



THE UNIVERSITY  
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# IMPROVING THE CAPACITY OF HEALTHCARE PROFESSIONALS TO STEM THE SPREAD OF COVID-19 IN KENYA

Final Report





# IMPROVING THE CAPACITY OF HEALTHCARE PROFESSIONALS TO STEM THE SPREAD OF COVID-19 IN KENYA: FINAL REPORT

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## CONTENTS

### 3 INTRODUCTION

- 4 PROJECT DESCRIPTION
- 4 PROJECT AIM
- 5 PROJECT SETTING
- 5 PROJECT ACTIVITIES

### 6 STAGE 1: WEEK 1 TRAINING

- 6 Preparation
- 6 Training

### 8 STAGE 2: PARTICIPANT EVIDENCE IMPLEMENTATION PROJECTS

- 8 Ethical Consideration

### 10 EVIDENCE IMPLEMENTATION PROJECTS - RESULTS AND ANALYSIS

### 13 WEEK 2 TRAINING

### 14 CONCLUSION

- 14 Lessons Learned

### 15 ACKNOWLEDGMENT

### 15 REFERENCES

### 16 APPENDIX ONE

- 16 Table 3

### 17 APPENDIX TWO

- 17 Trainers & Facilitators
- 17 Participants

# INTRODUCTION

Since its onset in late 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or COVID-19 has posed a serious challenge to many economies and healthcare systems across the world.<sup>1-3</sup> It is predominantly spread from person-to-person through contact and respiratory droplets.<sup>4-6</sup> Owing to this, it spreads fast and while it may cause mild or moderate disease, it often has a lethal outcome. As such, the World Health Organization (WHO) has drafted a series of recommendations aimed at controlling its spread.<sup>6</sup>

While global economic downturn has been an obvious consequence of the COVID-19 pandemic, its effect on other aspects of human life have been equally devastating. Lockdowns have resulted in less people seeking health services and most health systems have prioritised care for COVID-19 patients at the expense of other essential services such as provision of cancer care, therapy for HIV/AIDS, tuberculosis and malaria as well as reproductive, maternal and child health (RMCH) services such as family planning services, antenatal, natal and postnatal care and childhood immunizations.<sup>7</sup>

While addressing preventable maternal, neonatal and child deaths has always been a priority for the Government of Kenya as is reflected in the Vision 2030 plan and the 2018 Health Sector Strategic and Investment Plan, the national maternal mortality ratio (MMR) neonatal mortality rate (NMR) were already five-times higher than the WHO target.<sup>8</sup> In the wake of the COVID-19 pandemic, gains made in the prevention of maternal, neonatal and child deaths in Kenya were visibly at risk. There are reports of reduced antenatal clinic attendance, reduced hospital deliveries and a rise in still births.<sup>9,10</sup> These effects are attributable to reduced access to health facilities due to curfews and lockdowns imposed by the government for the purpose of limiting the spread of COVID-19.<sup>7</sup>

Further, the fear of contracting the virus during hospital visits drove down health facility utilisation contributing to a potential roll back in previous gains.<sup>7</sup>

Healthcare providers are a crucial component of the fight against COVID-19. Unfortunately, those delivering RMCH services in Kenya lack training on triaging and managing patients with COVID-19, putting themselves, pregnant women and children at risk for contracting the illness. In July 2020, it was reported that at least 41 employees at the country's largest maternity hospital had tested positive for COVID-19.<sup>11</sup>

Moreover, there have been reports of clinicians fleeing from patients presenting with COVID-19 symptoms due to lack of PPE and training on triaging and managing patients with the illness. Despite these challenges, the country's ministry of health still recommends continued availability of quality and safe RMCH services during the COVID-19 pandemic and has even issued clinical practice guidelines in line with this policy.

Given the need to sustain the provision of safe RMCH services during the pandemic, innovative strategies that support and supplement already strained healthcare systems are warranted.<sup>7</sup> In addition to employing more healthcare workers and availing PPE, a useful strategy would be to empower healthcare providers by training them in evidence implementation so that they can apply evidence-based measures for COVID-19 infection prevention and

control to ensure their own wellbeing as well as that of pregnant women, mothers and children. The JBI Evidence-based Clinical Fellowship Program is a highly successful international program designed to prepare clinicians, policymakers and quality managers from all health professions to lead initiatives related to implementing evidence-based approaches to healthcare and achieving change. The six-month work-based program not only teaches participants about evidence-based practice and how to access and critically appraise evidence; it also empowers them with clinical leadership skills to actively lead change by conducting unbiased clinical audits, engaging in quality improvement processes and designing and executing strategies to get research into practice and apply clinical evidence in their own work environment.

Clinical audit is a useful evidence implementation tool that can be applied for this purpose. It has been shown to lead to positive, appreciable and sustainable workplace changes across different healthcare contexts. However, its application for COVID-19 infection prevention and control in RMCH units in Sub-Saharan Africa is as yet unstudied. We purposed to utilise clinical audit as tool for implementing best practice in COVID-19 infection prevention and control in select RMCH units in four counties in Kenya with the aim of enhancing the government's policy on continued provision of RMCH services during the pandemic.





## PROJECT DESCRIPTION

This project delivered JBI's Evidence-based Clinical Fellowship Program (EBCFP) to improve the capacity of healthcare practitioners working in urban, rural and remote communities in Nairobi, Nandi and Uasin Gishu Counties, Kenya, to implement and sustain evidence-based healthcare strategies in their daily practice to stem the spread and impact of COVID-19 for healthcare workers and patients in the provision of maternal and child health services.



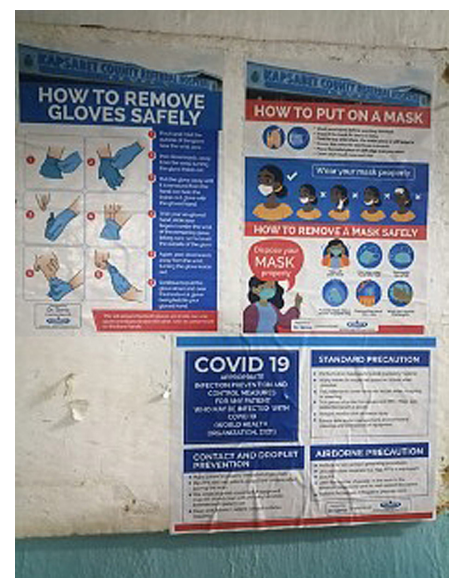
Nine doctors, nurses, community healthcare workers and public health officers (Appendix one) from across the four counties underwent a six-month work-based training program that provided participants with the knowledge and skills to lead change initiatives to implement evidence-based practice at the point of care. A multidisciplinary group of participants were recruited from different levels of healthcare delivery so that in addition to tackling the aforementioned issues with delivery of maternal and child health services during the pandemic, the project team could also study the barriers and facilitators of change/evidence implementation across the different levels of healthcare delivery in Kenya.

