Adequate nutrition, particularly in the first 1,000 days of life, is critical to both physical and mental development and long-term health. Poor access to agricultural and health information has been recognised as a major barrier in the uptake of improved nutritional practices, particularly for women and vulnerable groups in marginalised areas.

“The quality of the nutrition children get between the age of six months and two years is absolutely critical.”

The concept of the first 1,000 days is an important public health concept,” said the speaker, “because the quality of the nutrition children get between the age of six months and two years is absolutely critical for what happens to the rest of their life. Indeed, food quality is closely related to the issue of childhood stunting, where a child is too short for its age. There is evidence that children who are stunted will have bad outcomes during the rest of their life, both in terms of their income, their health and their cognitive development.”

The good news is that, in many parts of the world, stunting is declining. Yet in some places, especially in Sub-Saharan Africa, it is persisting. “This motivated a lot of public health concern, and it resulted in the so-called nutrition sensitive approaches: improving productivity, getting people into dairy farming, into poultry farming, but doing it in a way that there will be nutritional benefits and that they will be targeted towards the first 1,000 days: that is pregnant women and children under two years.” However, most of the effort has focused on kitchen gardens and homesteading rather than livestock, for the obvious reason that it’s easier to get people to garden and keep homestead gardens. “It has proven quite difficult to show that that has any impacts on stunting. And that has then led to increasing interest in livestock foods. These are naturally much more nutritionally potent than fruits or vegetables or cereals. They’re nutritionally very dense, they contain a variety of high biological value proteins, vitamins, minerals. Unlike plants, they have not evolved toxins to stop them being eaten.”

“Food safety clearly is an emerging problem, already having a major effect on nutrition and health.”

“ONE HEALTH: TACKLING EMERGING INFECTIONS AT THE SOURCE”

SESSION REPORT
WORLD HEALTH SUMMIT 2016

A ONE HEALTH CENTRE OF EXCELLENCE IN KENYA

BUILDING CAPACITY

3 NOVEMBER 2016 WAS THE FIRST ONE HEALTH DAY!

INTERVIEW WITH ONE HEALTH PIONEER LAURA H. KAHN

INFLUENZA VIRUSES: TRENDS AND FEARS

THE ONE HEALTH IMPLICATIONS OF MASS MIGRATION

More stories inside

CONTINUED ON PAGE 3
Dear Reader,

It is with great pleasure that we invite you to read the One Health Platform Communicator, issued by the One Health Platform Foundation.

In this edition, One Health pioneer Dr. Laura H. Kahn adequately describes the One Health concept as “a strategy to improve global sustainability as well as the health of all species.” In the last two decades, there have been several drivers for this One Health concept. The 2003 SARS outbreak has been a real wake-up call, the “Manhattan Principles” nicely summed up the aims of One Health for the first time in 2004, and of course, concerns about novel zoonotic diseases that were heightened by the spread of H5N1 avian influenza and its potential to become the next worldwide pandemic. Since then, the One Health approach has been increasingly accepted by major international health oriented organizations, academic research institutes, field workers and the pharmaceutical industry.

Many of the major challenges facing global health need a One Health approach to better understand the threats and seek some of the answers. These challenges include food and water safety and security as the population grows ever larger, the threats faced by antimicrobial resistance, and the future challenge of global climate change. Indeed vector-borne diseases that continue to cause major outbreaks such as yellow fever, Zika and West Nile viruses are excellent examples of zoonotic diseases at the human, animal and environmental interfaces, and which may be particularly susceptible to further spread due to increased global warming.

Interdisciplinary collaboration is at the core of One Health and the One Health Platform therefore wishes to be a strategic forum for this growing movement of One Health advocates who strongly support the idea of an integrated approach to human, animal and environmental health as the best solution to complex and urgent health threats.

This second issue of the One Health Platform Communicator brings you an account of our achievements, including the first edition of the One Health Day on 3 November, our presence at One Health colloquia in Chatham House and at the World Health Summit, and of course the announcement of the 5th International One Health Congress, to be held on 22-25 June 2018 in Saskatoon, Canada.

