USAID One Health Workforce Project

One Health Field Attachment Evaluation Report

OHW EVALUATION REPORT

USAID
FROM THE AMERICAN PEOPLE

One Health
WORKFORCE

Project Title
One Health Workforce

Sponsoring USAID Office
GH/HIDN

Award Number
AID-OAA-A-15-00014

Date of Publication
June 2019

This publication was compiled by the One Health Workforce evaluation team. This represents a collaborative effort of staff from the University of Minnesota, Tufts University, and the One Health Central and Eastern Africa Network. The authors would like to acknowledge all of the people who helped with logistics and organization that made this evaluation possible. Finally, the authors' views expressed in this publication do not necessarily reflect the views of USAID or the United States Government.

Table of Contents

Executive Summary 4

Introduction 6

Background 6

Understanding the One Health Concept 7

Defining a "One Health" Workforce 7

USAID Efforts for Pandemic Preparedness 8

The Field Attachment Program 9

Evaluation Scope & Methods 11

Our Approach 11

Evaluation Significance 11

Evaluation Questions 12

Evaluation Methods 13

Findings 14

Contextual Parameters 14

Contribution to a “One Health” workforce 14

Faculty Experiences 17

Pre-Service Workforce Experiences 19

Community Experiences 21

Conclusions & Recommendations 23

References 24

Appendices 25

Executive Summary

Background

Complex infectious disease threats highlight the need for educating and training health workers that not only have the technical skills and competencies to work within their own discipline and sector, but also possess skills to work across sectors to manage an infectious disease outbreak on a global scale. One way to train this type of workforce is by utilizing a transdisciplinary approach known as One Health; bringing together disciplines such as [human] medicine, veterinary medicine, public health, nursing, and ecology to work together to effectively address emerging challenges at the interface of animals, humans, and the environment.

Over the past few years, a number of higher education institutions in Africa, working alongside the One Health Central and Eastern Africa (OHCEA) university network, have developed and implemented experiential student training programs centered around the One Health Core Competencies (OHCC). These programs, called One Health Field Attachments (OHFA), are field-based applied learning experiences that bring together students from various health disciplines to work with communities to develop and implement community-based interventions that are informed by a community assessment of health priorities.

Description of Evaluation

This report adds to the growing understanding of One Health programing by evaluating 6 OHFA programs in the OHCEA network (Cameroon, Ethiopia, Democratic Republic of Congo, Kenya, Rwanda, Tanzania). The purpose of the study was to explore how these [implemented and ongoing] programs have fostered and contributed to the creation of a One Health workforce within their respective countries. Using data collected from an internal program evaluation conducted in 2018, this report analyzes the history, design, implementation, and outcomes of the programs with a particular focus on the outcomes for students, institutions, and communities in which the programs were situated.

Key Findings

Developing and strengthening a “One Health workforce” is a long-term endeavor, and at times requires a veritable paradigm shift. For many students, the OHFA was their first exposure to the One Health concept as well as the idea of One Health in action. Some of the key findings that emerged from this evaluation were:

Contribution to the Creation of a One Health Workforce

Through interviews with students, faculty, and community participants, it became clear that the One Health Field Attachment program contributes to the creation of a One Health workforce by:

- Building students’ technical capacity to respond to health challenges.
- Giving students and faculty the space to work collaboratively across disciplines.
- Sensitizing universities and communities on the One Health concept and One Health in practice.

The OHFA program is unique in its very nature in that it brings together students from different disciplines and has them work together alongside community partners to develop needs assessments and planned interventions. The programs as a whole have the same multidisciplinary approach, yet they go about it in different ways. Some programs focus more on technical knowledge needed to control health emergencies, whereas other programs heavily complimented this technical training with a strong emphasis on collaboration. Finally, while communities remain secondary beneficiaries of these programs, some community health officers and members expressed that they had been sensitized on the One Health concept, and how to put it into practice.

Faculty Experiences

University faculty play a key role in developing the One Health Field Attachment programs within their respective countries and universities. Faculty who were interviewed view the OHFA not only as an opportunity for students, but also see it as a form of professional development for themselves. In our interviews, faculty were able to provide a singular understanding of how the programs have been adopted and adapted to their country specific contexts, and the challenges and successes of these programs. In discussions with OHCEA Country Focal Persons, OHFA Activity Leads, and faculty participants, the following findings came through:

- OHFA programs require faculty who are well versed in One Health and can teach and lead across a variety of disciplines
- Faculty often act as the “go between” in the network/university/community relationships, thus gaining important community/stakeholder engagement skills
- While the activity is geared towards enhancing students’ capabilities and capacities, faculty also view the program as professional development

Pre-Service Workforce Experiences

Students overwhelmingly had positive things to say about their participation in the One Health Field Attachment programs. As faculty interviewees noted, these programs are popular and they often receive a high number of applications to attend. In our discussion with students, the following themes emerged:

- Students enjoyed the experience overall, but different programs prepared them for the field experience differently. Some attended a week long orientation, or similar, while other programs either had no orientation or an abbreviated one.
- Many expressed the importance of being able to translate what they learn in the classroom into work being done in the community.
- The program has been impactful for students even after leaving. Many described One Health situations they have encountered since leaving the program. In some countries, student clubs or WhatsApp groups allow students to stay connected to each other, and to the communities in which they worked.

Community Experiences

Each OHFA works in a community Demonstration Site—a community that has specifically partnered with the university to host the Field Attachment program—though these sites looks different across the programs. In general, OHFA programs either work with a specific community site, or a broad grouping of sites within a specific area. In interviewing members of the community in which the OHFA work, as well as community [government] officials, it became clear that these communities appreciate the work done through the program.

Communities expressed some of the following:

- Though the students come as teachers, the communities also teach the students
- Communities expressed a desire for more direct intervention, but completed many interventions themselves
- The link between students and communities often extended past the scope of health work

Introduction

Background

The complexity of recent infectious disease threats has highlighted a critical need for educating and training health workers that not only have the technical skills and competencies to work within their own discipline or sector, but also possess skills to work across sectors to manage an infectious disease outbreak on a global scale (American Veterinary Medical Association, 2008). One way to train this type of workforce is by utilizing a transdisciplinary approach known as One Health. One Health brings together disciplines such as [human] medicine, veterinary medicine, public health, nursing, and ecology to work together to effectively address emerging challenges at the interface of animals, humans, and the environment. Over the past few years a number of higher education institutions in Africa—working alongside the One Health Central and Eastern Africa (OHCEA) university network funded by the United States Agency for International Development (USAID)—have developed and implemented experiential student training programs centered around the One Health Core Competencies (OHCC). These programs, called One Health Field Attachments (OHFA), are field-based applied learning experiences that bring together students from various health disciplines to work with communities to develop and implement community-based interventions that are informed by a community assessment of health priorities.

