The One Health Central and Eastern Africa (OHCEA)

Our Legacy

SEPTEMBER 2018

USAID
OHCEA
Memorial University
University of Minnesota
Tufts University
The OHCEA History in the making: partners pose for a group photo in one of the meetings in OHCEA early years.
Hello,
Welcome! We are delighted to share this moment with you.

Almost ten years ago, One Health Central and Eastern Africa (OHCEA) was founded with the Vision, ‘To be a global leader in One Health’.

OHCEA is the pioneer voice of One Health in the region. Starting with only 14 institutions in 6 countries in 2010, we have grown to 24 institutions in 8 countries. We have spread beyond the East and Central African regions to West Africa. We are still growing bigger. With a strong commitment to our vision, mission and core values, OHCEA remains a strong advocate for One Health workforce development in the region.

Since we started, we have built a strong knowledge base in One Health in the region. We have built knowledge of faculty, students, in-service professionals, in One Health concept and its application. OHCEA has innovated in One Health through design and delivery of new and innovative training approaches, new academic and capacity development programs, as well as supporting building of structures.

Over the last eight years-working through partnerships and collaborations at international, national and regional levels-One Health Central and Eastern Africa (OHCEA) has registered incredible results and achievements in building capacity for One Health on the continent.

OHCEA has become the household name for One Health workforce development, in many countries and universities in the region; arising from the many One Health innovations engaged in. We pride ourselves in sharing what makes us special as a regional One Health university network. Our work has transformed learning and teaching approaches and environments in institutions where we are present. We have enabled students and institutions discover the unique benefits of multidisciplinary training arrangements, influencing how graduates exposed to this, approach diagnosis of health problems in community and clinical settings.

Change is vital and important in dealing with today’s health challenges. Change in how the future health workforce is trained is as important as change in how we practice health. No single discipline or sector can work alone to address the health challenges we are experiencing today. We require comprehensive multi-pronged, multi-sectoral strategies.

Thank you!

Professor Philemon Wambura Nyangi
Chair – OHCEA Executive Board of Directors
When the One Health Central and Eastern Africa (OHCEA) network was established in 2010, it was a small team of university lecturers that sat and concepted it. Though small, the team had commitment, enthusiasm, interest and the will to work. Most importantly, the team had vision; they knew where they wanted the network to go and how. It is this vision which they have readily shared with everybody else, that has brought us this far. It is this vision that is driving the exponential growth that we see demonstrated by the achievements in this profile.

Over the coming years, our mandate as a university network, building One Health workforce will become even more evident and significant. In the near future, our focus will be on:

1. Expanding and growing the OHCEA network, including establishing a Hub in Francophone Africa
2. Strengthening engagement of national governments and regional blocs for integration of One Health national, regional plans, policies, strategies and budgets
3. Collaborating with networks in other parts of the world to broaden our circle of exposure and learning base
4. Enhancing government, community and business performance by supporting evidence-based decision-making
5. Optimising and diversifying network communications and programming to maximise member and partner experience, facilitate greater member-to-member connections and attract new members

Some good examples of initiatives and innovations we have undertaken over the years have been articulately shared in this profile.

I hope and intend to ensure that OHCEA continues to lead and play an important role in developing capacity for One Health on the continent. I look forward to engaging the help of the OHCEA Executive Board, member institutions and collaborating partners in this endeavour.

Professor William Bazeyo
Chief Executive Officer
One Health Central and Eastern Africa (OHCEA) is an international network, currently of 24 institutions of higher education in public health, veterinary sciences, pathobiology, global health and environmental sciences. These are located in 16 universities in 8 countries in Eastern, Central and Western African regions. The Universities currently forming OHCEA are: Universite des Montagnes and University of Buea (Cameroon), University of Lubumbashi and University of Kinshasa (DRC), Jimma University, Addis Ababa University and Mekelle University (Ethiopia), Moi University and University of Nairobi (Kenya), Université Cheikh Anta Diop (Senegal), Muhimbili University of Health and Allied Sciences and Sokoine University of Agriculture (Tanzania), University of Rwanda and University of Global Health Equity (Rwanda), Makerere University and Mbarara University of Science and Technology (Uganda).

Formation of OHCEA
The creation of OHCEA was a natural response to the need to develop One Health Workforce capacity in the region, given the complex health challenges the region experiences.