Enjoy our Communicator and see you soon in Saskatoon!

Prof. John Mackenzie,
Vice-Chair of the One Health Platform
The concept of THE FIRST 1,000 DAYS

Yet, FAO data reveal that livestock products are a minor part of developing country diets. "Most protein comes from cereals, but this protein is low quality protein. It has not got the right balance of amino acids, is low in some vital micro-nutrients such as iron, and contains anti-nutritional substances as well. So even in developing countries, livestock products are clearly the major source of proteins. But as incomes rise, they want to consume a more animal source foods."

What we have seen a lot is when you start trying to implement rules to make food safe, it often has a perverse effect of either pushing food into black markets or reducing the consumption of food which is because the costs of making it safe then prices it out of the poorest." Food safety clearly is an emerging problem, already a major effect on nutrition and health. "What we have seen a lot is when you start trying to implement rules to make food safe, it often has a perverse effect of either pushing food into black markets or reducing the consumption of food which is because the costs of making it safe then prices it out of the poorest."

While livestock products consumption is too high in some parts of the world, economically underprivileged communities would certainly benefit from improving access to livestock products. "So basically, Goldilocks’ solution: not too much, not too little, just enough. A complex problem. Livestock products have an important role in nutrition. The drivers of consumption are much more powerful than the drivers of restrictions, so that is a challenge for policy makers who want to restrict."
First One Health Day celebrated on 3 November 2016

A Rabies Awareness Workshop in Uganda, a Regional One Health Strategic Planning Meeting in the Caribbean, an evening of academic talks and public discussion in Finland, a One Health Walk in Colorado, a One Health Awareness Week in Afghanistan and the launch of the Climate Vets Network in Australia... these are but six examples from 156 events held in 37 countries across six continents at the occasion of the first One Health Day on 3 November 2016.

“Recent global disease events, like the outbreaks of Ebola, MERS CoV and Zika, have underpinned the increasing impacts of zoonotic diseases on human and animal health. It has also become clear that changes in the environment, like population growth and climate change, are drivers for the emergence of such zoonoses”, says Prof. Dr. Ab Osterhaus, Chair of the One Health Platform Foundation Board. “One Health Day answers the urgent need for a One Health trans-disciplinary approach towards solving today’s critical global health challenges. It is a timely initiative that gives scientists and advocates a powerful voice for moving beyond current provincial approaches to emerging infectious diseases, antimicrobial resistance, climate change, environmental pollution, and many other problems, to a holistic default way of doing business.”

One Health Day was officially launched on 31 March 2016 as a joint initiative of the One Health Platform, the One Health Commission and the One Health Initiative Autonomous pro bono Team. They called upon individuals and groups from around the world to implement One Health educational projects and awareness events under the auspices of One Health Day. Seven months later, their call had generated an inspiring array of projects worldwide. But equally important: this global partnership is growing into a sustainable platform for One Health supporters around the world. Regional One Health Day Spokespersons in Africa, Asia, Oceania, the Middle East, Europe and the Americas liaised with project teams in their respective regions, while a network of One Health Day Country Ambassadors worked within their countries to encourage creation of inspiring events. Student groups from all disciplines were given the option to compete for cash prizes and global recognition. And many participating teams have requested a translated version of the One Health Day logo, into French, Indonesian, Vietnamese, Turkish, Greek and more. All promotional materials, including the event guidelines, the One Health Day brochure and the event submission form, are freely downloadable from the One Health Day website.

“The amazing number of global events planned by scientists, health practitioners and students has really exceeded our expectations and demonstrates the great interest and need for health professions to work together. We are delighted to continue this initiative in the future”, states Dr. Cheryl Stroud, Executive Director of the One Health Commission.

The inaugural One Health Day is dedicated to Jack Woodall (1935-2016), extraordinary scientist and admired One Health Leader.
The current attention for migration in Europe has been brought by the disaster observed on the shores of the Mediterranean. Yet migration is a global issue, with an estimated one billion people on the move worldwide, that is one seventh of the human population, of which 247 million are international migrants, and 740 million are internal migrants.