While there is a growing body of literature related to One Health education and training, much of this research has merely highlighted the need for increased multidisciplinary workforce training, or has outlined and proposed the processes for creating these types of programs. Additional research and evaluation work is needed to explore the short and long term outcomes from One Health focused education and training programs, and to inform the development of future programs.

This report adds to the growing understanding of One Health programing by evaluating 6 OHFA programs in the OHCEA network (Cameroon, Ethiopia, Democratic Republic of Congo, Kenya, Tanzania, and Uganda). The purpose of the study was to explore how these [implemented and ongoing] programs have fostered and contributed to the creation of a One Health workforce within their respective countries. Using data collected from an internal program evaluation conducted in 2018, this report analyzes the history, design, implementation, and outcomes of the programs with a particular focus on the outcomes for students, institutions, and communities in which the programs were situated. It concludes by suggesting some considerations that should be used when designing new transdisciplinary health training programs, or when revamping existing ones.

Photo by Kendra Grahl, USAID One Health Workforce Project

Understanding the One Health Concept

Most infectious diseases start in animals, move to humans, and then spread. Responses to these types of outbreaks need to take into account the intersection of animal, human, and environmental health. The One Health concept is a transdisciplinary approach to solving global health crises; it recognizes that there is no difference of paradigm in the various disciplines of health training and advocates for integrative thinking to improve disciplinary training while also breaking down “silos” (Zinsstaga, Schellinga, Waltner-Toews, & Tanner, 2011).

Growing recognition and support for One Health resulted in a series of workshops aimed at identifying key One Health Core Competency domains, which consist of: management; communication and informatics; values and ethics; leadership; teams and collaboration; roles and responsibilities; and systems thinking (Frankson et al., 2016). These competencies have since been used “to develop new continuing professional education programs for One Health professionals and help university curricula prepare new graduates to be able to contribute more effectively to One Health approaches” (p. 1).

Defining a “One Health Workforce”

Creation of a One Health workforce requires an understanding of the complexities of collaboration and what it means to define a unified workforce mindset and skill set. To this end, a One Health worker is one that has (1) technical skills and competencies to work well within their own discipline and sector, (2) cross-sectoral skills and competencies to work collaboratively across sectors, and (3) a supportive institution to enable their collaborative

What is a One Health workforce?

A One Health workforce applies a multi-sectoral approach to infectious disease prevention, detection and response.

TECHNICAL COMPETENCE

A One Health workforce supports sector-specific technical training.

MULTI-SECTORAL SKILLS

A One Health workforce fosters multi-sectoral engagement.

ENABLING ENVIRONMENT

A One Health workforce requires supporting systems to enable timely, effective and multi-sectoral response.

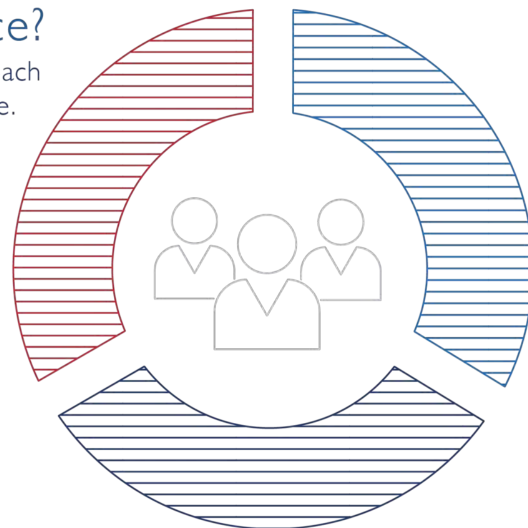

Photo by Kendra Grahl, USAID One Health Workforce Project

USAID Efforts for Pandemic Preparedness

Over the past decade, the United States Agency for International Development (USAID) has actively funded One Health education programs in universities in the Global South through the creation of cross-border university networks (Chapman, Pekol, & Wilson, 2014). This is a unique approach in that it influences the university-level education and training programs for health workers in ways which build personal and professional relationships across countries for personnel from different fields, disciplines and universities. The premise is that these relationships will “endure as graduates move into senior professional and administrative positions and will provide a basis for better epidemic response well into the future” (p. 623).

Since 2014, USAID—via it’s Emerging Threats Division (ETD)—has supported university networks through its One Health Workforce (OHW) project. In Africa, OHW partners with the One Health Central and Eastern Africa (OHCEA) university network, based in Kampala, Uganda. OHCEA is a collection of 17 universities and 24 schools and faculties that includes schools of veterinary medicine, public health, nursing, and medicine, among others. Today, OHCEA works in 8 countries across the continent: Cameroon, Democratic Republic of Congo, Ethiopia, Kenya, Rwanda, Senegal, Tanzania, and Uganda.

The network’s vision is “to be a global leader in One Health, promoting sustainable health for prosperous communities, productive animals and balanced ecosystems. OHCEA seeks to expand the human resource base needed to detect and respond to potential pandemic disease outbreaks, and increase integration of animal, wildlife and human disease surveillance and outbreak response systems, through innovative pre-service and in-service programs

Photo provided by OHCEA Ethiopia

The Field Attachment Program

The OHCEA-supported OHFA programs are designed to develop multidisciplinary One Health student teams who have expertise in their respective disciplines and also share a vision and commitment to holistic approaches to address complex community health problems. The program aims to help One Health student team members learn expertise in community engagement, communication, project management, and leadership.

The program involves an intensive field element where students live and work in small multidisciplinary teams in an identified demonstration site. While there, teams work closely with community partners to assess community strengths and concerns, develop and implement interventions based on assessment findings, and conduct some type of evaluation of the intervention.

The OHFA program has evolved and adapted significantly since its original inception. The original proposal came about during the RESPOND project as a way to provide experiential learning opportunities to students and service to the community. The original proposed demonstration site was near Lubumbashi, DRC, but due to unrest in the region, the site and attachment there were never implemented.

Following this, faculty in Tanzania and Uganda who specialized in community engaged scholarship began working to create and document what a formal Field Attachment and corresponding Demo Site would look like. While many universities in the region already have field attachment activities, these are usually geared toward students of public health, are clinical in nature, and don’t offer a One Health component.