OHCEA has its roots in the Leadership Initiative of Public Health in East Africa (LIPHEA) and the Health Alliance, which were being spearheaded by the School of Public Health at Makerere University in Uganda in collaboration with the School of Public Health at the Muhiimbi University of Health and Allied Sciences, Tanzania since 2005. In 2011, the two schools expanded membership to schools of veterinary medicine in the region to form what came to be known as OHCEA. The mission of LIPHEA was leadership in management of disasters and personnel training. The activities of LIPHEA were funded by USAID through the Higher Education until 2009. The main US partner in the LIPHEA team was the Johns Hopkins School of Public Health.
Hopkins Bloomberg School of Public Health. Inspired by the evolution of One Health, LIPHEA invited schools of veterinary medicine in the region to join hands in the formation of OHCEA which gradually moved from disaster preparedness and response to One Health Workforce (OHW) strengthening in participating countries. Based on opportunities available within the Emerging Pandemic Threats (EPT) program, OHCEA quickly became engaged with OHW strengthening in the participating countries. With the formation of OHCEA the total number of schools was expanded to 14 (7 being from the public health area and 7 from the veterinary area) spread into six countries from Uganda, Tanzania, Kenya, Ethiopia, DRC, and Rwanda. These have now grown to 24 institutions in 8 countries.

**OHCEA Strategic Goals:**

1. Strengthen a growing institutional network in terms of leadership, governance, technical assistance and information-sharing across countries in order to transform ourselves to deliver One Health.

2. Support national agencies to build capacity and efficiency for surveillance, reporting systems and outbreak response in country and across borders.

3. Provide pre-service, in-service and community education, training and outreach to expand the size and capabilities of the One Health workforce.

4. Build and leverage strategic partnerships with other organizations and networks for mutual awareness and benefit.

5. Strengthen infrastructure capacity (Labs, Information Technology, Human resources) and facilitate resource sharing to support One Health.

6. Generate evidence based data and share state of the art information to advance training, science and practice, to inform policy.

**OHCEA’s strategic approach** is leveraging on national, regional and international partnerships to enhance One Health surveillance, reporting and response capacity development; One Health innovations infrastructural development; knowledge management and information sharing and science-education-policy-practice interface. The network works with the eight national governments where it is operational, professional associations in the region including veterinary, nursing, public health and medical associations. OHCEA believes in building strategic and synergistic partnerships. With funding from USAID, the University of Minnesota and Tufts University have supported OHCEA in providing technical support for program implementation. The overall goal of this collaboration is to enhance One Health policy formation and implementation, in order to contribute to improved capacity of countries to respond to any emerging pandemics in the region.
The network has also worked with Sandia National Laboratories with financial support from the Defence Threat Reduction Agency (DTRA) in the USA to build regional capacity in bioterrorism. With funding from International Development Research Centre (IDRC), OHCEA is working with local governments and communities to address community prioritised needs through research, training and innovative interventions. The IDRC support is provided under a project “Managing health risks among communities in and around Queen Elizabeth Conservation Area, Western Uganda using Ecosystem Health approaches”.

OHCEA partner universities are collaborating to build One Health capacity and academic partnerships between the member institutions in the region and with governments. The overall goal of this collaboration is to enhance One Health policy formation and implementation at various levels, in order to contribute to improved capacity of countries to respond to any emerging pandemics in the region.

**OHCEA 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.

**The network’s overall aim** is to effect positive and sustained change to address complex global health challenges through trans-disciplinary, One Health approaches. Universities play a critical role in the education and training of current and future One Health Workforce. In addition to their traditionally conceived ‘educational’ role (knowledge transfer), universities undertake primary ‘research’ (generate new knowledge), as well as ‘outreach services’ (translate or extend knowledge).
Projects in OHCEA

1. One Health Workforce Project:

The United States Agency for International Development (USAID) One Health Workforce (OHW) project is strengthening the capacity of the global health workforce to prevent, detect and respond to emerging infectious diseases. Focusing on two infectious disease hotspot regions; central and eastern Africa and Southeast Asia, OHW strengthens training and educational programs in universities to create a skilled workforce by using the transdisciplinary One Health approach. The project is one of a suite of projects funded through the Emerging Pandemic Threats 2 (EPT 2) program; a USAID program that focuses on cross-sectoral disease surveillance, training, and outbreak.

The One Health approach brings together various disciplines such as medicine, veterinary medicine, public health, nursing, and ecology to work together, to more effectively address health challenges at the interface of animals, humans, and the environment. Emerging infectious diseases are among the most pressing of such challenges.

A One Health approach is essential to achieving the Global Health Security Agenda vision due to the complex nature of pandemic threats. It does require a shift in every country’s workforce culture and regulatory framework. Government ministries, industries, non-profits, and academic institutions must work together to achieve a stronger and more effective public health system, from the first responders on the front line to the policy makers implementing change. Universities within the OHCEA network are key drivers of One Health change as they educate the future One Health workforce and forge partnerships with governments and communities to support workforce strengthening and decision-making through action research, analytic tools, and service work.

One Health Workforce project objectives:
The One Health Workforce project is being implemented under 5 objectives namely:

1. One Health Workforce Assessments, Planning and Policy Communication

The activities and strategies under this objective are to ensure that universities in the network coordinate with multiple ministries, partners and communities to identify and address One Health workforce needs. Aspects included in here are; development of country roadmaps, capacity building for tools that support multi-sectoral coordination, community One Health and risk communication activities, evidence-based policy communication products like policy briefs, policy papers and memoranda.