## PROJECT AIM

The overall aim of the project was to improve the capacity of healthcare professionals to implement evidence-based infection prevention and control measures to prevent workplace transmission of COVID-19 among healthcare workers and patients in the provision of maternal child health services in Nairobi, Nandi and Uasin Gishu Counties, Kenya (including family planning clinics, antenatal clinics, care during labour, postnatal care and immunization clinics).

The aim of the participants evidence implementation projects was to promote evidence-based practice in the prevention of workplace transmission of COVID-19 among healthcare practitioners providing RMCH services in four counties in Kenya, including:

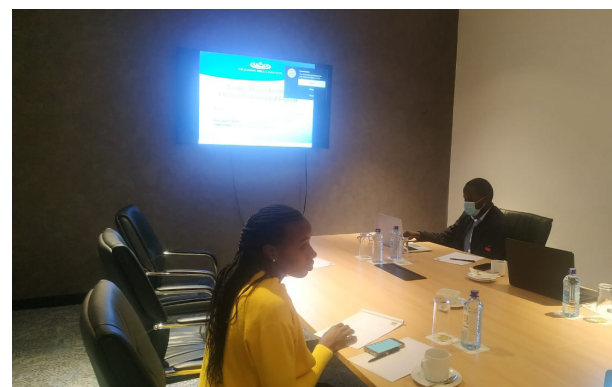
- 1.To assess compliance to evidence-based infection prevention and control measures for the prevention of workplace transmission of COVID-19 in select RMCH units in Nairobi, Nandi, Homa Bay and Uasin Gishu Counties, Kenya
- 2.To determine barriers and facilitators of compliance to evidence-based infection prevention and control measures for the prevention of workplace transmission of COVID-19 in select RMCH units in Nairobi, Nandi, Homa Bay and Uasin Gishu Counties, Kenya
- 3.To determine the impact of health facility context on compliance to evidence-based infection prevention and control measures for workplace transmission of COVID-19 in select RMCH units in Nairobi, Nandi, Homa Bay and Uasin Gishu Counties, Kenya



## PROJECT SETTING

This project was undertaken across nine health facilities providing MCH services (family planning clinics, antenatal clinics, care during childbirth/labour, postnatal care as well as child immunization clinics) in four counties in Kenya. The four counties are Nairobi, Uasin Gishu, Nandi and Homa Bay counties. Nairobi county is in the central part of Kenya and has a mostly urban population of 4,397,073 million people.<sup>12</sup> It also serves as the capital of the country. One facility from this county was involved in the project. Uasin Gishu county is located in the western part of Kenya. Its capital is Eldoret town and it has a total population of 1.163 million people, majority of which is rural.<sup>12</sup>

Four facilities from this county were involved in the project. Nandi county is also in the western part of Kenya with an equally rural population of 885,711 people.<sup>12</sup> Its capital is Kapsabet town. Three facilities from this county were involved in the project. Homa Bay County is located in the south western part of Kenya near Lake Victoria. It has a mainly rural population of 1,131,950 million people.<sup>12</sup> Its capital is Homa Bay town. One facility from this county was involved in the project. Table 1 provides a brief description of the individual facilities included in this project. Overall, there was a mix of primary, secondary and tertiary level facilities as well as rural and urban facilities.



**Table 1**

Health Facility	Level of Care	Location/Setting	Scope of Services
Kenyatta National Hospital	Tertiary (Level six)	Nairobi/Urban	Comprehensive general and discipline specialization. Training research and policy setting. Reference diagnostic/laboratory services.
Pioneer Health Centre	Primary (Level two)	Eldoret/Urban	Disease prevention and health promotion. Basic out-patient diagnostic, medical, surgical and rehabilitative services. Emergency in-patient before referral or for observation.
Moi Teaching and Referral Hospital	Tertiary (Level Six)	Eldoret/Urban	Comprehensive general and discipline specialization. Training research and policy setting. Reference diagnostic/laboratory services.
Uasin Gishu County Hospital	Secondary (Level Four)	Eldoret/Urban	In-patient diagnostic, medical, surgical, rehabilitative and reproductive healthcare services. Specialized out-patient services
Huruma Sub-County Hospital	Primary (Level Three)	Eldoret/Urban	Disease prevention and health promotion. Basic out-patient diagnostic, medical, surgical and rehabilitative services. Emergency in-patient before referral or for observation.
Kaptumo Sub-County Hospital	Primary (Level Three)	Kaptumo/Rural	Disease prevention and health promotion. Basic out-patient diagnostic, medical, surgical and rehabilitative services. Emergency in-patient before referral or for observation.
Nandi Hills County Hospital	Secondary (Level Four)	Nandi Hills/Rural	In patient diagnostic, medical, surgical, rehabilitative and reproductive healthcare services. Specialized outpatient services
Nandi County Referral Hospital	Secondary (Level Five)	Kapsabet/Rural	In patient diagnostic, medical, surgical, rehabilitative and reproductive healthcare services. Specialized outpatient services
Afya Research Africa-Homa Bay	Primary (Level Two)	Homa Bay/Rural	Disease prevention and health promotion. Basic out-patient diagnostic, medical, surgical and rehabilitative services. Emergency in-patient before referral or for observation.

## PROJECT ACTIVITIES

### Planning

- Afya Research Africa trainers and facilitators worked with local stakeholders and JBI to identify local health facilities, establish clinical questions and determine project timeline and key milestones; training venues, materials and equipment were booked/secured.
- JBI Research Fellow, Dr Luclynn Lizarondo, developed Evidence Summaries and Audit Criteria to inform the clinical questions; Audit Criteria were reviewed/amended by the project team to ensure feasibility, meaningfulness and appropriateness in the local contexts; participants were recruited and registered; final audit criteria were delivered.
- Final planning meeting held by project team to confirm program schedule, milestones, resources, activities and approaches.