The first formal OHFA program was implemented in Uganda in 2014 and consisted of mostly students of nursing, veterinary medicine, and a few MPH students. The program lasted for six weeks and was originally intended as a one off activity. Due to its popularity, however, it continued and eventually spread to other OHCEA members countries, beginning with Tanzania.

One Health Core Competency Domains Covered in the OHFA Program

Domain: Collaboration and Partnership

- Promote inclusion of representatives of diverse constituencies in collaborations/partnerships
- Contact potential stakeholders and clearly articulate the needs, interests, and objectives of the collaboration/partnership, the alignment of these with the stakeholder's objectives and the expected commitments required of participating stakeholders
- Create an environment that fosters innovation and creativity
- Develop procedures and processes for joint analysis, planning, communication, and commitment of decisions into action to achieve common goals
- Clearly define joint expectations, commitments, roles, responsibilities and timelines
- Communicate transparently on decisions, lessons learned and ongoing progress and challenges
- Ensure information is accessible to everyone
- Seek opportunities to transfer information and knowledge among stakeholders and to the wider public

Domain: Leadership

- Evaluate project, team and event performance, outcomes, and impact to implement continuous improvement
- Demonstrate ability to advocate, create partnerships, and foster collaboration in OH teams
- Make informed decisions in order to move forward after collaboration or consensus building by multidisciplinary teams
- Facilitate cooperation, mutual trust, team function, and commitment throughout an outbreak response
- Motivate the outbreak team to work together to achieve the agreed upon goals of the team.

Domain: Culture and Belief

- Ability to interact with team members from various backgrounds (cultures, disciplines, etc.) during outbreak response
- Distinguish between different existing belief systems and religious practices among various ethnic groups involved in outbreak areas

Domain: Values and Ethics

- Demonstrate willingness to listen to and recognize individuals from other disciplines and sectors, and to change ideas, opinions or approaches based on resulting new information or situations
- Identify the different ethical aspects of decisions including dilemmas and conflicts of interest that exist across disciplines and sectors, and take account of these when making decisions about team actions

A unique aspect of the OHFA program—other than its central focus on multidisciplinarity—is the way in which each country adopted and adapted the program to fit its local context. Today, 7 out of 8 partners countries have adopted some form of the OHFA program including: Cameroon, Democratic Republic of Congo, Ethiopia, Kenya, Rwanda, Tanzania, and Uganda. OHCEA has recently made efforts towards standardizing the program across the network, but the localized nature of certain aspects made an idiographic and contextual evaluation (highlighted in the subsequent section) the best option for understanding differences and similarities across countries.

Evaluation Scope & Methods

This report results from a series of small scale internal evaluations of the OHFA programs that were conducted in 6 OHCEA partner countries during 2018. The list of countries includes: Cameroon, Democratic Republic of Congo, Ethiopia, Kenya, Rwanda, and Tanzania. While university implementers of the attachments routinely conduct assessments after completion of the program, these assessments gauge student satisfaction with the program and technical knowledge gained as a result of the fieldwork. As part of its ongoing effort to standardize and share best practices across the region, OHCEA commissioned evaluations that would look to address broader questions that can help to situate the attachments in the network's larger goal of creating a workforce able to collaborate effectively and efficiently across disciplines to manage health outbreaks on a global scale. These evaluations also sought to liaise with communities that serve as demonstration sites, and understand through participant interviews how the experience has affected their community.

Our Approach

Rather than focusing solely on immediate project outputs, this evaluation sought to look at the impact of these programs more holistically. In doing so, the evaluators decided against a completely aggregated approach, instead utilizing an idiographic methodology which allowed for contextual understanding of the program as it exists in different countries, universities, and contexts. This approach also engages with how students are learning during the OHFA process; idiographic evaluation "serves decision-makers by providing descriptions of learning processes and outcomes. Both processes and outcomes are assumed to be diverse rather than standard; processes are defined by reference to students' actual learning experiences in a teaching-learning milieu, and outcomes are defined in terms of students' cognitive structures. The relation of process to outcome is described in terms of the knowledge structures engaged in the learning process" (Kemmis, 1978, p.55).

Evaluation Significance

This evaluation has significant practical, conceptual, and methodological implications for the field of One Health education and training. Practically, this work will be used to provide continued adaptation and improvement to the OHFA program. It can also highlight best practices that can be adopted or spread to other, similar programs. Through the vertical study of how One Health training programs, such as OHFA, are conceived of and implemented at various levels (OHW project level, OHCEA network level, and country/institutional level), this work will engage with programmatic dynamics that previously have not been studied along this type of axis.

Conceptually, this type of work, though transnational, adopts an idiographic approach that favors country context and the study of knowledge structures that are engaged via the OHFA program. Most [peer reviewed published] evaluations or descriptions of One Health programming, especially educational programming, do not engage with the programs in this way.

Finally, this evaluation has several methodological implications for the field of evaluation, and specifically evaluation of One Health education and training programs. By its very nature as a transdisciplinary field, One Health advocates for collaboration. Yet case studies or programmatic evaluations of One Health programming are typically descriptive in nature and assess outputs related to technical knowledge. The methodology utilized in this evaluation not only aimed to explore how collaboration is taking place, but also employed collaboration in the process of data collection and analysis.

Photo by Kendra Grahl, USAID One Health Workforce Project

Evaluation Questions

This evaluation addresses the following thematic questions:

1. Contribution to the Creation of a One Health Workforce

How is the OHFA contributing to the creation of an OH workforce, particularly in the areas of: fostering multisectoral collaboration, education and training of the pre-service workforce, and creating an enabling environment?

2. Faculty Experiences

What has been university faculty members' experiences working on the OHFA program? What do they view as the successes and challenges of the program? Where would they like to see the program go from here?

3. Pre-Service Workforce Experiences

What has been the experience of university students who are involved in the OHFA? How prepared were they for the attachment? What types of One Health experiences and technical skills do they gain from the program? What has been the impact on them following their time in the attachment?

4. Community Experiences

What has been the experience of the communities who are involved (i.e. serve as the field attachment demo site)? What was the impact of the activities conducted during the attachment? What did the community learn from the university participants, and what did university participants learn from the community? Has this program fostered enhanced collaboration between the community and the university? What would the community like to see in future Field Attachments?

5. Program Function, Impact, and Sustainability

How does the OHFA program meet its stated goals and objectives? Do the goals and objectives need to be reevaluated in light of potential changes? How does one country's program compare to other countries' programs? What has been the most significant impacts from this program? How sustainable is the program, or what does it need to be sustainable?