2. Pre-service One Health Education and Training

Activities and strategies under this objective are designed with the goal of ensuring that university students learn One Health competencies through university courses, One Health club activities, field attachments, global health case competitions, and community-based learning activities.

3. In-service One Health Education and Training

Activities and strategies here are designed to have increased in-service workforce capacity to prevent, detect and respond to emerging pandemic
threats. Activities are designed to enable government officials and educators participate in trainings on zoonotic outbreak response capacity, animal health capacity, and One Health core competencies.

4. Faculty/staff development and improved academic offerings
   Increased university capacity to sustainably address workforce training needs, is the goal of this objective. Under here, strategies and activities engaged in include development of One Health course content, community learning sites, faculty development in support of One Health teaching, research and outreach; etc.

5. Organisational Development: Positioning the One Health University networks as long-term sustainable leaders in One Health
   This objective has the purpose of increasing the network’s capacity to sustainably address workforce training needs through strategies and activities like expansion of the network in terms of membership and coverage, staff trainings, development of manuals, guidelines and strategic documents, determining strategic directions for the network, among others.

2. Biorisk Management Engagement
   Biorisk Management is the management of biosafety and biosecurity risks and affects bioscience higher education (pre-service) and members of the workforce (in-service).

   Sandia National Laboratories’ International Biological and Chemical Threat Reduction (SNL/IBCTR) is responsible for building regional biorisk management (BRM) training capacity in Africa through the East Africa Training consortium (EATC) project.

   Developing trainers and integrating curriculum into higher education is a key expected outcome of the collaboration. Professional development for in-service workforce is another key outcome with cross sector biosafety and biosecurity risk reduction impact.

3. The IDRC-Supported Eco-Health Project
   An increase in human populations in and around Africa’s wildlife conservation areas is leading to increased land degradation, biodiversity loss and related health risks. Very few scientific studies have been carried out to validate and/or quantify the extent of the problems faced by pastoralist, agriculturalist and fishing communities in and around Queen Elizabeth National Park. This project aims to foster the building of a body of evidence and knowledge, research
capacity and collaboration needed to tackle health and environmental sustainability problems at the interface of wildlife and livelihoods of vulnerable communities in the region. A key objective is to use the Queen Elizabeth National Park area as a long-term demonstration site for implementing applied Ecohealth research studies that benefit local communities and the Park ecosystem, helping to develop the field of Ecohealth in East and Central Africa.

Over the years, populations of people have been migrating into the areas surrounding Queen Elizabeth National Park – and - inevitably into the national park. Most recently, the Basongora pastoralist communities have been displaced from across the border in Democratic Republic of Congo (DRC) into this region of Uganda, leading to some settling inside the national park. At the same time, populations of fishing communities and livestock have increased within the national park. This project enables the study of health-related issues in humans, animals and the environment that are brought about by human-domestic animal and wildlife interaction.

The project fosters the building of a body of evidence and knowledge, research capacity and collaboration needed to tackle health and environmental sustainability problems at the interface of wildlife and livelihoods of vulnerable communities in the region.

**Objective of the project**

To expand and consolidate the Ecohealth field in Central and Eastern Africa that aims to improve sustainability of conservation areas and the health of local communities, livestock and wildlife.

**Specific Objective**

i. Assess the burden of health problems and priorities to generate relevant information and evidence for change in policy and practice

ii. Identify and explore the cultural, socio-economic and ecological drivers for key environmental changes that affect livelihoods

iii. Translate research findings into evidence-based policy recommendations and bring increased awareness to communities and partners about health vulnerabilities, risks, and responses.

iv. Disseminate research findings throughout the OHCEA network and contribute to building African leadership in the emerging field of research on health, environment and society.

The project has five PhD students that it fully funds, five Masters’ students and three more students who are supported in their research work. All the students are multidisciplinary working on addressing various health challenges to meet the project objectives. The project works with eight communities (4 fishing, 2 Agricultural (cultivators) and 2 pastoralists) from the districts of Rubirizi, Kasese and Rukungiri that share borders with Queen Elizabeth National Park (QENP; the study site).
A Formidable Regional One Health Network: OHCEA has provided a platform for building the capacity for One Health in the East, Central and West African region. The platform brings together 24 Schools of Public Health, Veterinary Medicine, Environmental science, global/international health and pathobiology in 8 countries. The network has grown from the original 14 institutions and 6 countries to 24 institutions and 8 countries, covering 3 regions of the continent, including those with critically low numbers of professionals in much-needed disciplines like wildlife health and management. The platform provided by OHCEA continues to be a springboard for developing One Health Workforce in the region, engagement of governments and other strategic stakeholders in workforce planning and development as well as nurturing young talent for One Health.