**Public health implications**

The public health impact of migrants is heavily determined by the process of migration and eventually, the non-access to care at the destination. Obviously, the distribution of HIV, tuberculosis and malaria is unequal when compared with residents at the countries of destination. It is therefore of utmost importance not to stigmatize migrants, but rather to recognize and address the problems of a population that is particularly vulnerable.

**Why do people migrate?**

Predications are that the number of migrants will continue to grow, for a number of reasons:

1. **Demography.** It is estimated that, in the next 35 years, the population in Africa will double from one billion to two billion, while it is unlikely that employment opportunities, food security and water safety will grow at the same pace.
2. **Economic demand.** Due to the ageing populations in industrialized countries, additional workforce is needed to maintain productivity. In this sense, migration is an opportunity. Globally, migrants send back $423 billion to their native countries, which equals the GDP of Austria. By sending back money, they contribute to stabilize populations that would otherwise be on the move.
3. **Globalization and the digital revolution.** Distance is shrinking, people can travel faster. At the same time, people are in contact, and especially younger people know what’s happening in other parts of the world.
4. **Growing disparities and armed conflicts.**

**Vulnerability of migrants increases**

Changing perception in destination countries and a decline in public confidence in government’s ability to manage migration puts migrants in a vulnerable position. Worldwide, 20 million people are estimated to be in forced labour. They produce an estimated $150 billion annually.

Migrants often suffer from poor conditions because they come from countries where hospitals are destroyed and vaccinations have been stopped long ago. Violence, abuse, every sort of disaster happens down the migratory road.

Adding to migrants’ vulnerability are the inequalities they encounter in their countries of destination:

- **Inequality of employment.** Migrants, particularly the less educated or able to navigate systems, occupy jobs that are characterized by the so-called three Ds: difficult, dirty, and undermining the person.
- **Inequality in accessing health services.** Access to healthcare for migrants is not equitable, as is demonstrated by the Migrant Integration Policy Index (MIPEX), a tool that measures policies to integrate migrants in all EU Member States, Australia, Canada, Iceland, Japan, South Korea, New Zealand, Norway, Switzerland, Turkey and the USA. There is no country in the world where there is equitable access to care for migrants that would yield a 100% score. Scores between countries vary widely.

Inequality of health services is reflected in health outcomes. It is estimated that 15% of all tuberculosis cases worldwide are among migrants.

**OBVIOUSLY, THE DISTRIBUTION OF HIV, TUBERCULOSIS AND MALARIA IS UNEQUAL WHEN COMPARED WITH RESIDENTS AT THE COUNTRIES OF DESTINATION.**

The MIPEX score table for 2014. Portugal and Sweden are the most favourable destinations for migrants.
Influenza: Trends and Fears

ANNUALLY RECURRING INFLUENZA
All seasonal influenza A viruses originate in East and Southeast Asia and from there migrate around the world. About six to nine months after they emerge, they reach Europe and North America. Several months later still, the strains arrive in South America. “That is why in moderate climate regions, we experience flu epidemics only in winter time,” explains Prof. Ab Osterhaus, Research Center for Emerging Infections and Zoonoses, Hannover, and chair of the One Health Platform Foundation. Fortunately, influenza is a vaccine preventable disease and risk groups are recommended to be immunised against flu infection annually.

FLU PANDEMICS KILL
In the past century, more than 50 million people died in four pandemic outbreaks of influenza. “The most recent one, the 2009 H1N1 Mexican flu pandemic, caused 0.3 to 0.5 million deaths, which is more than a normal seasonal influenza, and the impact was highest among young people,” says Osterhaus. The pandemic also perfectly illustrated the impact of globalization and air travel on the movement of infectious diseases, with the infection spreading to nearly all continents in a few weeks time. Osterhaus also warned for complacency: “Although primary care and hospital care systems were able to cope with all patients, many countries were close to 100% occupation of hospital capacities. Consequently, hospital capacity would have been overstretched if the pandemic had been any worse. But surprisingly, the lack of hospital capacity is not calculated in current pandemic preparedness plans.”

