

Evaluating clinical competence of Village Health Workers in Kisoro, Uganda

1. Study Purpose and Rationale

The developing world has been afflicted by weak health systems, where poor government funding, inadequate facilities, lack of access to services, and a shortage of health workers have all fueled the health crisis. The challenges associated with human resources are particularly relevant; even in the setting where drugs, vaccines, and health services are available, such interventions will not be delivered without a competent and available workforce. In this setting, the need for primary care with emphasis on community-based interventions has been recognized. Community health workers (CHW) have been utilized to deliver services to areas with minimal coverage of health care.¹ Their roles have included preventative measures (e.g. provision of malaria bednets, immunizations); drug distribution (e.g. mass drug administration of albendazole for helminth control); and case-management of illnesses (e.g. malaria, pneumonia), among others. Such models of community outreach and service delivery are especially important in rural settings, where the poor are less likely to access health services. In addition, the focus on preventative interventions at the community level would reduce the need for curative interventions at facilities that are already strained for staffing and resources.

In a study on child deaths, Jones and colleagues investigated child survival interventions that when applied at high coverage rates, can lead to mortality reduction in the under-five population.² The authors concluded that the knowledge and instruments to reduce child mortality are available, but are not reaching those who need them. Some of these interventions can be delivered through community-based strategies including oral rehydration therapy, insecticide treated nets, and education on complementary feeding. This highlights the potential contribution of CHW's in mortality reduction by delivering interventions to entire communities. The mortality impact of case-management of pneumonia has been documented in a meta-analysis of community-based trials. These trials involved the use of the WHO approach, which employs an algorithm based on counting respiratory rates to identify children with pneumonia that would require treatment with antibiotics. The study reports a total mortality reduction of 24% in the under-five population, and a 36% reduction of mortality from pneumonia in the same age group.³

In Haiti, a large cadre of CHWs has been trained in an effort to scale-up HIV prevention and treatment. Initially workers were trained to administer HAART to patients at home as directly observed therapy.⁴ Subsequently, they became an active part of community outreach and provision of primary health care services to these patients. This model has resulted in improved service uptake of voluntary testing and counseling for HIV.⁵ On a national level, a well established program that employs CHW's is the African Program for Onchocerciasis Control. In this program, community-based distributors are trained to provide education, distribute ivermectin, manage side-effects, and keep records of their activities. The goal is to achieve annual treatment coverage of 90% of the eligible population. These efforts have resulted in a reduction of the prevalence of river blindness by 73%.⁶ In Uganda, not all districts have achieved the same coverage rate, and this has been postulated to be due differences in community involvement in decision-making around program design, and in the selection of their community-based distributor.⁷

In 2007, the Village Health Worker (VHW) Program was created in Kisoro, Uganda. The project was started with 20 villages, 40 VHWs, and is currently expanding to include another 25 villages. VHW's are selected by their communities to participate in data collection and delivery of basic health education and services. A team of Kisoro District Hospital staff was created to provide monthly training sessions,

covering a curriculum that focuses on maternal-child health and other health topics of interest to the workers. VHWs do regular home visits in their communities and identify individuals that need assistance. They also monitor the general health of the village by ensuring that preventative services are reaching all of those who need them. Clinical officers travel to the villages on a routine basis to support and supervise the VHWs in the field.

The first set of VHWs have completed about two years of training sessions. Initially, these sessions focused on improving health knowledge. The focus subsequently shifted to improving health outcomes in their communities by targeting areas where they can make a difference in morbidity and/or mortality. Efforts are underway to create a written syllabus and evaluation tools to determine competence in relevant clinical situations. This new model will be used in the new phase of the program, which is expanding to 25 new villages. Once VHWs complete our education program, we hypothesize that they will improve their knowledge and skills in the core clinical areas (malnutrition, malaria, maternal mortality in pregnancy, diarrheal mortality in children, respiratory disease, chronic disease management, and cervical cancer screening).

2. Study Design and Statistical Analysis

Design: This is a prospective intervention study that will evaluate the effectiveness of our training sessions on VHWs' competence before and after the education program. Study subjects are all VHWs who are selected by their communities. One hundred percent of the VHWs will participate in this study, as it is required for their training and certification. They will attend monthly training sessions at Kisoro District Hospital led by our local program coordinators. During these sessions, a wide range of health issues that cause premature death and suffering in the communities are addressed. These include malnutrition in children, malaria prevention, maternal mortality in pregnancy, diarrheal mortality in children, respiratory disease, access to health facilities, chronic disease management, and cervical cancer screening. We hope that VHWs will be able to recognize danger signs in their communities, and become the conduit for prompt access to a health facility when emergencies arise. They would provide education on these health topics to increase awareness in their communities. Likewise, VHWs are expected to become competent in case-detection of various illnesses, including severe malnutrition in children under five, hypertension, respiratory diseases (ie pneumonia in children, tuberculosis).

Analysis: A paired t-test will be used to compare the mean difference between the pretest score and the post test scores of each VHW.

Power: Power calculations were made based on the number of VHWs ($n = 25$). Assuming a standard deviation of 15%, and a sample size of 25, we expect that the smallest effect that can be detected at 80% power and $p = 0.05$ is a mean difference of 9 points before and after the training.

3. Study Procedures: We will administer a case-based test consisting of 100 questions describing scenarios VHWs may encounter in their communities. The test will be administered prior to the training program, immediately after, as well as six months after the training.

4. Study Drugs or Medical Devices: not applicable

5. Study Questionnaires: see appendix for a sample of test questions. These questions were developed by the investigator and have not been validated in other settings. The goal is to identify deficiencies in our specific training program, design "remediation" strategies for those who need it, and identify those individuals who require less training/support and could operate as future educators.