Photo by Kendra Grahl, USAID One Health Workforce

Evaluation Methods

This evaluation involved a multi-disciplinary team of evaluators from the OHCEA network, the University of Minnesota, and Tufts University. This team has a wide array of backgrounds including specialists in both the social and health sciences. Members from the evaluation team formed small data collection teams in each of the countries that were involved. During these visits, the data collection teams were joined by the OHCEA Country Administrator, OHCEA Focal Persons and Activity Leads, as well as former student participants of the OHFA programs. The makeup of these teams aided in the access of interview participants, translation of materials, and also helped to provide context to some of the findings.

While in country, the data collection teams interviewed university faculty and administration officials, OHCEA country representatives, past student participants, and members of the community that serve as field attachment demo sites. Primary elements of the evaluation methodology included:

- Semi structured interviews
- Group interviews
- Phone interviews
- Document analysis and review (program reports and plans)
- Online surveys

Following each data collection visit, the teams convened to discuss preliminary findings and conduct a meta analysis of the collection process in order to inform future efforts. These preliminary findings were collected and outlined in individual country reports. In November 2018, the evaluation team met for a two-day meeting in which they synthesized key findings and outlined the layout for this comprehensive OHFA report.

Findings

Contextual Parameters

Prior to discussion of the evaluation questions we include here some contextual parameters that emerged from our interviews and conversations on the program and are relevant to all of the evaluation questions being asked.

1. Developing and strengthening a "One Health workforce" is a long-term endeavor, and at times requires a veritable paradigm shift. For many students, the OHFA was their first exposure to the One Health concept as well as the idea of One Health in action.
2. The OHFA program operates on a tight budget and funding for the program comes with a degree of uncertainty as the OHW project comes to a close. As such, issues and challenges discussed during interviews were often mentioned in recognition of budgetary constraints; recommendations for program improvement recognize this caveat.
3. Each OHFA program in the OHCEA network is unique and, in many ways, developed based upon in country context. Faculty and university administration officials were often open and honest about the challenges they faced in implementing the program based upon some of these contexts.
4. The programs are also evolving rapidly. This report includes a snapshot of the program as it was implemented in 2018, since that time countries have further begun to adapt their programs to meet the OHCEA OHFA guidelines.

Contribution to the Creation of a One Health Workforce

Through interviews with students, faculty, and community participants, it became clear that the One Health Field Attachment program contributes to the creation of a One Health workforce by:

- Building students' technical capacity to respond to health challenges
- Giving students and faculty the space to work collaboratively across disciplines
- Sensitize universities and communities on the One Health concept and One Health in practice

The OHFA program is unique in it's very nature in that it brings together students from different disciplines and has them work together alongside community partners to develop needs assessments and planned interventions. The programs as a whole have the same multidisciplinary approach, yet they go about it in different ways. Some programs focus more on technical knowledge needed to control health emergencies, whereas other programs heavily complimented this technical training with a strong emphasis on collaboration. Finally, while communities remain secondary beneficiaries of these programs, some community health officers and members expressed that they had been sensitized on the One Health concept, and how to put it into practice.

Building Technical Capacity

Each program focuses on transdisciplinary technical capacity that is needed for students to solve emerging health issues in a community. While some programs focus on specific health technical capacity, one unifying theme across programs is emphasizing the importance of community entry. The newly distributed OHCEA–OHFA guidelines outline how to

work with community leaders or those who can assist with entry. Additional focus is placed on field data collection techniques such as interviewing, writing field notes, and analyzing/ evaluating data. While this is an expectation of each program, programs vary in orientation length. Some students enter the field prepared with these skills, and in other programs the skills are learned and taught along the way.

Collaborating Across Disciplines

The OHFA program involves bringing together students of different disciplines to work together to assess and formulate solutions to community health problems. This approach, while simple on paper, can prove difficult in practice. One challenge is the occasional inherent hierarchical differences in disciplines that can impede collaboration (some programs are offered at the undergraduate level, while others are at the graduate level). In addition, student interviewees remarked additional hierarchical differences that sometimes exist between students of medicine and other disciplines.

In many programs, once the group finishes orientation and begins the field work, students are split into small multidisciplinary groups and are each assigned either a task or a village/site in which they will work. Creating these types of groups ensures that for the interventions and reports everyone is “at the table,” and also fosters a sense of teamwork. Some past participants from the medical (human) field joked about their initial heightened sense of ego, which they recounted was later put into new perspective based upon their work with people from other health disciplines.

Upon completion of the OHFA, students said they sometimes stay in touch via WhatsApp groups and social media. Other OHCEA partners countries have created One Health student clubs, that allows another way for students to not only stay connected, but continue to collaborate on community outreach activities. Despite the, at times, irremediable persistence of discipline siloing, these continued interactions play a role in continued collaboration.

One key challenge that emerged from student interviews is that having a multitude of disciplines working together on a project or intervention does not automatically equal collaboration. Some students expressed concerns that their disciplinary background was not being put to use, and/or they were being asked to do something (technical) that was outside of their sectoral purview.

Photo by Kendra Grahl, USAID One Health Workforce Project

Photo by Kendra Grahl, USAID One Health Workforce Project

Creating an Enabling Environment: Sensitizing Universities and Communities on One Health

Many of the program's indirect beneficiaries remarked that working or participating in the OHFA was the first time they were exposed to either the One Health concept, or One Health in practice. During community interviews, community members either used the term One Health or remarked on specific One Health issues of which students had made them aware (such as diseases moving from livestock to members of the community). When interviewing community level health officials, those from public health and animal health sectors mentioned that while they traditionally don't work together closely, the program has brought them together and spurred some collaboration even after its completion.

The emphasis on multisectoral collaboration is different in each country. Some approaches that interviewees commented on as being successes were:

- In Rwanda, the University of Rwanda brings students to a more loosely defined site for a week. While there they embark on a series of day long field visits to different sites each day. This OHFA program takes a large umbrella approach to One Health, including not only health sciences disciplines, but also a number of students from the social sciences and other non-health related fields.
- In Kenya, there is an emphasis on building team dynamics early on. The week long orientation includes sessions to acquaint the students with one another and to introduce them to the different disciplines. Students described an activity whereby they are asked 'what do you think veterinarians do?' which is then countered with 'what veterinarians actually do" and so on. Many past participants described this as not only their first interaction with students from other disciplines, but also with faculty from different disciplines.