THE BIRD FLU THREAT
Migratory birds are a reservoir for all types of flu viruses. Typically, these avian viruses cause little or no illness in wild birds. But when they are transmitted to domestic poultry, they may acquire mutations and change into so-called highly pathogenic avian influenza (HPAI) viruses. These HPAI viruses do not easily transmit to humans, unless they evolve and acquire new mutations. Hence, we face the constant threat of a new pandemic outbreak of influenza. And H5N1 remains a major cause for concern. “Between 2003 and 2016, H5N1 has caused 854 human hospitalized cases, with a mortality rate of over 50%”, says Osterhaus. The fundamental question is why, with all the human cases we have observed, H5N1 has not yet caused a pandemic. In other words, why has H5N1 not acquired the capacity to efficiently spread from animals to humans and from humans to humans. Several years ago, there was major scientific controversy resulting from the publication of two papers, one by Yoshihiro Kawaoka, University of Tokyo, Japan, and one by Ron Fouchier, Erasmus MC Rotterdam, The Netherlands, which showed it was possible to make H5N1 transmit efficiently between ferrets via aerosol. Osterhaus: “It only takes five mutations for some of these viruses to become transmissible between ferrets. It is alarming that viruses collected from birds have been found to already have three of the mutations, so that they might only need two more. Today, we suspect that if the H5N1 virus ever acquires the mutations to transmit efficiently from humans to humans, it will probably happen in immunocompromised patients.”

“If H5N1 VIRUS WERE EVER TO ACQUIRE THE ABILITY TO TRANSMIT EFFICIENTLY BETWEEN HUMANS, IT WILL PROBABLY HAPPEN IN IMMUNOCOMPROMISED PATIENTS.”
PROF. A.D.M.E. OSTERHAUS

WHAT ABOUT THE H7N9 BIRD FLU VIRUS?
The H7N9 bird flu virus emerged in early 2013. Its hotspot is located around Shanghai, and so far it has only emerged in China. “The virus is quite efficient in infecting humans”, Osterhaus says. “It has a case fatality rate of around 40%, which is lower than H5N1. In contrast to the H5N1 virus, however, H7N9 is a low pathogenic virus. The low pathogenic character may sound like good news, but it makes it more difficult to trace the virus and monitor its spread. We also know that the virus can spread from human to human, although not very efficiently. But it is impossible to say whether it is going to take off.”

CURRENTLY, THERE ARE TWO TYPES OF APPROVED INFLUENZA ANTIVIRAL DRUGS, BUT NEW INFLUENZA THERAPIES ARE IN THE PIPELINE.

PREVENTIVE MEASURES
Surveillance and societal measures, combined with the use of antivirals and later also vaccines, are the major lines of defense worldwide. Better surveillance can lead to earlier detection and more effective information. Novel antiviral drugs against influenza are at the horizon. Osterhaus: “Currently, there are two types of approved influenza antiviral drugs: the M2-channel inhibitors and the neuraminidase inhibitors. The M2-channel inhibitors, amantadine and rimantadine, however, have considerable side-effects and the viruses become easily resistant to the drugs. The neuraminidase inhibitors have a high barrier of resistance. And new influenza therapies are in the pipeline.” At the same time there is also a need for influenza vaccines that offer broader and longer lasting protection, while drastically reducing production time. “We are in fact exploring some promising routes: different targets for cross-reactive antibodies (like the M2 protein, the neuraminidase or perhaps even the nuclear protein), and also targets for T-cell responses.”

“IN MANY COUNTRIES, HOSPITAL CAPACITY WOULD HAVE BEEN OVERSTRETCHED IF THE PANDEMIC HAD BEEN ANY WORSE.”
PROF. A.D.M.E. OSTERHAUS

In a few weeks time, the 2009 H1N1v pandemic spread around the world affecting all countries...
“One Health: Tackling Emerging Infections at the Source”

BACKGROUND
Too frequently, as we have seen with many contemporary pandemics, scientific development comes too late to fight major disease outbreaks. When a new pandemic arises in a location, it takes too long to develop, approve and distribute a treatment plan. Medicinal cures and vaccines frequently become available options promptly after the crisis is managed and stabilized. This was true in the case of the recent Ebola outbreak in West Africa, and will likely be true for the Zika virus as well. In delaying the action, the pandemic impacts large portions of communities with devastating results and, often, massive human losses.