## STAGE 1: WEEK 1 TRAINING

### Preparation

The Ayfa Research Africa trainers worked together to ensure that the JBI EBCFP materials were contextualised to the knowledge/cultural needs and skill level of the target group. They modified materials to include further information on evidence-based healthcare, clinical improvement and audit and feedback approaches. All content within the slides was reviewed for relevancy to Kenya health professionals and changes were made to each session, particularly the group work and contextualised cultural examples used. Exemplar projects from Kenya were included within the teaching content.

### Training

The first three days of training focused on introducing participants to evidence-based healthcare, best practice models and concepts and the importance of clinical leadership. Including building the capacity of participants to manage, actively lead and facilitate change in their workplace, including conflict resolution, negotiation, communication and building workplace culture based on current best practice. Facilitators guided participants through contemporary models and tools to enable them to develop an understanding of strategies related to clinical leadership and change management in healthcare using real world examples.

The workshop involved a mix of facilitator-led group discussion, guided learning, personal reflection and analytical exercises. Small groups were encouraged to share their experiences and report back to the entire group. The program aimed to enable participants to explore theories and concepts relating to clinical leadership and change management in healthcare and equip health professionals with the knowledge and tools they need to become effective clinical leaders.

The objectives were to prepare participants to enable them to:

1. Describe the nature of clinical leadership
2. Identify your own strengths and weaknesses as leaders
3. Develop and engage in processes to further develop your leadership strengths
4. Introduce evidence-based practice to your setting
5. Act as an agent for change
6. Provide skills in conflict resolution
7. Maximise your clinical leadership potential

### PARTICIPANT FEEDBACK

**“Thanks to this training and project, I have learned that task shifting plays a big role in achieving change. Where we lacked good will such as deployment of extra nursing staff to screen walk in clients, use of the security personnel, students and non-clinical staff helped in achieving the objectives. Support such as training triggers a change and leadership outlook beyond routine clinical practices”**

Jedidah W. Kiprop





### Stage 1: Week 1 Training (Cont.)

In the last two days of training, participants worked both together and independently to develop a evidence implementation project plan for their health facility, including but not limited to:

- Participants selected the relevant JBI evidence-based audit criteria (Table 2) to measure and monitor. As participants' healthcare facilities range from small to large, not all criteria was feasible all suitable for all practice settings.
- They then determined how these audit criteria would be defined, measured and monitored. i.e. what constitutes a hand washing station? Is it a sink and tap with soap? Must it have running water everyday? How will it be measured? i.e. will a project team member undertake observation of the handwashing station every day? Random days? For how long?
- Participants considered who the key stakeholders were in their health facilities, which patients (or clients or residents) may be impacted by the change, and identified relevant leaders and leadership skills that need to be accepting and engaged; and the organisational communications channels, committees and reporting requirements. This identification process means considering the trajectory of a project from start to finish, and knowing (or learning) the organisational pathways or processes to facilitate the successful completion of an evidence implementation study.
- Participants mapped out the human and technical resources needed to complete the project, including who would comprise their project team.
- They then mapped out a stakeholder engagement plan, including how to obtain executive leadership support.
- Finally they mapped timelines for resource procurement, initial stakeholder engagement (meetings/training), team establishment, implementing phase 1- conducting baseline audit, phase 2- getting research into practice (GRIP) and phase 3- follow up audit.

Participants and trainers established a WhatsApp group to facilitate ongoing, instantaneous feedback and to share experiences, and established monthly check-in meetings via Google meet.

From the trainers' perspective, the training seemed to be very well received and the format of the training worked well. The participants were engaged and joined in happily with the discussions and activities. The trainers were appreciative of the opportunity to work with this remarkable group and to see how they overcame many of the challenges they see in day-to-day practice and provide guidance and resources on how to further address challenges to become leaders and change agents.

In the words of Henry Adamy (trainer), "The JBI Evidence based project on Covid-19 Infection prevention and control (IPC) makes environments safe for the mother and child (the most vulnerable group) attending health clinics and health workers working in those clinics. In the beginning of the pandemic, so much information was available to the health care practitioners regarding Covid-19 infection prevention and control. The JBI evidence summaries have made it easier for the clinicians to have the most reliable best practices to tame the spread of Covid-19 and provided the simplest way to assess our IPC practices and implement best practices.

This training opportunity was very resourceful to me because clinicians were able to share myriad challenges facing them from different level of care despite being in the same country. Through constant follow-up and discussions to address these challenges faced by each individual, which required unique interventions, this multifaceted experience made me appreciate the dynamic nature of implementation projects."



### PARTICIPANT FEEDBACK

**"Thank you very much for upskilling me with the knowledge and skills which have been very helpful."**

**"The main aspects of this course that I found useful and interesting was on how to conduct Clinical audits and the importance of research in relation to improving patient care based on evidence-based practice."**

**"Thank you for helping me to gain new knowledge in which I have to learn and implement it."**

## STAGE 2: PARTICIPANT EVIDENCE IMPLEMENTATION PROJECTS

With the help of Ayfa Research Africa trainers and facilitators, participants designed and implemented their evidence-based improvement project over a period of 26 weeks, using JBI's Getting Research into Practice approach and Practical Application of Clinical Evidence System (JBI PACES) and the Getting Research into Practice system (GRiP). They involve the use of audit and feedback as a framework for the promotion of evidence utilisation at the work place. Three phases are involved in this system. First, a baseline audit is carried out to assess current practice and compare it to an evidence informed standard. The second phase involves providing feedback to concerned healthcare workers as well as identifying barriers to implementation of evidence-based practice. Strategies to overcome these barriers are also devised and implemented. The third phase involves a follow up audit aimed at assessing for improvement in practice.

### Ethical Consideration

Permission to conduct the project was sought from each facility's administrators following any laid down procedures for acquiring such permission. No ethical clearance was sought since this project was designated a quality improvement initiative in each participating facility. Nonetheless, any patient level data were de-identified and kept confidential.

### Phase 1 Stakeholder Engagement and Baseline audit

Following Week 1 of training, all participants returned to their health facilities to undertake phase 1 of their projects.

This included establishing a project team, implementing their stakeholder engagement plans to educate colleagues and patients; engage with executive leadership and ensure project buy-in and plan and implement their baseline audit using JBI PACES.

In each participating facility, a similar audit process was followed. In the first phase, an audit team was constituted comprising a project leader and medical, nursing or allied health staff involved in the provision of care in each project unit. This was followed by establishment of audit criteria and performance of a baseline audit to assess compliance to these criteria. Overall, ten evidence-based audit criteria were identified through an evidence summary prepared by the transfer science unit at JBI (Table 2). However, each facility was at liberty to audit only those criteria that were relevant or applicable to their context.