Faculty Experiences

University faculty play a key role in developing the One Health Field Attachment programs within their respective countries and universities. Faculty who were interviewed view the OHFA not only as an opportunity for students, but also see it as a form of professional development for themselves. In our interviews, faculty were able to provide a singular understanding of how the programs have been adopted and adapted to their country specific contexts, and the challenges and successes of these programs. In discussions with OHCEA Country Focal Persons, OHFA Activity Leads, and faculty participants, the following findings came through:

- OHFA programs require faculty who are well versed in One Health and can teach and lead across a variety of disciplines
- Faculty often act as the "go between" in the network/university/community relationships
- While the activity is geared towards enhancing students' capabilities and capacities, faculty also view the program as professional development

Creating "One Health" Faculty

An important requirement for a successful field attachment program is the involvement of community engaged faculty. In many of the countries where the OHFA program exists (such as Kenya, Uganda, and DRC), universities already have strong connections to community demonstration sites, and routinely carry out discipline specific, clinical, field attachment programs. Faculty experiences with these programs has positively influenced the OHFA program as these instructors provide students with information on gaining community entry, and respect for community culture. Students positively described orientation sessions where these topics were covered and showed how they were instrumental in doing their fieldwork as well as in subsequent field experiences they have had in school and for work. In seeing students utilize the community entry competencies taught during orientation while in the demo site, one faculty member noted "that is where you see a lot of changes."

In addition to the importance of community engaged scholars, the OHFA also requires faculty who have a strong understanding of One Health and the ability to put it into practice. While most programs bring together students from different disciplines, each program differs with how to engage these different groups and have them work together. In some programs, like Rwanda's OHFA, a large number of faculty also attend the activities in the demo site, while other programs, such as Kenya's OHFA, focus on fewer faculty. In either situation, it was shown that it is imperative that faculty have the ability to organize disciplines to work collaboratively, but also within their technical area. Students who were asked to do work outside of their technical area expressed dissatisfaction with these tasks, and a feeling of not learning anything. Some programs offer an orientation for faculty that not only tackles logistical issues, but also issues related to enacting One Health once in the demonstration site.

Many faculty interviewees voiced the need for further sensitization of the academic community about One Health and field-based learning. As one faculty member said, "if we fail to sensitize and engage the faculty and university administration to appreciate the OH approach, then we will fail." This emphasizes the need for continued engagement among students and faculty from multiple disciplines.

Faculty as the "Go Between"

This OHFA program operates along a variety of levels: the One Health regional network, the country, the university (and it's associated colleges/schools/faculties), and the communities. Faculty often act as the connecting force between these levels, as do OHCEA Country Administrators for logistics. On the one hand, faculty have played a role in adopting and adapting the OHFA program to their own countries and contexts. This has then carried back to the network through their participation in crafting the OHFA Guide which the network is distributing in an effort to standardize the program. As outlined above, community engaged faculty also play an important role in being the conduit between the demonstration site communities and the universities. In some countries, activity leads, focal persons, and country administrators conduct reconnaissance efforts prior to the OHFA to inform the community of pending dates, and sort out transportation and lodging issues.

Operating along these different levels presents challenges to the programs. In discussions with faculty, some of these challenges that were mentioned were:

- OHCEA guidelines and recommendations have forced countries to alter aspects of their program. While there is a desire to move towards the guidelines, in some countries, extending the length of the program runs into budgetary issues. Overall funding was referenced as an issue and a challenge throughout, especially when it comes to deciding what would be sacrificed in order to stay on budget.
- While the multidisciplinary aspect of the OHFA is praised, it also leads to a variety of challenges. Students come from different colleges and universities, and each of these are on different schedules and timetables. This makes organizing the OHFA difficult, especially when multiple colleges are involved.
- Some faculty described logistical challenges around coordinating field attachment activities with students in remote locations. Budgetary constraints often meant that items like transportation would have to be cost effective, often coming at the expense of comfort. (Difficulty getting around was a common concern)

> "The main challenge is the environment. The field is quite remote, transport is a problem, but also storage of materials, and sometimes security. Sometimes you encounter challenges and sometimes you meet people who aren't prepared so you can encounter resistance or lack of cooperation."
>
> -Faculty Interviewee

Professional Development Opportunities

Many faculty interviewed for this evaluation praised OHFA activities as both powerful student learning experiences and important for their own professional development. Faculty commented on the value of taking infectious disease research out of the classroom and into the field, where One Health Core Competencies can be applied to real world scenarios. These comments show faculty also benefit from these activities, both in terms of strengthening their ability to conduct and teach transdisciplinary and community engaged scholarship, but many faculty also mentioned that the OHFA programs gave them opportunities to publish research related to the program.

Pre-Service Workforce Experiences

Students overwhelmingly had positive things to say about their participation in the One Health Field Attachment programs. As faculty interviewees noted, these programs are popular and they often receive a high number of applications to attend. In our discussion with students, the following themes emerged:

- Students enjoyed the experience overall, but different programs prepared them for the field experience differently. Some attended a week long orientation, or similar, while other programs either had not orientation or an abbreviated one.
- Many expressed the importance of being able to translate what they learn in the classroom into work being done in the community.
- The program has been impactful for students even after leaving. Many described One Health situations they have encountered since leaving the program. In some countries, student clubs or WhatsApp groups allow students to stay connected to each other, and to the communities in which they worked.

Preparation for the One Health Field Attachment

Prior to working in the demo site, some countries have students attend an orientation of varying lengths of time. During these orientations students attend technical sessions as well as sessions on team building, community entry, and culture. Following the orientation, those who attended said that they felt adequately prepared for the field attachment. In fact some even described the sessions as “overadequate.” For many students, the skills on community entry and working within communities proved useful for future projects on which they worked. Programs such as Rwanda and Tanzania offer a more abbreviated orientation for one to two days. Many of these students felt that they would have been better prepared had they attended a longer orientation. As one remarked, a longer time “will allow for people from different disciplines to be told what to expect, so when they go to the field they can work adequately.” This contrasts with longer programs, like Kenya, where students spend one week gaining technical skills they’ll need, but also spend a large amount of time on team building activities.

From Classroom to Community

In our interviews with students, two points became clear: students value the opportunity to work with different disciplines, and to translate what they learn in the classroom into work in the community.

For many of the students we spoke with, this was the first opportunity to work with students from other disciplines. Faculty and staff joked that when students first arrive they are hesitant to intermingle, but by the end of the OHFA programs you can often find them working together in groups of different disciplines. As one student stated, “when you’re in a multidisciplinary group, be humble, and listen to others, let them express themselves and you can learn much from them.” Another added that “in a multidisciplinary team you can more easily find answers to the questions that the community asks you.”