The strong management and governance structures, position OHCEA as a strategic choice for partnership and collaboration.
Collaboration with National Governments in workforce planning: Government engagement is a cornerstone to OHCEA’s approach to effect positive and sustained change in addressing complex global health challenges through multi-sectoral, multi-disciplinary, collaborative approaches. This requires evidence for governments to review and design appropriate policies, guidelines, strategies and plans. OHCEA in collaboration with the eight national governments, conducted a synthesis of national workforce capacity gaps in the seven member countries. The process entailed an in-depth analysis of capacity gaps using the One Health Systems Mapping and Analysis Resource Toolkit (OH SMART) and generation of a regional workforce development roadmap and workforce packages to guide follow up capacity building actions. The regional synthesis of the findings summarized the key broad themes as: communication, coordination and collaboration, human resources, policy and regulations, education and training (technical), education and training (cross-sectoral), data management, leadership, management, institutional (resources/ funding), laboratory, surveillance, gender, biosecurity, monitoring and evaluation, Antimicrobial Resistance (AMR), case reporting, emergency preparedness, disaster management, diagnostics, others (e.g. trade).

It is expected that the education/training institutions will work with government and other partners to implement the follow up actions for improved national capacity for better health services.
Through efforts initiated by OHCEA in Tanzania, the Government of Tanzania created a One Health Coordination Desk in the Office of the Prime Minister. The government also developed and launched a One Health Strategic Plan that is now the guiding document for national One Health activities and plans in the country.

In several of the eight countries, National One Health Platforms have been established by national governments and OHCEA is one of the few networks that have been invited to sit on these inter-sectoral platforms.

OHCEA also contributed to the process in Rwanda to design the country’s One Health Strategic Plan.

The work done in Cameroon by One Health Central and Eastern Africa (OHCEA) is already influencing policy making processes in the education sector.

Through the Eco-Health project, OHCEA is collaborating with local governments and communities to foster the building of a body of evidence and knowledge, research capacity and interventions needed to tackle health and environmental sustainability problems at the interface of wildlife and livelihoods of vulnerable communities in the region.
One Health Core Competences

The goal of the One Health Core Competences is to catalyze the effective and efficient practice of the One Health approach by defining competences which, while building upon the foundation of multiple health-related disciplines, primarily seek to strengthen the relationships and interdependencies between those disciplines. OHCEA through the USAID’s Emerging Pandemic Threats Program-developed core competences in One Health; a concept that recognizes the critical importance of animal and ecosystem/environmental health components of the public health system. One Health competences are critically important for the early identification and appropriate response to epidemics or pandemics of emerging infectious pathogens, which often originate among animals, including wildlife.

Since the core competences were developed, institutions in the network have revised pre-service and in-service curricula to take care of the competences, while some have been able to develop new programs. Faculty have also been trained to design and deliver One Health Competency-based curricula.

**OHCEA One Health Core Competences**
- Management
- Communication
- Values and ethics
- Leadership
- Collaboration and partnership
- Systems thinking
- Culture, belief and Gender
- Policy and Advocacy
- Research

**EPT 1: Pre-service Curricula Reviewed**
- MPH and MSc (Epidemiology Rwanda)
- Masters of wildlife Health & Management (Uganda)
- Vet socio-economic & gender course (Uganda)
- Curricula Reviewed
- Bachelor of Veterinary Medicine (Kenya)
- All programs under Vet medicine & MPH (Rwanda)

**EPT 2: One Health Integration in Curricula**
- MPVM, BSc Nursing, Environmental Health (Rwanda)
- DVM, MSc, Public Health, MSc, Veterinary Public Health, MSc, Environmental Science & Technology Medicine, BSc Public Health (Ethiopia)
- MPH (Senegal)

**EPT 2: In-service Training**
- Risk Analysis
- Biorisk Management
- Antimicrobial resistance
- One Health Leadership
- In-service Training 339
One Health Educational Materials

OHCEA has developed 16 One Health modules covering soft and technical skills. These modules are being used to enrich training curricula and courses in the various institutions in the network. The modules are in the area of, 1) One Health Principles and Concepts, 2) Outbreak investigation, response and antimicrobial resistance, 3) Ecosystem health, 4) Gender and emerging pandemic threats, 5) Infectious disease management, 6) One Health leadership, 7) Epidemiology, 8) Risk Analysis, 9) Policy and Advocacy, 10) Culture, Beliefs, Values and Ethics, 11) Research, 12) Systems Thinking, 13) Collaboration and Partnership, 14) Behaviour Change, 15) Management, 16) Communication and Informatics. These can be accessed by clicking on [this link](#). The network has also developed One Health case studies that can be used by all institutions in the network and those interested in One Health but are not yet members.

