organizational coordination, in both clinical and administrative areas[23]. Our findings have shown that the hospitals had few or no routine organizational structures and processes to facilitate implementation of guidelines. A clear example is the lack of a system that introduces and orients new staff to routine/standard practice, an issue also potentially addressed by supervision and facilitation. This combined with staff movements over time can result in only a vague familiarity of staff present with guidelines appropriate to their work station even in settings that have received specific training. Such casual awareness clearly threatens the ability to apply them correctly[20].

## **CONCLUSIONS**

In delivering clinical interventions, understanding the context is important to effect change. In exploring the hospitals' culture it appears that traditionally senior staff in many hospitals rarely make any attempt to implement new guidelines even when these come from the national government. Instead senior staff are perceived to be mostly concerned with disciplinary actions for jobs done poorly. Consequently health workers are cynical about the organization's ability to improve care and have low outcome expectancy with regard to proposed improvements to practice. While the impact of limited human and physical resources is likely to be real such negative attitudes, tolerance of poor performance, unwillingness to deal with errors and in some cases an inertia associated with long experience or particular roles are major barriers to the implementation of best practice guidelines in routine hospital settings in Kenya. In such settings training and provision of guidelines alone may achieve little. It remains to be seen if a multifaceted intervention also incorporating supervision, feedback and facilitation can alter practice and improve the quality of care as hypothesized.

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## **Contributions**

The idea for the study was conceived by Mike English who obtained the funding for this project. Preparation for and conduct of the study was undertaken by all authors. Jacinta Nzinga undertook all the interviews and with Anne Warimu undertook the qualitative analysis. Jacinta Nzinga produced the draft manuscript to which all authors contributed during its development. All authors approved the final version of the report.

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## **Conflict of Interest Statement**

There are no conflicts of interest.