6. Study Subjects and Recruitment: Muramba Subcounty Village Health Workers (and thus, our study subjects) are elected by the community during meetings facilitated by our local program leaders. There are no strict eligibility criteria for VHW selection. Reading and writing are important competencies, however not absolute. Communities are encouraged to elect women.

7. Confidentiality of Study Data: Study data (test results) will be available to the individual VHW as well as the educational coordinators. As stated previously, our goal is not only to evaluate VHWs, but also to evaluate our educational program.

8. Potential Risks: This test will identify VHWs who are not meeting competency criteria, and therefore may lose their job as a VHW. This may cause emotional distress to the individual.

9. Potential Benefits: This study is part of a larger effort to evaluate the effectiveness of the VHW program to improve the health of their communities. An evaluation at this phase of the program will allow us to modify our educational efforts, identify VHWs who need additional training, schedule “refresher” sessions, and identify future educators. Ultimately it will provide valuable information on how to improve our model and expand this program to other communities in rural settings.

10. Alternatives: none

References

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Appendix: Sample study questions

On one of your home visits one evening, you find a mother who is very worried because her 1-year old boy is sick. The child is not breastfeeding and has been vomiting several times. Mom also tells you that he has been having many watery stools. When you see him, he is lying on the floor and looks very sleepy. He feels very warm and you find it hard to wake him up. What should you do next?

- Teach mom how to make oral rehydration solution
- Advise the mother to bring her child to the health center if he does not improve in 2 days
- Give Coartem and return next week to check on the child
- Activate the village emergency transport and bring the child to the nearest health post immediately

One of your neighbors has been ill for the past few months. You notice she has not been able to harvest beans this season, and has spent most of her time lying in her home. She has been coughing for more than two weeks. She also seems to have lost weight. How should you take care of her?

- She needs more nutrition and you will ask fellow neighbors to help with food
- She may be pregnant and needs iron pills
- She may have malaria and you will ask the clinical officer to bring Coartem
- She may have tuberculosis and should go to the clinic for a sputum sample and treatment

You find a 6-year old child in your village who has been having watery stools for 4 days. Mom says she is more tired than usual. When you look at her, her eyes seem to be sunken. You offer her some water, which she is able to drink. What is your next step?

- Help mom make ORS and make sure that the child can drink sips of this solution
- Refer to the health center immediately
- Give Coartem, and return to see her next week
- There is nothing to do now as the child is drinking; you will return the following week to check on the girl

You hear from a neighbor that there is a woman in your village who has been sick. The woman is 6-months pregnant, and she has been having vaginal bleeding. She feels weak and can barely walk around her compound. Your next step is:

- Wait for the next time the clinical officer comes to your village and visit the woman at her home
- The woman is not 9 months yet, and therefore, she does not need to go to the hospital
- The woman is at risk and should be referred to the hospital immediately
- Make sure the woman has iron pills, and if not, try to get some for her

It is time for your biannual home visits and you are measuring the mid-upper arm circumference (MUAC) of the children. Musominali is a 2-year old boy, his MUAC is 10.5cm. Mbabazi, is 1-year old and her MUAC is 12cm. Tumushime, is 6-months old and his MUAC is 10. Who needs to be referred to the hospital feeding program?

- Only Tumushime because he is the youngest one
- Both Musominali and Tumushime because his MUAC is less than 11 cm
- All three need to be referred because their MUAC is less than 13cm
- Only Musominali and Mbabazi, since Tumushime is still breastfeeding

One of the village councilmen tells you he suffers from high blood pressure. He was taking medications for a long time in the past. However, he has not gone for a check-up and has run out of medications. He tells you he feels well, and does not think he needs to see a clinical officer. What do you tell him?

- a. He does not need to go to the clinic unless he feels sick
- b. His blood pressure may be high even if he feels well, and he should go for a check-up
- c. This is an emergency and you should call for help right away
- d. He is cured from his high blood pressure since he took medications in the past

A new baby was born last month in your village. His mom was unable to reach the hospital, so she delivered at home with the help of her mother-in-law. The baby is breastfeeding and seems to be healthy. She asks about immunizations. Which of the following is TRUE:

- a. It is too late; the baby should have been immunized as soon as he was born
- b. She should take her baby to the nearest health center and pay for immunizations
- c. She should take her baby to the nearest health center to get the immunizations for free
- d. Because the baby is healthy, he can wait until later to get his immunizations.

You visit a 23-year-old woman in your village. She has 3 children, her youngest one is 1-year old. Which of the following health topics are important for you to review with her?

- a. Family planning
- b. Cervical cancer screening
- c. HIV testing
- d. all of the above

One of your fellow villagers is 2 months pregnant. She is a healthy woman; her first child was delivered at home, without complications, and is also healthy. However, she hears that it may be safer for her to deliver in the hospital. What advice can you give her?

- a. She should go to the clinic to get antenatal care before the baby is born and inform you at the time of labor so you can arrange for transport to the clinic
- b. She does not need antenatal care because she is healthy but should deliver in a clinic
- c. Because there were no problems with the first child, it should be safe to deliver at home
- d. She does not need to go to the clinic until after her child is born, for immunizations

You are approached by an older woman, who is worried because her son has been feeling sick for a few months. He is 30-years-old and had been working in Kampala for the past year but has returned home because he is too weak to continue his work. She thinks he has lost a lot of weight, and is worried about AIDS. How should you advise her?

- a. You tell her that HIV testing and treatment is free and confidential at Kisoro hospital.
 - b. She does not need to worry. HIV is not a problem if he is married and only has one wife
 - c. There is HIV testing in Kisoro; however, he will have to travel to Mbarara to get treatment
 - d. He can be tested for HIV in the hospital but there is no treatment for AIDS
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