Multidisciplinary Experiential Learning:

OHCEA has pioneered multi-disciplinary One Health experiential learning in the region. While in some OHCEA institutions, single discipline experiential learning is one of the teaching and learning approaches, especially in the health sciences, this is the first time multiple disciplines are learning together for One Health. Various models are being
used with results indicating positive changes in the attitude of university students. Several strategies to this have been pioneered, tested and found to be effective. These include Global Health Case Competitions, One Health Demonstration Site Field Attachments, involvement in disease outbreak response and investigation, Participatory Field Epidemiology trainings, community outreaches, among other strategies.

a. **Global Health Case Competitions:** this is a high level approach to training the One Health workforce. Done right, the competitions heighten students’ understanding of issues of national, regional and/or global interest and concern. They bring together multidisciplinary student groups to propose innovative ideas and solutions to a provided case on a complex health challenge involving ever-changing and growing infectious disease threats. The groups compete against each other for the best and most innovative solution to the case.

“I was impressed that this is a disease I knew but didn’t know how it is transmitted, or how to handle it. And it was very enlightening looking at the disease from a One Health perspective. The approach of working as a multidisciplinary team was very rewarding. I have been working as an individual but working as a team where students from various disciplines contribute their knowledge to the same problem was very impressive.” Ms Nadine Mpinganzima – University of Rwanda student who participated in the 2018 GHCC.

Competencies that students can develop through this training approach include:

- Synthesizing information under pressure
- Prioritizing issues
- Recognizing and working within resource constraints
- Working within and appreciating multidisciplinary teams
- Integrating various perspectives and methods
- Applying evidence-based decision-making to global health problems

Faculty are responsible for developing the cases and mentoring students throughout the process.
b. **One Health Demonstration Sites**: these are carefully identified and selected by multi-disciplinary technical teams using predetermined criteria that differs from country to country. The sites provide a combination of factors that present One Health challenges; such as environmental fragility, human diseases and animal health conditions. Multidisciplinary teams of students are attached to these sites for a specified period of time (ranging from 1-4 weeks) during which they study the community, work with the community to identify health challenges (focusing on those that provide multidisciplinary learning opportunities), and design and discuss interventions with the community members. Five Hundred and Thirty Four (534) students have over the years, been involved in this learning approach. One Health Demonstration Site Field Attachments are meant to among other things- demonstrate how practically multiple disciplines and teams can learn and work together to address ‘wicked’ problems. Experiences can then feed into policy; both learning and training policy as well as implementation policy. This learning approach has been very much appreciated by students, faculty and the communities where the Demonstration sites are located.

**Student Participation in Field Attachments**

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“…... they gave us information that we didn’t know before; we discovered that they live (sleep) together with the animals; we gave them advice on this issue. (Also) I met one woman; a TB patient who was taking erythromycin for pain management, but this is an antibiotic. And she was taking Amoxicillin; 500gms 4 times a day which is overdose. So, there are several issues related to drug resistance which need to be explored further”:-
Teklebrhan Aregawi – 4th year student of Pharmacy, Mekelle University
“This is a great chance for me, so having this knowledge of holistic problem identification enhances my skills (and helps me to think beyond the silos). The knowledge we have gained especially on zoonotic diseases is useful especially when we do home visits. It is valuable in doing diagnosis”, Leilse Mekonnen, Nursing Department, Jimma University. This was after learning about animal-human disease transmission.
Students in Uganda demonstrate the making of briquettes to the female members of the community in Kasese Uganda

"In the past, we have not been communicating with those (the animal clinic), but now we will communicate; we will communicate and compare resources and action plans. How can we work as veterinary and health professionals? The interaction should be continued. I have found it useful; students come up with useful information that will help me and my staff", said the Hashenge Health Centre Director.

"Coming from the Health Sciences/medical field, I thought I know it all but under the One Health Institute I have been challenged. I have been challenged in that they bring in students we used to look at as 'academic dwarfs' but now One Health has brought us together. It has put us at another level. I have learnt interpersonal skills, communication skills. In medicine, I used to think that work is all about receiving patients in a facility but I have learnt the benefits of working close to the community": - Nabadda Rebecca – Bachelors in Nursing Science

"For me working with other disciplines has been quite the experience. For example, when we had been given tasks to be accomplished, everyone was pulling in their direction, thinking from their disciplinary perspective. Until we came to that point where we agreed that indeed this is the root cause of the problem. That was really a new thing for me": - Carolyn Kimani, MSc. Range Management University of Nairobi.
c. Disease outbreak response and investigation: Occasionally disease outbreaks can seriously endanger health (or have the potential for doing so) due to their intensity or severity of outcome(s). These situations may occur at a local level, but are mostly multi-regional with agencies additional to those responsible for health being involved. Student involvement in outbreak response and investigation by building skills for investigating and responding to disease outbreaks enhances response to potential epidemics in resource-limited settings. In the OHCEA network, institutions work with national outbreak management taskforces to source and deploy students in outbreak settings to provide them opportunity to learn in real-time. Care is taken to ensure that the health of the students is not put at risk in the process of participating in outbreak management.