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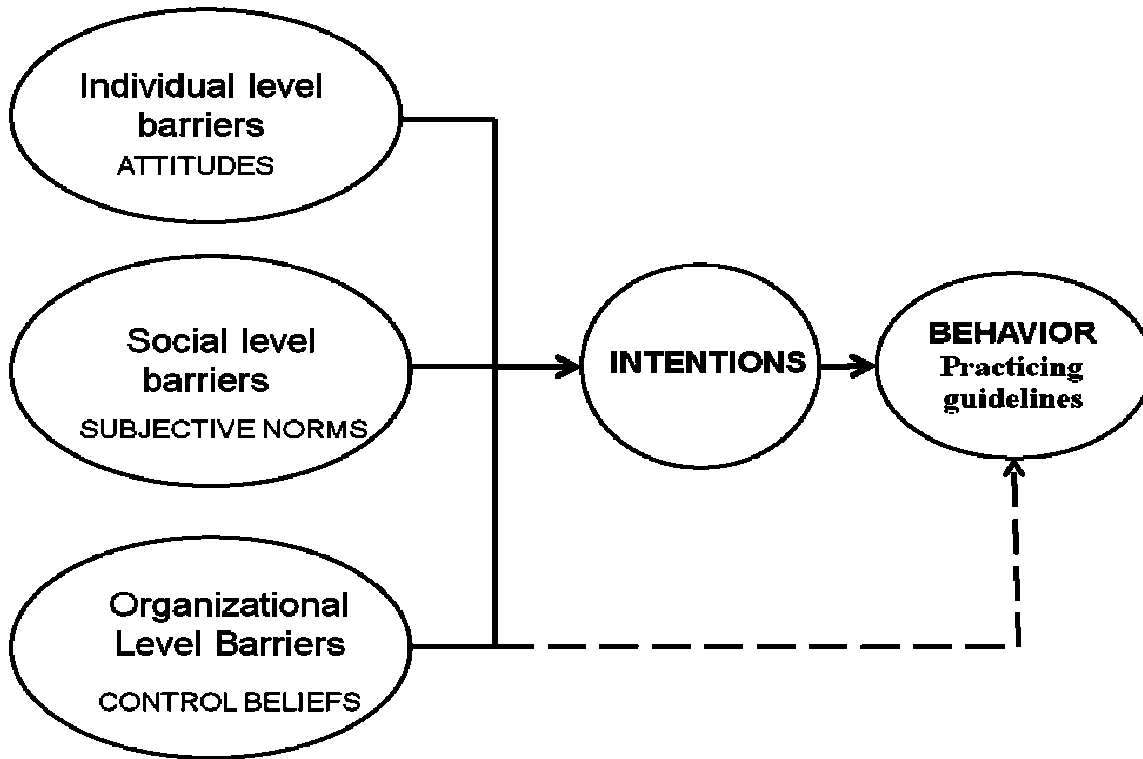
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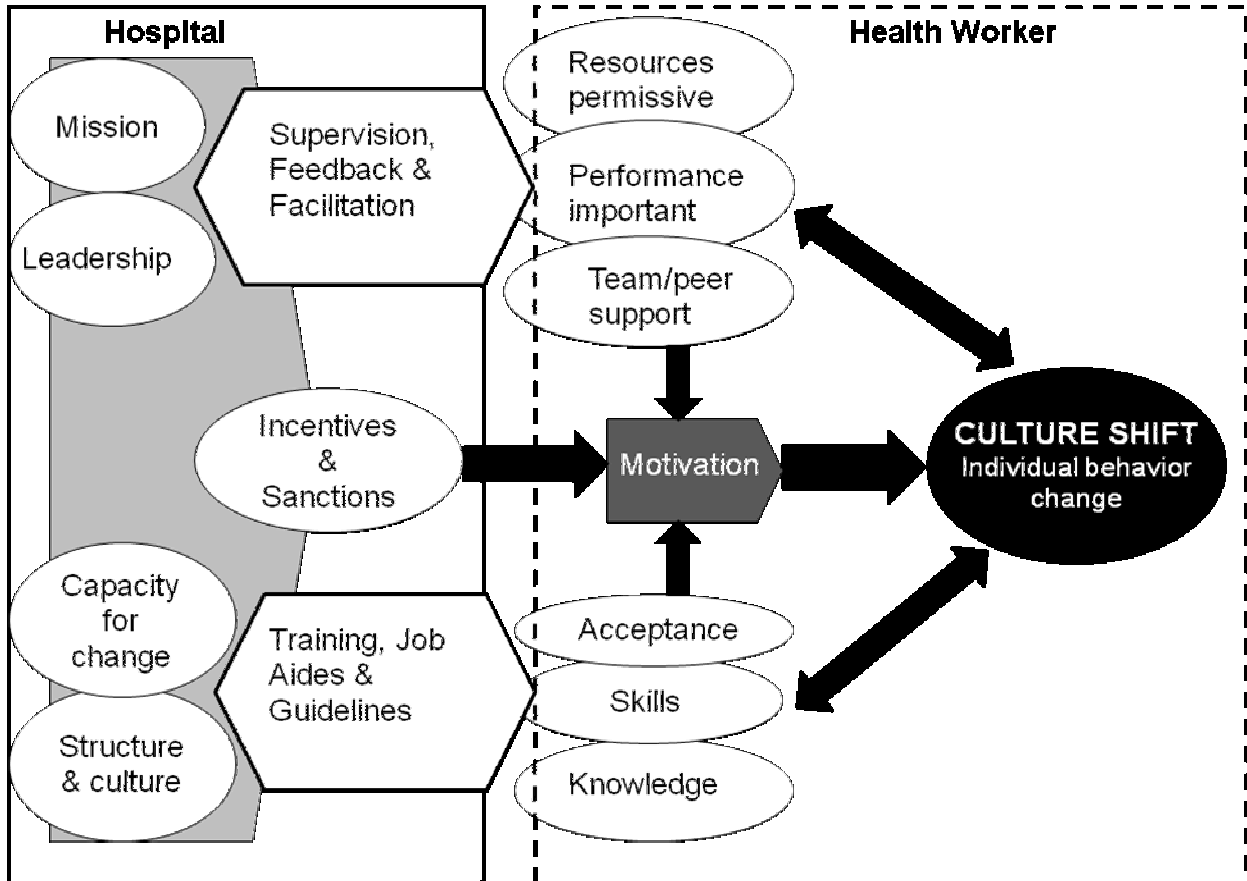
**Table 1 .** Number of participants interviewed in each hospital and cadre.

<b>HOSPITAL</b>	<b>H1</b>	<b>H2</b>	<b>H3</b>	<b>H4</b>	<b>TOTAL</b>
<b>Medical Officers</b>	1	1	2	2	6
<b>Clinical Officers</b>	4	3	2	4	13
<b>Clinical Officers interns</b>	1	1	0	0	2
<b>Nurses</b>	1	1	2	1	5
<b>Administrative Staff</b>	2	1	0	0	3
<b>TOTAL</b>	9	7	6	7	29

**Figure 1:** Diagrammatic representation of the Theory of Planned Behavior based on Ajzen, 1991 [18] and adapted for our project context.



**Figure 2:** Conceptual Framework for the hospital intervention illustrating how facets of the intervention may interact with characteristics of the hospitals; the social, organizational and physical context within which a health worker practices and their individual capacity for change that may all help create a culture promoting desired behaviours.



**Additional files provided with this submission:**

Additional file 1: barriers2guidelines\_060309\_clean.doc, 152K

<http://www.implementationscience.com/imedia/5772968962625996/supp1.doc>

Additional file 2: barriers2guidelines\_060309\_track\_changes.doc, 492K

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Additional file 3: barriers\_intervention\_aims\_table1.doc, 34K

<http://www.implementationscience.com/imedia/2104804056262602/supp3.doc>