This focus on mixing disciplines isn’t always easy to achieve, however. In our interviews, some students remarked that they were unsure of the One Health idea, and whether or not certain health sciences should have a say on issues related to human health. Others countered that the issue may be related to personalities: “I wouldn’t say it was interdisciplinary conflict, it was maybe personal conflict. Personalities in a pot, it’s bound to boil. But it was still workable, it

Students were also positive about their interactions with the community. Aside from using their technical knowledge to help solve health problems, students also learned a great deal about community culture and traditional practices. Those interviewed mentioned that this focus on community entry and ways to sensitize on health issues will be helpful (or has been) in their future careers. On community skills, one student remarked, "I will apply it. Each time I go to talk to communities, I will refer and modify my messaging based on what I learned."

> "We didn't know what One Health was until we came here for the Field Attachment. Now, once you see something, you think about how to tackle it from a One Health perspective.

Experiences Beyond the Field Attachment

Many of the students we interviewed had completed the OHFA program in the preceding years, but spoke about it passionately and enthusiastically. The program was usually described as a positive experience and one that endowed students with a new set of skills and competencies that some have begun to utilize in their professional careers.

One of the key aspects of the OHFA is to foster collaboration, and in some countries that continues after the program ends. For universities that host student clubs or official WhatsApp groups, students are able to maintain the connections they made during the program. But sometimes, even with these in place, students maintain appreciation for collaboration, but are missing the opportunities to do so. Barriers to collaboration can sometimes be simply explained by geography, schools of veterinary medicine and human medicine are often far apart from one another.

Some students have used the community entry skills to work on other projects in rural or remote communities. One woman described obtaining a short-term job training others on these skills before they attended a similar field experience. Another skill that is utilized after the program is the consideration of One Health, and how that affects their diagnoses. A nursing student explains that when a patient presents with certain problems, he may begin wondering if that patient also lives with animals or livestock, from which a disease could be transmitted.

Many students expressed a desire to be engaged beyond the life of the program. Some requested the opportunity to revisit the demonstration sites to evaluate their efforts and see whether any interventions have been implemented. Others suggested that the universities and/or governments should utilize their skills working in multidisciplinary teams to tackle infectious disease outbreaks and other health challenges within their communities.

Photo by Kendra Grahl, USAID One Health Workforce

Photo by Kendra Grahl, USAID One Health Workforce Project

Community Experiences

Each OHFA works in a community demonstration site, though these sites looks different across the programs. In general, OHFA programs either work with a specific community site, or a broad grouping of sites within a specific area. In interviewing members of the community in which the OHFA work, as well as community [government] officials, it became clear that these communities appreciate the work done through the program.

Communities expressed some of the following:

- Though the students come as teachers, the communities also teach the students
- Communities expressed a desire for more direct intervention, but completed many interventions themselves
- The link between students and communities often extended past the scope of health work

At the outset of the evaluation, some faculty and past student participants expressed concern that communities that serve as the demonstration site multiple times become overburdened or oversaturated. In speaking with communities, none expressed this concern and many were enthusiastic about being part of the program. To paraphrase one community member, he wished the students could come every month, as opposed to annually. Despite this, some universities and OHFA are looking to change sites.

Community as Teachers

While students noted their role as collaborating with communities to conduct a needs assessment, they also saw themselves as educating the community on health issues specific to them. In doing this, the students viewed themselves as health educators. But in talking with the community it became clear that, while they did learn a great deal from the students, they also saw themselves as serving an important role in teaching the students about localized health concerns and community approaches to dealing with those concerns. As one community member said, “when the students came to teach us about pasture management, they didn’t know that we have

traditional ways to manage pastures, so I think the students learned something from that. Maybe students didn't know about conflicts between the humans and wildlife, but they learned about this from us."

Interventions in the Community

While the central aim of the OHFA is not clinical or focused on implementing interventions, some programs do respond to health issues as they arise. In 2018, the Rwanda OHFA was interrupted by an outbreak of Rift Valley Fever within its demo site. The program used this challenge as an opportunity to provide students with experience directly responding to an active outbreak. In return, the community received a tangible benefit, which they mentioned in our interviews.

During the OHFA, students are often broken into smaller groups to develop a community health needs assessment. Occasionally, these assessments lead to small interventions, such as vaccinating dogs against rabies in the Tanzania OHFA. Other times, the assessments provide a blueprint for an intervention that can be carried out at a later time. In Kenya, communities worked with students to create a plan to reduce bed bugs, to design and build toilets, and to reduce their dog's consumption of potentially sick livestock. In these instances, communities were able to either locate outside funding for the project, or funded and built them themselves.

Many communities expressed a desire for more direct interventions, such a bringing medicines, or supplying vaccines for future use. Many of the network's OHFA programs play a delicate balancing act in outlining community needs, creating plans, and acting when possible without moving the program into the category of direct intervention.

Link Between Students, Communities, and the University

Many communities form a strong bond with the students that extends beyond the life of the program. In conducting the evaluation site visits, our teams consisted or students that had previously participated in the OHFA program, community residents were excited to see the students return, and students were able to see the impact of their needs assessments and intervention plans.

Nearly every community expressed gratitude to the students and universities who participate in the OHFA, and many encouraged them to come more frequently. In Tanzania, community members expressed a desire to begin hosting students in their homes to help them fully integrate. In Kenya, communities described the university students as being inspirational to their own children, and encouraged the university to plan the OHFA program around a time when the primary and secondary schools are on holiday, so that the university students could act as mentors to the children living in the demonstration site.

Many suggested that there is a need for more consistent and frequent communication with the university. In order for the community to be active in the planning process for student field attachments, there is a need for better communication. When OHFA programs end, communities are not always engaged on findings. In Rwanda, the university hosts a mini-conference which allows people to come and see the students present, but for larger countries where demonstration sites are more remote, this isn't always an option. Some communities suggested they organize themselves to begin disseminating the knowledge they gained from the program, and share it with nearby communities and towns. Additionally, community members suggested that student field attachments last longer to allow for more engagement between the students and community.

Conclusions & Recommendations

Based upon the findings of this evaluation, we have developed the following conclusions and recommendations that can help to strengthen the One Health Field Attachment program and aid its sustainability and effectiveness moving into the future.

Program duration matters.

Some of the most successful OHFA programs that we looked at were the ones that lasted for longer than one week. This allowed time for students to acclimate to the communities in which they were working, and also gave the communities time to work with the students. These programs also often included an extended orientation, during which students gained the necessary technical and soft skills (team building, community entry) that they would once they entered the demonstration site. Understandably, programs face budgetary constraints, but extending short term programs is a worthwhile endeavor. It should also be noted that the original field attachment lasted for well over a month before being reconfigured. Many students and faculty we spoke with agreed that 2-3 weeks allowed for a meaningful experience.