Photo: Peer training (how to conduct a baseline audit)

Audit Criterion	Method used to collect information	Denominator for criterion	Sample size (Across all sites)
1. Healthcare workers receive standardized infection IPC training.	Healthcare workers were interviewed and asked whether or not they had undertaken IPC training in relation to COVID-19	Total number of healthcare workers interviewed	Baseline: 374 Follow-up: 374
2. Healthcare workers show competency in assessment, donning, use and doffing of PPE.	Healthcare workers were observed and assessed on proper use of masks, gloves and gowns	Total number of healthcare workers observed	Baseline: 259 Follow-up: 259
3. Healthcare workers have been made aware of information relating to the current COVID-19 situation.	Healthcare workers were interviewed and asked whether or not they had been provided with information relating to the current COVID-19 situation	Total number of healthcare workers interviewed	Baseline: 367 Follow-up: 367
4. All patients presenting to a healthcare facility suspected of COVID-19 are triaged.	Checking for evidence of triage among patients suspected of COVID-19	Total number of patients suspected of having COVID-19	Baseline: 430 Follow-up: 430
5. Separate areas are made available for triage, assessment and management.	Checking for availability of a triage, assessment and management area for COVID-19 suspects	Total number of observations in which a triage area was checked for	Baseline: 58 Follow-up: 59
6. Suspected COVID-19 cases are identified as soon as possible, tested, and isolated in appropriate facilities.	Checking that suspected cases of COVID-19 have been tested and isolated in appropriate facilities	Total number of suspected cases seen at the facility	Baseline: 84 Follow-up: 84
7. Social distancing is in place at the triage station.	Observation of whether or not patients being served are at least one meter apart	Total number of observations in which social distancing was checked for	Baseline: 324 Follow-up: 324
8. A handwashing station is provided at the triage station for use by healthcare workers, patients and visitors.	Checking for the presence of a handwashing station that has running water and soap or adequate hand sanitizer solution.	Total number of times a check for a functional handwashing station was done	Baseline: 101 Follow-up: 101
9. Standardized IPC precautions are taken by all healthcare workers	Checking for proper use of masks, gowns and gloves as well as handwashing and/or use of hand sanitizer by healthcare workers.	Total number of times healthcare workers were observed taking IPC precautions	Baseline: 300 Follow-up: 300
10. A point-of-care risk assessment of the patient is undertaken.	Check patient charts for documentation of risk assessment i.e., temperature, symptoms of COVID-19, self-quarantine etc	Total number of patient charts reviewed	Baseline: 304 Follow-up: 284



## Phase 2 Design and implementation of strategies to improve practice (GRiP)

The second phase of the audit process involved analysis of findings and providing feedback to relevant stakeholders (other healthcare workers within the study units and health facility at large, healthcare managers and other interested parties). Compliance to each criterion was determined and the results presented to stakeholders during an educational meeting. The project team at each facility also brainstormed possible barriers and facilitators to change as well as designing strategies to overcome identified barriers or sustain facilitators. While this phase was initially envisioned to take place between December 2020 and February 2021, a health workers' strike during this period necessitated extension of timelines. As such, phase two was implemented over a two-month period (March to April 2021).

## Phase 3: Follow-up audit post implementation of change strategy

The final phase of the audit process was a follow up audit to assess the outcome of interventions implemented in the previous phase. The follow-up audit used the same evidence-based audit criteria as those used in the baseline audit and the methods employed were similar to those used in the first phase. The third phase was carried out over a one-month period in May of 2021.

### PARTICIPANT FEEDBACK

**“Feedback to staff on baseline audit results, and issues with compliance was an important improvement strategy, making various stakeholders aware of gaps in practice. Evidence from other studies have proved feedback to be important tool in improving performance. Associated with motivation and addressing root cause.”**

– Marian Esiromo



*Photos: Feedback and Discussion with Labour Ward staff on Baseline Audit compliance with best practice in Kenyatta National Hospital*



## EVIDENCE IMPLEMENTATION PROJECTS – RESULTS AND ANALYSIS

The JBI PACES software was used across all sites to determine compliance to each audit criterion (Table 2). This was calculated as the proportion of observations in which each criterion was fulfilled. The denominator in this calculation was the target number of observations and each facility was at liberty to determine this number after consideration of patient volumes and availability of facilities requisite facilities. For each site, the GRiP module of the software was used to generate a table of barriers to implementation and strategies and resources required to overcome them (Figure 2). Thereafter, all barriers and strategies from each site were put together and categorised to enable a more meaningful analysis suited to the aims of the entire project. Barriers were defined as any issue or problem that contributed to an undesired compliance. These were arranged into three main categories: knowledge, skills and attitudes (KSA), resources and organizational characteristics as has been previously attempted.<sup>13</sup>

Strategies used to overcome these barriers were categorized according to the Cochrane Effective Practice and Organisation of Care Group (EPOC) taxonomy which classifies interventions/strategies into categories based on their conceptual or practical similarities.<sup>14</sup> The taxonomy has four domains each with different categories and sub-categories. We mapped each identified strategy in this project to a sub-category, category and finally a domain.

In order to determine the impact of context on evidence implementation, participating sites were categorised according to level of healthcare service provision (tertiary, secondary and primary) and compliance to audit criteria compared across categories. Similarly, the types of barriers to compliance encountered at each of these levels and the strategies used to overcome them were compared.