Students participating in these events have the privilege of working alongside and being mentored by professionals from national and local governments, international agencies (non-state and UN agencies). So far, One hundred and thirty three (133) students have participate in disease outbreak response and investigations across the network.

“It was a learning experience for me, I engaged in different activities and got several views and opinions which were different from what I practically knew. As we communicated with different people I got to know how health challenges are interlinked. I acquired much knowledge about diseases; how the environment influences disease outbreaks and am glad that I can use this knowledge even outside the field. As a mass communication student, I get the privilege to inform society in order to avoid future community outbreaks”. Kawuki Joseph, Mass Communication, Makerere University
d. Community Outreaches: these serve a dual purpose of promoting community health awareness while providing students with an in-depth understanding of local One Health challenges. Most OHCEA community outreach activities are organized by interdisciplinary Students One Health Innovations Clubs (SOHICs) at member universities. University students and faculty also address community health challenges through applied, field-based research. In outreach activities, students and faculty visit communities, schools, university campuses and hospitals. Some of the activities conducted in community outreaches are; sanitation and hygiene campaigns, Antimicrobial Resistance talks, rabies vaccination and awareness, sensitisation on zoonotic and infectious diseases, among others.

Community members respond to a rabies vaccination call in Moshi Tanzania

Students of University of Lubumbashi (Democratic Republic of Congo) conduct malaria and Brucellosis tests in a community during outreach

Students in Kenya demonstrate construction and use of hand washing facilities

After a community outreach to primary school pupils on Antimicrobial Resistance in Tanzania, one of the pupils reported that “proper handling and disposal of antibiotics were not clear before, but after this sensitization all antibiotics and all other medicines that will be given to us or our immediate family members will be properly handled” (Standard 7 pupil).
Building capacity in critical areas: While the Democratic Republic of Congo (DRC) is a hot-spot for zoonotic disease outbreaks, the country has not had experts in the area of wildlife health and management. Through OHCEA the process of building that capacity has started where two 'seed' faculty are completing their training at Sokoine University in Tanzania. The two will lead the process of developing a program in Wildlife Health and Management at University of Lubumbashi in DRC. One of the trained faculty is now supporting the newly established Msc.Wildlife Health and Management program at the Ecole Inter Etats de Sciences et Medicine Veterinaires (EISVM)-a regional school of veterinary medicine based in Senegal. This is groundbreaking for the network.

The Master’s in Management and Health Surveillance of Wildlife (Master Gestion et Surveillance sanitaire de la faune sauvage) was started in November 2017. The program started off with a multinational group of students; 5 Senegalese, 2 from Côte d’Ivoire, 2 from Niger, 1 from Burkina Faso and 1 from Cameroun, making a total of eleven students, 3 of them females. This is a very important program for the region. It is the first of its kind and is strategically positions at EISVM to train and serve 14 countries in the West African region. The existence of this program provides:

- Personnel qualified for disease surveillance (zoonosis/emerging diseases) and wildlife management;
- Networking frameworks for surveillance and management of health problems within wildlife;
- Efficiency to create a surveillance network of wildlife diseases at sub-regional scale
- Health monitoring of domestic animals living near protected areas

In the second year of the One Health Workforce project (EPT II), OHCEA in DRC started the process of creating a MSc. Wildlife program by training two wildlife faculty at Sokoine University of Agriculture (SUA) in Tanzania and through advocacy with various stakeholders, particularly during the review of the country’s veterinary curriculum (in Year 3). During all these engagements, the lack of expertise in wildlife was highlighted. OHCEA continued to advocate for the creation of the MS in Wildlife Epidemiology (FETP-V) programs at University of Lubumbashi (UNILU) following a series of meetings with FAO, Ministry of Health, Ministry of Livestock and Fisheries and other stakeholders.

Masters in Veterinary Preventive Medicine (MVPM) in Uganda

Addressing both a need for health professionals trained in applied field epidemiology and a shortage of veterinarians with the skills and competencies to address challenges at the One Health interface of Humans, animals and the environment, takes an innovative approach. To address this challenge, partners from Uganda and the United States; Makerere University College of Veterinary Medicine, Animal Resources and Biosecurity the African Field Epidemiology Network (AFENET), USAID Emerging Pandemic Threats (EPT) Program RESPOND project and OHCEA, developed an innovative solution; the MVPM program. Students on the program came from countries around the region and from diverse undergraduate degree backgrounds. Through EPT 1 funding, OHCEA provided scholarships and to-date, the program has graduated several professionals serving in varying but important capacities around the region.