Team building should be a priority focus before students enter the field.

A central component of the OHFA is collaboration among a variety of disciplines. Students enjoyed the experience of working across sectors and disciplines, but noted the importance of respect and understanding in doing so. To that end, programs could benefit from extended team building exercises during orientation and throughout the OHFA.

Students should be continuously engaged, even when the program ends.

Students valued the skills and competencies they gained during the OHFA program. Many remarked that they utilize these skills in their studies or work. For others, they value the skills but don't always have similar opportunities to collaborate on a One Health project. Universities should continue to foster this collaborative spirit by supporting existing or creating new student clubs or using social media to allow students to stay connected formally. Additionally, consideration toward utilizing these students groups for future community work or infectious disease outbreak responses could be useful.

Engage communities throughout the process.

Communities appreciate the OHFA program and see themselves not just as beneficiaries, but also as teachers to the students. Communities requested additional involvement in program pre-planning, as well as being engaged post-program. Materials and reports should be shared with the community, and universities should consider budgeting a post-OHFA return where students can present findings, and evaluate the impact of their work.

Champion One Health leaders.

This program wouldn't exist without strong One Health faculty leaders who developed and adapted the program. These leaders, experts on One Health and community engaged scholarship, should be utilized by the regional network to share and educate across the region, including in helping shape and adapt OHFA programs in other countries. As countries begin standardizing according to the OHCEA OHFA guidelines, using these One Health leaders can be especially useful.

References

American Veterinary Medical Association. (2008). One health: A new professional imperative. Retrieved from American Veterinary Medical Association website: https://www.avma.org/KB/Resources/Reports/Pages/One-Health.aspx.

Chapman, D.W., Pekol, A., & Wilson, E. (2014). Cross-border university networks as a development strategy: Lessons from three university networks focused on emerging pandemic threats. International Review of Education, 60(5), 619-637.

Frankson, R., Hueston, W., Christian, K., Olson, D., Lee, M., Valeri, L., Hyatt, R., Annelli, J., & Rubin, C. (2016). One health core competency domains. Frontiers in public health, 4, 192.

Kemmis, S. (1978). Nomothetic and Idiographic Approaches to the Evaluation of Learning. Journal of Curriculum Studies, 10(1), 45-59.

Zinsstag, J., Schelling, E., Waltner-Toews, D., & Tanner, M. (2011). From “one medicine” to “one health” and systemic approaches to health and well-being. Preventive veterinary medicine, 101(3-4), 148-156.

Appendix 1: Faculty Interview Guide

Faculty Member Background Information

Name:

Email:

Country:

Discipline:

Professional designation:

Junior faculty member

Mid-level faculty member

Senior faculty member

# of years of teaching experience: ____

# of years worked at current university: ____

Faculty Reflections

1. How have you supported One Health student field attachments?

2. What was the most recent field attachment that you supported?

Overall Field Attachment Evaluation

3. Which aspects of the field attachment are most successful? Why?

4. Which aspects of the field attachment program would you improve if you could?

5. What do you hope that students will learn/take away from their field attachment experience?

6. What do you hope that community members will learn/take away from this experience?

Personal/Faculty Engagement

7. What have you personally and professionally gained as a result of your participation in the field attachments?

8. How has your involvement with the One Health field attachment program influenced your teaching, research, or outreach work, if at all?

9. Would you recommend this experience to your colleagues who have not participated in the field attachment?

10. What challenges/limitations do you face in supporting field attachment activities?

11. Have you written any publications or reports as a result of your participation in field attachment activities? If not, would you like to? How can OHCEA support you?

University-Community Relationship

12. How would you describe your university's relationship with community members who live in the field attachment sites? How has this relationship changed over time? Do you expect this relationship to continue over the long-term?

13. Apart from the field attachment activities, have you engaged these community members in other types of activities? If so, please describe.

Sustainability

14. Would you like the field attachment program to continue after the OHW project ends?

15. What challenges to you anticipate your university will face in sustaining the One Health field attachment program?

16. What steps can/should your university take to ensure that the field attachment program continues? Realistically, what aspects of the field attachment program, if any, do you expect to continue after the OHW project ends?

Appendix 2: Student Group Interview Guide

Field Attachment Preparation

1. What year did you participate in the OH field attachment program?

2. Was there a training or orientation before the field attachment?

3. How do you feel this orientation prepared you for the field attachment?

4. Did your orientation address any technical issues?

5. Did your orientation address any potential personal health and safety issues for participants? If yes, please describe.

6. What, if anything, did you learn about the community prior to your arrival at the field site?

7. Did you have any interaction with community members prior to your arrival at the field site?

8. Were you given any pre-departure assignments or homework to complete before your arrival at the field site? If so, please describe.

9. How prepared were you for the field attachment?

10. How could your university better prepare students for their field attachment experiences?

11. Do you have any recommendations for things future students can do to prepare themselves for similar field attachments?

Field Attachment Activities & Engagement

12. What types of activities did you participate in as part of your field attachment experience?

13. Did you work with students from other disciplines?

14. If so, what did you gain from working with other disciplines?

15. What was challenging about working with other disciplines?

16. What type of follow-up activities did you participate in, if any?

17. Have you had any interaction with community members since your field attachment ended? If so, please describe.

18. Would you like to continue working with these community members? If so, how

Reflection & Impact

19. How valuable was this overall field

attachment experience for you? Why?

20. Which aspects of the field attachment program were most valuable?

21. How could future field attachment programs be improved (what topics, activities, etc.

would be helpful)?

22. What have you personally and professionally gained as a result of your participation?

23. Is a One Health approach relevant to your current or future career? How so?

24. Have you applied (or do you expect to apply) the knowledge and skills you gained from this field attachment to your current educational and academic activities? If so, please give examples.

25. Is there anything else you'd like to add?

Appendix 3: Community Stakeholder Focus Group Interview Guide

This focus group guide includes a list of thematic topics and questions beneath each. There is no need to follow these in order, rather the themes are to be used to structure the focus group conversation. Please do your best to cover all topics, however it is only necessary to address the questions that are most relevant to the conversation.

Field Attachment Activities & Engagement

1. What is your understanding of the purpose of this student field attachment program?

2. To your knowledge, what are the goals of the student field attachment program?

3. Take a moment to explain the One Health student attachment program. The One Health student field attachment program is a field-based learning opportunity for students to apply One Health skills and competencies that they have learned in the classroom. Through community engagement and real-world scenarios, students gain hands-on and practical experience and knowledge. The intent is that individuals who once participated as students in field attachments will pull from this experience in their careers following graduation.