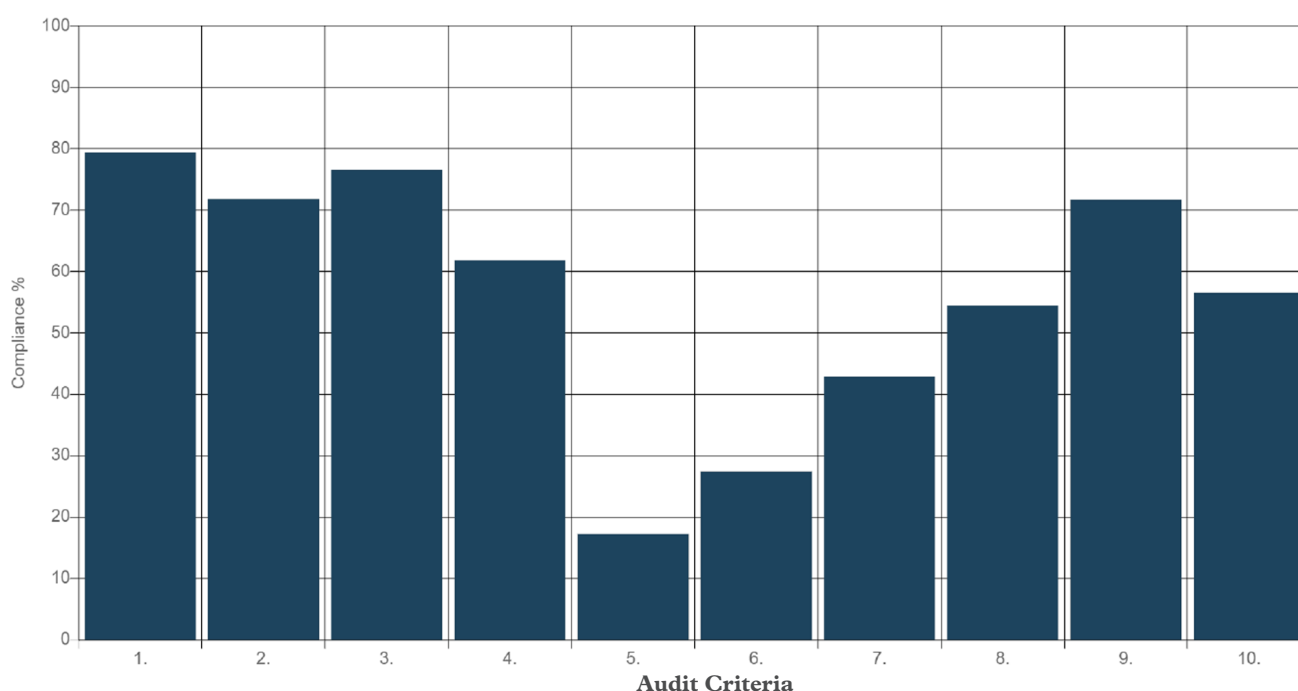
## Results

### Phase 1: Baseline Audit

Across all sites, the best compliance (79%) was found in criterion 1 (healthcare workers had received standardised IPC training). Healthcare workers also showed competence in use of PPE (criterion 2, 72% compliance), followed standard IPC precautions (criterion 9, 72% compliance) and were aware of the current COVID-19 situation (criterion 3, 77% compliance). Three criteria had compliance less than 50%. Social distancing was observed only 43% of the time (criterion 7), expedited identification of suspected cases had 27% compliance (criterion 6) while presence of separate areas for triage, assessment and management of suspected cases had only 17% compliance (criterion 5). Presence and use of a hand washing station had 54% compliance, point of care risk assessment had 57% compliance while triage of all suspected cases had 62% compliance.

Figure 1 depicts compliance to each criterion across all sites. Site specific compliance to each criterion is shown in table 3.

**Figure 1 Baseline Audit Results (All Sites)**





## Phase 2: Getting research into practice

Across all sites, a total of 44 barriers and one facilitator were identified during this phase. Lack of knowledge, skills and attitudes were a common barrier to compliance. There was reduced knowledge and skills on IPC practices in general, PPE use as well as the COVID-19 situation. Hand washing, social distancing and triaging were affected by a relaxed attitude among healthcare workers in addition to reluctance and lack of initiative to implement these practices. The second category of barriers involved availability of resources. Across all sites, compliance was affected by lack of supplies, equipment and facilities as well as lack of physical space to implement triage and social distancing. Increased workload was also a barrier, causing staff to be overworked and therefore unlikely to implement IPC strategies. The final set of barriers involved organisational characteristics. There was a lack of organisational protocols on social distancing and triaging in a number of sites. Those that had such protocols noted they were poorly utilised. Lack of reporting channels and other forms of communication was also reported as a barrier. Other aspects of the organisational system such as high staff turnover, poor role definition/delegation and lack of managerial supervision were also identified as barriers to compliance.

The strategies to overcome these barriers fell into two domains from the EPOC taxonomy. Implementation strategies were employed for KSA barriers as well as those due to organisational characteristics. They included having education meetings to enhance knowledge and skills, consensus processes on how best to adhere to IPC practices, providing regular feedback, reminders such as posters, use of opinion leaders and local IPC champions and managerial supervision to ensure adherence to protocols and processes. Delivery arrangements included role expansion and task shifting and change of workplace environment to provide areas for triage and enable social distancing.

The project trainers and facilitators played a key role in mentoring participants during this phase. In the words of Rosa Chemwey (facilitator), "Facilitators guide the process and are available to handle challenges in project implementation. For instance, at Kenyatta National Hospital when administrative consent was needed to undertake the project, I came in handy especially in emphasising the profound benefits of monitoring clinical practice against evidence. Subsequently, this was highly acceptable and to date there are ongoing clinical audits in various aspects of healthcare. Administrative buy-in was one of the key achievements in ensuring sustainability of the project. As facilitators we also create a long lasting mentor-mentee relationships to continuously guide future clinical audits."

## Phase 2: GRiP

Barriers	Strategies	Resources	Outcomes
Lack of knowledge	Training of staff through CME	Tea and snacks IEC materials	A CME training log Staff showing competency in IPC measures
No social distance at all service delivery points	Ensuring social distance by marking 1M rule	Marker pens Stickers	All waiting areas are marked 1M apart
Reluctance of staff to do hand washing before entering the facility	Providing soap in all hand washing areas at all service delivery points. Provision of alcohol based improvised hand sprays	Soaps. Hand sprays Alcohol based sanitizers	All staff observing hand hygiene
No proper triaging of patients at point of entry to the facility	Printing of screening questions.	Printing papers	Screening questions in place
Few hand washing stations	All taps at Service delivery points provided with soap and running water	Working taps Hand washing soaps	More hand washing stations
No assessment of patients at triage areas and documentation	Availing of black register for documenting Print out of checklist	Black book Print out	Documented patients