Dr. Fred Monje—a graduate of the MVPM program is a Senior Veterinary Inspector in the Ministry of Agriculture, Animal Industry and Fisheries. He represents the Ministry on the Zoonotic Diseases Coordination Office and is also on the National One Health Platform.
A Pool of Biorisk Management Trainers has been developed

OHCEA through partnership with Sandia National Laboratories through U.S. Department of Defense Threat Reduction Agency sponsorship, held four biorisk management training events from August 2014 to March 2015 with over 75 participants from universities and in-service bioscience institutes. The four training events were designed to integrate across schools of veterinary and public health and government in-service animal and public health sectors and across the region in Kenya, Uganda, Ethiopia, Tanzania, Rwanda and DRC. Through the trainings 18 biorisk management trainers were developed from higher education and government laboratories. Through co-training with an expert biorisk management trainer, six of these newly developed biorisk management trainers have gained critical skills towards competency.

Developing trainers and expertise towards competency in biorisk management education and training that lowers risks to biological materials is key to a safer and more secure region. A survey was for BRM trainees in BRM practices, post-training and their perceived future training needs. Those surveyed were members of ministries overseeing laboratories in their countries, management and leadership of bioscience institutes, university professors and lecturers, biosafety and biosecurity officers, veterinarians and laboratorians. (Thirty seven) 37 BRM trainers reported training 1538 trainees, which has multiplied the number of professionals with the skills and knowledge.
Setting the pace for One Health research: In the year 2016, the network developed a research agenda for One Health in the region which will help address pertinent one health issues including epidemics. The research agenda strategic areas of focus include, bat-transmitted diseases, hemorrhagic fevers, neglected diseases, antimicrobial resistance, biosecurity/biosafety, ecosystem health—non-communicable disease, endemic diseases, and food safety.

The research agenda is grounded in OHCEAs’ niche as the only network of Universities in the region that works to secure the health of humans, animals and eco-systems through strengthened high education using multi-disciplinary teaching and learning practices and environment in Africa- a hotspot of emerging and re-emerging diseases.

As a result of this training, at Moi University-Kenya, BRM principles were integrated into an existing academic program; 2) in Jimma University—Ethiopia, BRM has been integrated into different courses for BSc and MSc students, while 3) in Uganda, principles of BRM were integrated into the Bachelors of Environmental Health Science coursework, and is also delivered as part of a Certificate in Infectious Disease Management.
OHCEA network recognizes that gender equity and empowerment must be considered in all stages of any program design, and is committed to ensuring that social and gender integration is identified as a high priority at institutional, country and regional levels. Gender roles, the distribution of labour, access and control over resources play an important part in the biosecurity, control, prevention and response to infectious diseases and emerging pandemics. Gender inequalities interact with other inequalities such as ethnicity, socio-economics status and age. Therefore gender differences need to be addressed to better understand the risks and to help develop effective control and response strategies. The OHCEA network institutions will use a holistic approach to create more favourable incentives and structures for equitable development and assist country offices to design and implement gender-balanced and socially sensitive programs with lasting value. The secretariat will support the awareness-building and knowledge-strengthening activities and training needed to integrate gender considerations into all aspects of programming. As part of the strategy the network is working to:

1. Develop a gender strategy and policy that will guide the implementation of activities and ensure gender and cultural equality are central to activities, organizational culture and public image.

2. Ensure that gender as a strategic concept is included as an analytical and planning tool and that One Health skills and competencies are engendered.

3. Create a gender integration training curriculum that weaves and fully integrates the key principles of gender equality and gender analysis throughout the program. As part of this OHCEA is developing capacity of faculty to carry out gender analysis through training. Rather than being seen as an ‘add-on’, gender considerations will be woven into all stages of the program cycle.

4. Mainstream gender across institutions with students and faculty to include faculty development, curricula design, and teaching and learning methods and project monitoring and evaluation processes.
5. **Develop a gender and infectious disease facilitator manual**, as well as a **collection of practical, user-friendly tools, resources and training material** to support networks and their partners in integrating gender equity into daily project activity tasks while supporting a systematic and credible analysis on the gender implications of emerging diseases and pandemic crisis in different socio-economic and cultural contexts.

6. **Identify gender gaps** and work to mainstream gender considerations in all activities including faculty development, curricula design, teaching and learning methods, community interventions, field based programs and stakeholder engagements.

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**Students’ Spaces to Participate in One Health**

One of OHCEA priority areas is preparing the future One Health workforce. This is done using different approaches including the self-organising SOHICs. There are student clubs in each of the OHCEA partner countries. The SOHIC, similar to other student clubs functioning at universities, provides students with extracurricular opportunities for building relationships and engaging in activities around a common interest. This common interest of One Health Innovation sets the SOHIC as a mechanism for positively influencing the students, and their communities, as they undertake OH Innovation projects, and importantly, as they gain competence and experience in OH. The typical student club activities include club formation and leadership organization, One Health sensitisation campaigns in response to community needs, as well as in alignment with the One Health Day and One Health Week, case competition and debate activities, and dissemination activities such as abstracts, publications, and conference attendance.