With the growing concerns of climate change and human society’s impact on ecological processes, decision makers must account for how people interact with the ecosystems in which they live, and the wildlife with which they share the environment. Understanding the relationships shared between humans and the ecosystems they interact with and developing an understanding of environmental and ecological factors will better allow public health actors to develop pre-emptive plans to manage and treat health threats at the source.

Understanding these inter-relationships is the central focus of One Health conversations. The One Health philosophy seeks to examine microbial issues in contexts broader than solely human issues. This will improve public health efforts in managing, treating and preventing future disease outbreaks. Creating these One Health plans will require the involvement of many public health actors from academia, corporations in the biomedical industries, governmental officials, and scientists.

The underlying purpose of this session was to show how to improve the health of the environment by using a synergistic relationship between humans, institutions, animals and ecosystems. The topics discussed were oriented to understand the roles of humans in ecosystems, and how the institutions that people develop can shape the threats present in ecosystems.

DISCUSSION OUTCOME: POLICY IMPLICATIONS

TOWARDS BETTER INSTITUTIONAL COLLABORATIONS
Institutions should invest in research to better understand where vulnerabilities exist for pathogens. Intrinsic to the mission of the One Health dialogue is the focus on expanding understanding of different relationships between public health actors, and reducing the restrictions that prevent effective work. Public health institutions should commit to greater study of the relationships between humans, animals and ecosystems to understand how to reduce the burden and impact of disease. Dr. Leendertz emphasized the need to examine the quality and quantity of humans’ contact with animals to understand where infections may present highest risks. This way we can design greater preventative measures within human communities located close to critical wildlife areas. The One Health Platform can help in this by creating best practice guidelines for health and monitoring between wildlife and people. Often, the most vulnerable communities for pathogens are in countries with developing economies, and understanding their context is central to devising solutions.

Studying the direct and indirect interactions between humans and their surroundings may provide better answers as to where microbial vulnerabilities exist.

MANAGEMENT OF THE H1N1 INFLUENZA PANDEMIC IN MOROCCO

Developing institutional collaborations will lead to more efficient and effective pathogen management. To better prevent, detect, treat and monitor the spread of health issues within communities, distributing responsibilities across ministries and institutions helps to disperse management costs. However, strong coordination is essential. Morocco exemplified a prepared system that worked effectively within its means as it managed the global outbreak of the H1N1 virus within its borders. Dr. El Aouad detailed how the collaboration between government institutions facilitated the division of responsibilities and healthcare distribution to reduce the impact that H1N1 had in Morocco. Furthermore, she discussed how different institutions had varying restrictions on resources with which to fight the virus. Within these collaborations and management plans, it is crucial to focus on the contexts of each population to know where communication issues may arise.

Policy makers should incentivize newly trained scientists and workers to stay in their home-countries and prevent intellectual capital drain. After graduates complete their educational training, they are the most capable of addressing the health needs in their communities. Establishing economic incentives and cultural values to help retain medical professionals to work in their own communities will help further develop national institutions to manage future microbial outbreaks.

PLANETARY HEALTH

Regarding planetary health, the goal is to enhance ecosystem resilience to protect the planet’s natural systems. Professor Capon suggests that challenges to our ecosystem can be met by transitioning to a circular economy where reusing, recycling and minimizing waste are at the forefront. Additionally, he suggests that policy makers need to think more about the effects of climate change on hunger and nutrition due to land degradation, loss of pollinators and ocean acidification. Making choices that reduce negative impacts on the environment, such as forest conservation, may benefit human health by reducing the number of emerging infections and diseases.