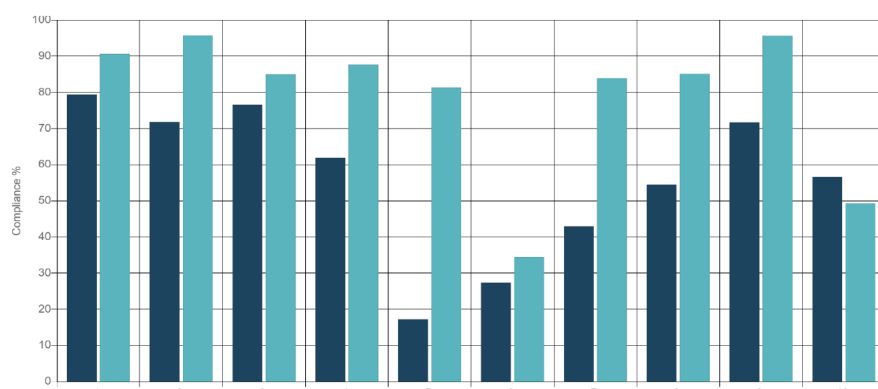
**Figure 2 Example GRiP Plan, Naomi C. Arussey, Pioneer Health Center**



### Phase 3: Follow-up Audit

In the follow up audit, there was improvement in nine out of ten audited criteria across all sites. The most improved was criterion 5, patients presenting to a healthcare facility suspected of COVID-19 are triaged (17% compliance at baseline and 81% compliance at follow-up). Adherence to social distancing also showed marked improvement in the follow-up audit (43% at baseline and 84% at follow-up). Healthcare worker competence in use of PPE and application of standard IPC precautions had the best compliance in the follow-up audit (96% compliance each). Figure 3 depicts compliance to each criterion across all sites for both baseline and follow-up audits. Site specific compliance to each criterion for both audit cycles is shown in table 3.

**Figure 2 Follow up Audit Results (All Sites)**



- Healthcare workers show competency in assessment, donning, use and doffing of PPE improved 71 – 90% (19% increase) across all sites
- All patients presenting to a healthcare facility suspected of COVID-19 are triaged improved 61 – 88% (27% increase) across all sites
- Separate areas are made available for triage, assessment and management improved 17 – 81% (64%) across all sites
- Social distancing is in place at the triage station improved 43 – 84% (41% increase) across all sites
- A handwashing station is provided at the triage station for use by healthcare workers, patients and visitors improved 54 – 84% (30% increase) across all sites
- Standardized IPC precautions are taken by all healthcare workers improved 71 – 96% compliance (25% increase) across all sites
- Improvement in 9 out of 10 audit criteria across all sites (average 26%)

**“This project will be sustained by pro-actively selecting and addressing problem areas in a bottom-up manner, where all staff are involved in identifying challenges, possible solutions and implementing them as cost effectively as they can.”**

**Dr Jedidah W. Kiprop, Uasin Gishu County Hospital**

### Impact of context on compliance to audit criteria

Overall, there was no difference in compliance to audit criteria between tertiary, secondary and primary healthcare facilities. The types of barriers encountered were also similar (all levels had lack of knowledge and skills as a barrier in addition to having resource constraints and organisational impediments). Strategies to overcome barriers were also similar across levels of service delivery.

### USE OF PPE ACROSS ALL SITES

**19%  
INCREASE**



### SUSPECTED COVID-19 PATIENTS TRIAGED

**27%  
INCREASE**



**17-81%  
IMPROVEMENT**



### SEPARATE AREAS MADE AVAILABLE FOR TRIAGE

### SOCIAL DISTANCING IN PLACE

**41%  
IMPROVEMENT**



### HANDWASHING STATION PROVIDED

**30%  
INCREASE**



### IPC PRECAUTIONS TAKEN

**25%  
INCREASE IN  
COMPLIANCE**



**9 out of 10  
AUDIT CRITERIA  
IMPROVEMENT**





## WEEK 2 TRAINING

Afya Research Africa delivered the final 5-day training residency in Nairobi and Eldoret. Week 2 training was an opportunity to spend dedicated, protected time in reflecting, and writing up the results of each participant's evidence implementation projects.

Over the course of the week, each participant shared the results of their individual projects, including baseline audit, GRiP barriers, facilitators and strategies, follow up audit results and overall reflections of their project experience. Trainers and facilitators worked closely with each participant to finalise their data for individual presentations to the group and hospital/facility staff at the end of the week. In the final debrief session, participants spoke about their future plans for clinical audits and scaling up evidence-based activities in their setting.



### TRAINER FEEDBACK

**“I was excited to see how bringing this program to hospitals for the first time enabled clinicians who had never undertaken an evidence implementation program or activities before not only to embrace and implement the new skills that they had learned, but also to engage colleagues (other clinicians) in the process. As a result of this program, we have seen a big increase in clinicians wanting to participate in, and learn more about, evidence-based practice, and the nine clinicians that participated in this program are already making plans for their next clinical audit. It is great to see them willing and able to sustain and build on the skills that they gained in this program.”**