4. What types of activities do students and faculty do when they visit?

5. Do OH field attachment programs focus on new topics and activities each time?

6. Did members of your community have any input in determining these topics or activities?

7. If any of you were involved in any of these activities, can you give us some description of your participation?

8. Have the field attachments been helpful to your community?

9. Can you provide some examples of the ways in which the field attachments have been helpful to the community?

10. What has been the most important contribution that students have made to this community?

11. How have they not been helpful?

12. How could field attachment topics or activities be improved to be more helpful?

Community Impact

13. What types of health issues does this community face?

14. Do any student and faculty activities help address these issues? Which ones? How so?

15. Has this experience changed the way your community deals with health issues? How so?

16. Have any activities or initiatives been sustained after students and faculty have left your community?

17. Any specific activities or projects?

18. If they are being sustained, what is being done to sustain them?

19. If not, what could be the reason(s) they were not sustained?

20. How could these activities be sustained?

Student & University Impact

21. In your perspective, how do students benefit as a result of their participation in activities in the community?

22. How do you believe these field attachments support student learning?

University-Community Engagement

23. How satisfied are you with the relationship between the universities and this community?

24. Can you provide any stories or anecdotes that highlight this positive working relationship with the university?

25. How could the relationship between the universities and this community be improved or expanded?

26. How could the OH field attachment program benefit more/other members of your community?

Appendix 4: Data Collection Tool for Process Documentation

Planning Process:

Probe to establish who was involved in planning (number of persons, disciplines, gender, etc); how (basis) participants were determined; facilitator(s); role played by the institution(s), USU partners, and OHCEA Secretariat; when planning started; etc.

Preparation:

Establish how preparations were made for development of SOWs for USU support, development of concept note, budgeting and forecasts, selection of participants, selection/ identification of facilitators and supervisors, identification of logistics

Quality Assurance:

Establish whether implementation adhered to the work plan (timing, beneficiaries / participants, process, outputs and deliverables); in case of deviation probe to find out why; what made the activity One Health?

Technical support:

Probe to establish respondents' attitude towards technical support received from USU Partners, OHCEA Secretariat, and Institutions during planning and implementation of the activity: adequacy, timing, appropriateness, technical competence, etc; attitude towards non-technical support (administrative/ logistical and financial); support needed that was not available/ provided; support needed to implement next steps for the activity;

Possible areas for process improvement:

Solicit views on possible areas for improvement: planning, implementation, approach, technical support, non-technical support, post implementation activities, etc.

University & Field Attachment Information (from faculty leads only)

(Interviewer: Please fill in as much of this information as you can before the interview)

University Information:

1. University name:

2. How many different schools/faculties participate in the field attachment program? _____

3. Which disciplines/academic programs participate in the field attachment program (select all that apply):

a. Veterinary medicine/Animal science

b. Public Health

c. Medicine

d. Pharmacy

e. Nursing

f. Environment/Ecosystem/Wildlife Health

g. Other (specify, e.g. One Health Institute)

Description of Field Attachment Program:

4. When (in what year) did your university start the One Health field attachment program?

5. How many different community/field/demo sites are part of your OH field attachment program?

6. How often does your university conduct field attachments?

7. How many One Health student field attachments has your university conducted to date?

8. What is the duration of a typical field attachment?

9. Approximately how many faculty members support each field attachment?

10. Approximately how many students participate in each field attachment?

11. Is participation in a OH field attachment a requirement for students?

12. At what stage of their academic program do students participate in a field attachment? (e.g. at the beginning of the program, at the end of the program, every year of the program, etc.)?

13. What sort of pre-requisites (what prior courses or student status) do students need to meet in order to participate?

Description of Field Sites

Field Site #1:

a. Name and location of field site:

b. Is this an established One Health demonstration site? Yes/No

i) If yes, when (in what year) was this site designated as a One Health demo site?

c. Why was this site chosen (e.g. what One Health issues are represented)?

d. How often does your university conduct field attachments at this site (e.g. every semester, every year, etc.)?

e. How many field attachments have taken place at this site to date?

f. What other university activities take place at this site (e.g. faculty research, student outreach activities, etc.)?

Field Site #2 (if applicable):

a. Name and location of field site:

b. Is this an established One Health demonstration site? Yes/No

i) If yes, when (in what year) was this site designated as a One Health demo site?

c. Why was this site chosen (e.g. what One Health issues are represented)?

d. How often does your university conduct field attachments at this site (e.g. every semester, every year, etc.)?

e. How many field attachments have taken place at this site to date?

f. What other university activities take place at this site (e.g. faculty research, student outreach activities, etc.)?

Field Attachment Components

14. Do students participate in a pre-attachment training/orientation?

a. If so, how long is the orientation?

b. Where does it take place?

15. What topics do the pre-attachment trainings/orientations address? Select all that apply.

a. An introduction to the One Health concept

b. One Health core competencies

c. Cross-cultural awareness & communication

d. Information about the local community & health issues

e. Personal health and safety issues

f. Other (please describe)

16. Which One Health core competencies are explicitly addressed during field attachment trainings? (check all that apply)

a. Collaboration & Partnership

b. Systems Thinking
Leadership

c. Management

d. Communication

e. Policy & Advocacy

f. Culture and Beliefs

g. Values & Ethics

h. Gender

i. Research

17. Which activities are part of the field attachment program? (check all that apply)

a. Informational meetings or interviews (with whom?)

b. Research/health assessments

c. Outreach activities/campaigns

d. Intervention/Innovation

a. design/proposal

b. implementation

c. evaluation

e. Report writing

f. Presentations (to whom?)

g. Other (specify)

18. Do field attachments involve group work?

a. If so, how are student groups organized (e.g. mixed gender & disciplines)?

19. How is student performance evaluated?

20. What follow up, if any, is done with the community members? (e.g. Do students return to the community to share their findings or implement their innovations?)

21. Do students reconvene after the field attachment to reflect on their experience? If so, please describe.

USAID
FROM THE AMERICAN PEOPLE

One Health
WORKFORCE

ONE HEALTH WORKFORCE

University of Minnesota
120 LES Bldg
1954 Buford Avenue
Saint Paul, MN 55108, USA

Phone
+1 (612) 626-9625

Twitter
@OneHealthW

Email
ohw@umn.edu

Website
z.umn.edu/onehealth