Thousands of students have participated in SOHIC activities and gained various skills, competences and knowledge. Currently, there are 13 clubs across the eight countries.

"OHCEA work is highly-involving and participatory and it puts high priority on educating the public, in which awareness creation on zoonotic diseases is among the top issues addressed. It has funding ability, it has ability to enable participation of different disciplines (that include veterinarians, medical doctors, and others). Most important is its ability to enable participation of students and office workers and multiple universities": - Haftom Yirga male student from Veterinary College

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"Ugandan students through their SOHIC interact with pupils in a Kasese district primary school"
"It has made a difference and enabled students appreciate the importance of working together as multidisciplinary teams. OHCEA provided me with a platform to engage students from other countries, hence creation of new professional friends. Through the One Health Club, I also build an international network that has seen me serve on various international youth health group committees. For example, I served as the conference organizing committee member of Young Leaders for Health conference on SDGs hosted in Germany last year. This was possible through the networks I created through One Health.

I am also currently serving as a member of the mentoring subcommittee of the International Students One Health Alliance (ISOHA) affiliated to the One Health Commission, thanks to the skills and experience I gained from serving as the chair of Moi University One Health Club. One Health experience shaped my research career through mentorship from One Health workforce researchers I interacted with"- Protus Musotsi, former club leader, Moi University Kenya

"OHCEA allowed us to participate in the implementation of One Health through awareness days on zoonotic diseases, organized within the country. These awareness days, allowed us to see the relationships between the three components of health namely: humans, animals and the environment. Conferences organized by OHCEA, have greatly improved our participation in One Health" - Abdoulaye Samba - Institute of Environmental Sciences - Université Cheikh Anta Diop - Senegal

"OHCEA provided me with a platform where I could put the theoretic knowledge that I gathered in class to practice. Furthermore, working with students from different disciplines to address One Health challenges helped me appreciate the critical role that the One Health approach plays in addressing various challenges facing humanity. Students rarely get opportunities to interact with communities, OHCEA provided me with that chance and for that I am really grateful.

OHCEA involved me in field based activities like the Demosite which is one of the best experiences ever! Participation in One Health would be a challenge with the absence of the kind of funding USAID is providing, especially activities that require heavy funding. However, low cost One Health activities could be undertaken like visiting local primary schools and conducting One Health awareness within the college." - Nickson Langat –College of Agriculture and Veterinary Sciences, University of Nairobi –Kenya
"OHCEA has implemented the Students One Health Innovations Clubs. OHCEA supports this club to organize activities to raise awareness, training of students and many other topics. This is a way to develop a One Health mind-set in the students and be able to work in a multidisciplinary team later in life": - Issaka Nacanabo- School of Veterinary Sciences, Université Cheikh Anta Diop – Senegal

"There is one space that is difficult for most organizations to establish; students’ clubs. But OHCEA does it. That is; being with different disciplines, education background departments and work together and discussing, and learn from different perspectives. When we all work together, I personally feel relieved because I feel confident and told myself I should not worry like the universe falls on my head. I have friends (colleagues in other disciplines) who know other things; we can both can do it (in case of need of addressing complex health challenges)": - Shishay Gebrehiwot- College of Veterinary Medicine, Mekelle University-Ethiopia

As a future OH workforce, allow me to say that OHCEA and USAID had put seeds in a fertile soil. The training I have received has exposed me to many opportunities, including conferences, trainings and fellowships. I participated in One Health Fellowship program for 2 months at Tufts University, Cummings school of veterinary medicine in United States of America (USA). I become a competent global health leader with a strong technical fluency in application of One Health approach and able to control and able to apply acquired skills in outbreaks management infectious diseases control. I am now mentoring other students which is a privileged position to be in: - Jean Paul Mushayija, University of Rwanda - Rwanda.

Election time at the University of Rwanda – Nyagatare campus – involvement in the club activities has built leadership skills of the students
“OHCA has enabled us to know the importance of multi-disciplinarity in the management of epidemics. Thanks to OHCA, I visited the field several times and I was in touch with the community, which is quite important as a student in training. In short, I gained a lot. The One Health Students club is a space which helps us to engage and grow with other disciplines. Without the funding to OHCA from USAID, our participation in One Health was not going to be easy or possible”– Nathan Kutshi – School of Public Health -University of Kinshasa – Democratic Republic of Congo

Skill the Next Generation workforce: Students in Tanzania engage members of the community on health challenges that need multidisciplinary management. This is during a field training in Kilosa One Health Demonstration Site
OHCEA Leadership Summit members pose for a group photo after their February 2018 meeting in Kampala.
Some of the past and outgoing leaders receive awards in recognition of their dedicated service to the network. The awards - an internal initiative of the network - were handed over to them by Dr. Dennis Carroll, the director of the U.S. Agency for International Development’s (USAID’s) Global Health Security and Development Unit.
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