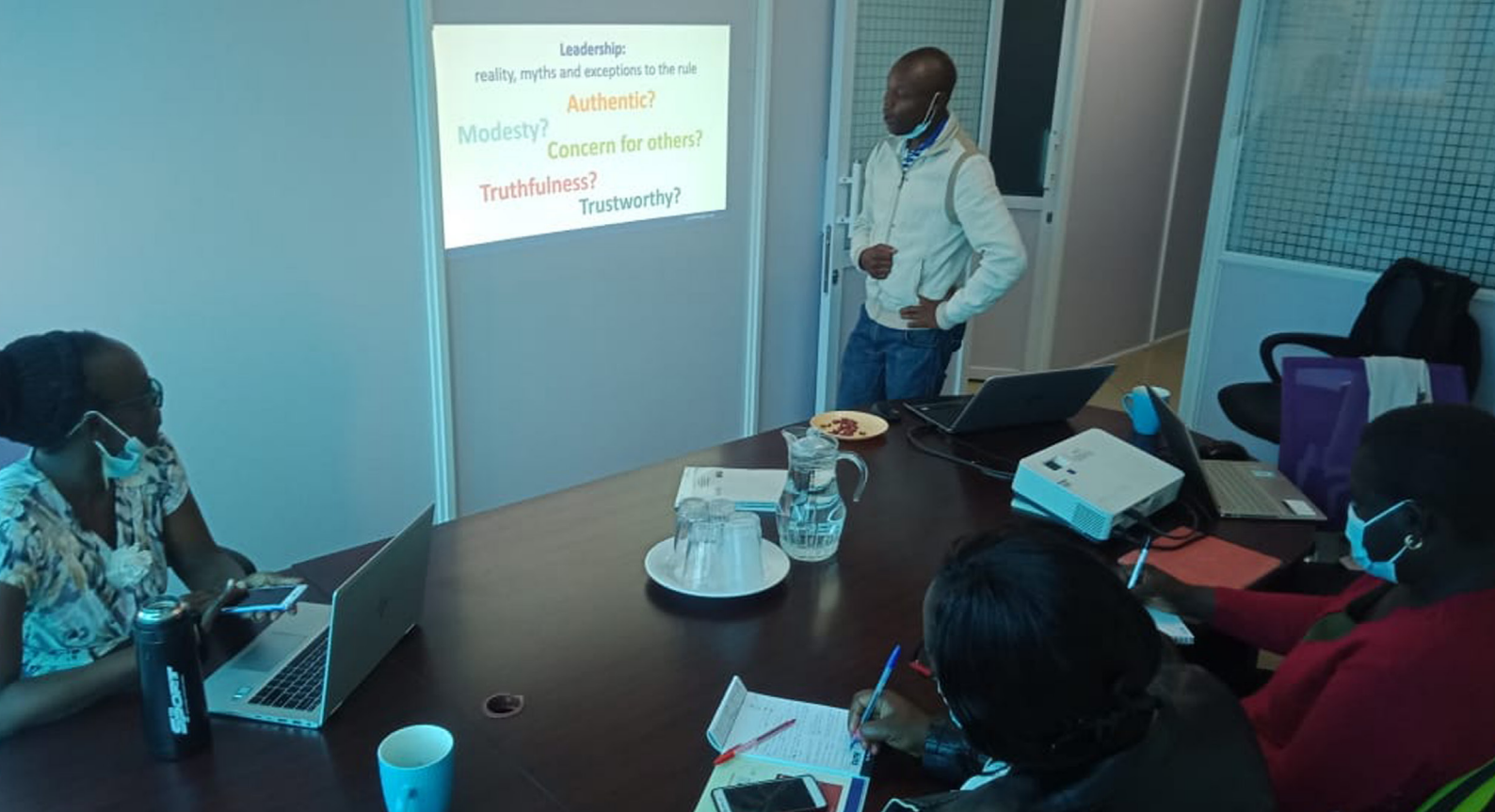
– Dr Clifford Mwita, Trainer

### FACILITATOR FEEDBACK

**“It was a great success that we were able to achieve our target of completing a multicentre clinical audit exercise. Through this project participants were able to appreciate performance, challenges and different opportunities for improvement across the varied sites. For example, putting up posters and creating an outdoor triage area for social distance worked in one facility while in another simply staggering clinic appointments and creating space within the facility served the purpose.”** - Rosa Chemwey, Facilitator

### PARTICIPANT FEEDBACK

**“Application of evidence-based approaches in the Prevention of COVID- 19 infection in maternal and child health units was effective in attaining the foregoing objectives. Sustainability of achievement will be attained through buy in from management, continuous education for behavior changes by staff and continued partnership with donors.”**



## CONCLUSION

### Lessons Learned

- Evidence based practice is very useful in the fight against the spread of the current COVID-19 pandemic by ensuring that health workers work in a safe environment and mothers and children attending health clinic are protected from getting infected with the COVID-19 virus.
- Having two trainers and two facilitators that had formerly been participants of the JBI Evidence-based Clinical Fellowship Program and conducted JBI evidence implementation projects and clinical audits meant that participants were well supported throughout the project. Trainers and facilitators were mentors and sounding boards offering advice, guidance and feedback at every stage i.e. providing insight into clinical practice gaps, validating participant ideas and solutions, assisting with the development of action plans and providing encouragement when the project was not moving as planned.
- Having all nine participants undertake the same clinical topic, using the same audit criteria (modified where required for their clinical setting), meant that the group could support each other, problem solve together, and learn more readily from one another's experiences, including what change strategies and solutions were successful.
- This also led to creating networks across the participating sites. Participants are now able to continue working together and exchange experiences in future clinical audits. A social media forum was created for this purpose.
- Monthly meetings with the project team as a whole were an important mechanism for participants to share experiences, address common barriers, learn from one another and keep their projects on task.
- Likewise, routine monthly meetings between the project coordinator, Dr Clifford Mwita, and JBI were an opportunity to sound out challenges solutions and discuss strategies for overall project support.
- Participants revealed that staff from their facilities' other departments/units had expressed an interest in their project, pointing to a demand among healthcare providers for skills in evidence implementation.
- The evidence implementation terrain in LMICs may be faced with unique challenges such as strikes by healthcare workers. While these challenges may slow the process of implementation, persistence and perseverance are key in seeing the process through to completion.

**“Constant engagement with JBI Clinical fellows has seen motivated individuals who ensure the positive gains from the concluded project continue to be experienced in their work place. Since the dissemination of the positive outcome of this project in their clinical settings, we have seen other departments have already adopted these best practices to curb the spread of Covid-19 disease in their health facilities.” - Henry Amdany, Trainer**



## ACKNOWLEDGMENT

We would like to acknowledge the audit team members from each participating facility and their invaluable input into this project. We are equally grateful to Bianca Pilla, Alexa McArthur and the rest of the JBI team for their guidance and support during this project. We are also thankful to the Dreamin Foundation for providing the funding necessary to carry out this project.



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# APPENDIX ONE

Table 3

	Kenyatta National Hospital		Pioneer Health Centre		Moi Teaching and Referral Hospital		Uasin Gishu County Hospital		Huruma Sub-County Hospital		Kaptumo Sub-County Hospital		Nandi Hills County Hospital		Nandi County Referral Hospital		Afya Research Africa-Homa Bay	
	BA	FA	BA	FA	BA	FA	BA	FA	BA	FA	BA	FA	BA	FA	BA	FA	BA	FA
1. Healthcare workers receive standardized infection IPC training.	64%	70%	80%	96%	96%	98%	100%	90%	40%	80%	50%	100%	70%	100%	70%	100%	33%	56%
2. Healthcare workers show competency in assessment, donning, use and doffing of PPE.	N/A	N/A	40%	100%	94%	98%	60%	100%	100%	100%	20%	80%	80%	100%	100%	100%	11%	11%
3. Healthcare workers have been made aware of information relating to the current COVID-19 situation.	58%	72%	80%	96%	70%	84%	86%	75%	100%	100%	60%	100%	62%	96%	93%	90%	100%	100%
4. All patients presenting to a healthcare facility suspected of COVID-19 are triaged.	N/A	N/A	20%	100%	100%	100%	90%	100%	60%	100%	20%	86%	70%	70%	70%	73%	40%	75%
5. Separate areas are made available for triage, assessment and management.	N/A	N/A	100%	100%	100%	100%	0%	100%	0%	100%	0%	100%	N/A	N/A	0%	75%	44%	89%
6. Suspected COVID-19 cases are identified as soon as possible, tested, and isolated in appropriate facilities.	N/A	N/A	N/A	N/A	100%	100%	N/A	N/A	N/A	N/A	20%	80%	50%	50%	0%	0%	22%	56%
7. Social distancing is in place at the triage station.	54%	78%	0%	100%	100%	100%	30%	60%	0%	70%	33%	67%	74%	74%	38%	90%	22%	100%
8. A handwashing station is provided at the triage station for use by healthcare workers, patients and visitors.	12%	76%	100%	100%	100%	100%	50%	100%	100%	100%	0%	100%	100%	100%	100%	93%	N/A	N/A
9. Standardized IPC precautions are taken by all healthcare workers	54%	82%	40%	100%	100%	100%	10%	100%	100%	100%	90%	90%	80%	100%	93%	93%	N/A	N/A
10. A point-of-care risk assessment of the patient is undertaken.	96%	98%	0%	100%	100%	100%	0%	0%	60%	100%	100%	100%	80%	0%	8%	0%	N/A	N/A
BA: Baseline Audit, FA: Follow-up Audit, N/A: Not Audited, IPC: Infection Prevention and Control																		

## APPENDIX TWO

### Trainers & Facilitators

#### 1. Clifford Mwita

Clifford is a general surgeon by training and is presently stationed at Gatundu Level 5 hospital in Kiambu county. He is also the head of research and evidence at Afya Research Africa (ARA) and the Director of JBI's Center of Excellence at ARA. He has skills in evidence synthesis and implementation and has undertaken a number of systematic reviews and clinical audits. Clifford is also a JBI fellow, having undertaken the EBCFP in 2012 thanks to an AusAID grant awarded to JBI.

#### 2. Henry Amdany

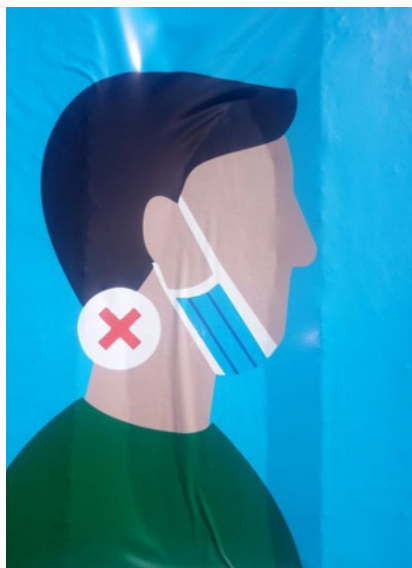
Henry is a pharmacist by training and is presently employed by Uasin Gishu county as a senior pharmacist. He also holds a master's degree in public health and is a JBI fellow having undertaken the JBI EBCFP in 2013. Since then, he has been involved in a number of clinical audit projects and has since been certified as trainer for the EBCFP. His areas of interest include pharmacovigilance and the application of best practices in drug prescription.

#### 3. Rosa Chemwey

Rosa is also a specialist obstetrician/gynecologist presently working with Kenyatta National Hospital in Nairobi. She is also a JBI fellow having undertaken the EBCFP in 2017 courtesy of the Joanna Briggs Foundation. Besides her clinical duties at Kenyatta National Hospital, she is involved in quality improvement initiatives for her department.

#### 4. Lydia Akumu

Lydia is a specialist obstetrician/gynecologist presently working in Nandi county. In addition, she is a JBI fellow having undertaken the EBCFP in 2018, courtesy of the Joanna Briggs Foundation. Her project on menstrual health practices undertaken during the fellowship has been the subject of a prestigious international recognition.



### Participants

#### 1. Sharon Kiptoon

Sharon is a medical doctor by training. Presently, she works as a government doctor employed by Nandi county and posted to Nandi Hills county hospital, a level 4 healthcare facility. In addition, she is presently pursuing a masters degree in Epidemiology and Biostatistics with a special focus on implementation science.

#### 2. Samson Sirma

Samson is a medical doctor currently working at Kapsabet county referral hospital, a level 5 healthcare facility that also doubles up as the main referral hospital for all of Nandi county. He has three years working experience and is presently posted to the obstetrics and gynecology unit of the hospital.

#### 3. Joyce A. Omia

Joyce is a nursing officer currently working for Uasin Gishu county. She has over 30 years' experience as a nurse and is presently the nursing officer in-charge of the antenatal clinic at Huruma sub-county hospital, a level 4 healthcare facility.

#### 4. Jedidah W. Kiprop

Jedidah is a medical doctor by training. She has over seven years of experience in this capacity and is presently employed by Uasin Gishu county and practices at Uasin Gishu county hospital, a level 4 healthcare facility.

#### 5. Naomi C. Arussey

Naomi is a clinical officer by training with a diploma in clinical medicine as well as a bachelor's degree in environmental health sciences. She has over 10 years of experience as a clinician and is presently working for Uasin Gishu county at Pioneer Health Center, a level 3 healthcare facility.

#### 6. Elizabeth Ombech

Elizabeth is a public health specialist with a particular focus in monitoring and evaluation. She presently serves as the chief of operations at Afya Research Africa and oversees the implementation of various projects carried out by ARA at the health centers (level 2) that ARA co-owns and runs with local communities across Kenya. These facilities are branded Ubuntu-Afya kiosks and have been instrumental in bringing essential healthcare services to rural and underserved communities across Kenya.

#### 7. Marian Esiromo

Marian is a specialist Obstetrician/Gynecologist presently working for Kenyatta National Hospital, Kenya's first national referral hospital (level 6). She heads the departmental quality assurance program for obstetrics and gynecology and carries out clinical audits as part of her mandate although she has not had formal training in evidence implementation.

#### 8. Abigael Gesuka

Abigael is a senior nursing officer who works as the clinical audit coordinator at the Moi Teaching and Referral Hospital, Kenya's second national referral facility (level 6). She has eight years clinical experience although she is now involved with the hospital's clinical audit and research department.

#### 9. Daisy J. Metto

Daisy is a clinical officer with five years' experience in healthcare practice. She is presently stationed at Kaptumo sub-county hospital, a level 4 facility located in Nandi county.