Article based on the World Health Summit 2016 Workshop Report authored by Maren Taylor and Nicholas Olson
“One Health offers a solution for this divide as it tries to prevent disease at a very high level, we address the root causes of what is driving diseases to emerge. A lot of the impact comes from environmental destruction, often for agricultural purposes. One Health is a strategy that we have to use in order to figure out how to sustainably feed ourselves in a world that is becoming increasingly compromised by many of our activities, to the detriment of the other species and life on the planet. The bleaching of the coral reefs due to the warming oceans is a good example of our deleterious impact on the environment. We also see that African scientists and public health leaders in particular are embracing the One Health concept. An increasing number of excellent One Health activities are happening on that continent which is a positive development. Africa is among the hotspots of emerging diseases, and it is one of the most food-insecure regions in the world. In addition, they will be hit hard by global warming. Water security and integrity of the environment are high on the agenda. So it really is in their interest to embrace the One Health concept. The next challenge is to better integrate the environmental aspects into the One Health approach.”

“I REALLY BELIEVE WE NEED A ONE HEALTH APPROACH TO ACHIEVE A SUSTAINABLE EXISTENCE IN THE 21ST CENTURY AND BEYOND.”

“ANTIBIOTICS ARE THE FOUNDATIONS OF MODERN MEDICINE. HOWEVER, DUE TO THE INCREASING RESISTANCE TO DRUGS, WE ARE FACING A POST-ANTIBIOTIC ERA.”

The Power of One Health

ONE HEALTH

The One Health concept is a multifaceted concept that can be used at many different levels, varying from the basic level of increasing communication collaboration between physicians and veterinarians to using it as a strategy to improve global sustainability as well as the health of all species. It encompasses sustainable development of underserved communities.

WHERE DID WE GO WRONG?

“Medicine and public health div- orced back in the early 20th cen- tury, when the Welch-Rose Report recommended that public health should be separated from medi- cine. The Rockefeller Foundation es- tablished schools of public health, which furthered the divide between the two disciplines. Medicine and veterinary medicine also went their separate ways. All of these schisms were to the detriment of global health. The training of physicians focuses on individuals rather than populations. Consequently, the emphasis in medicine lies on tertia- ry care rather than on prevention, which has had adverse financial im- plications for the public’s health.”

BIODEFENSE

“The terrorist attacks on 9/11 and the anthrax attacks one month later had a huge impact on the trajectory of my career. They marked the start of my involvement in One Health”, says Dr. Laura Kahn of Princeton University and a true One Health pioneer. “Until then, I had been work- ing at the State Health Department involved in hospital regulations. But I decided to pursue biodefense and joined the Program on Science and Global Security at Princeton. In the course of my research, I became in- terested in how state health and ag- riculture departments were working together, since many of the diseases of bioterrorism and emerging infec- tion diseases are zoonotic. Yet, I discovered that people on the ani- mal health side rarely talked to the people on the human health side. There was a clear disconnect be- tween the two, even though patho- gens don’t necessarily recognize the difference between humans and other animals. I wrote up my find- ings in the CDC’s journal Emerging Infectious Diseases in April 2006 and received a huge response from the veterinary community. One of the people who contacted me was Dr. Bruce Kaplan, a veterinarian, who wanted to work together to spread the word. Dr. Thomas Monath, a distinguished virologist, joined us a year later. Around the same time, Drs. Roger Mahr, President of the AVMA, and Ron Davis, President of the AMA, met and agreed to get their respective organizations to work to- gether. Their meeting resulted in establishing schools of public health, which furthered the divide between the two disciplines. Medicine and veterinary medicine also went their separate ways. All of these schisms were to the detriment of global health. The training of physicians focuses on individuals rather than populations. Consequently, the emphasis in medicine lies on tertiary care rather than on prevention, which has had adverse financial implications for the public’s health.”


ABOUT LAURA H. KAHN

Dr. Laura H. Kahn, a physician, is a research scholar with the Program on Science and Global Security at the Woodrow Wilson School of Public and International Affairs, Princeton University. She led a two-year study assessing the public health infrastructures of New Hampshire, New Jersey, New York and Pennsylvania under a Josiah Macy, Jr. Foundation grant from 2003 to 2005. She currently teaches the course, “Hogs, Bats, and Ebola: An Introduction to One Health Policy,” to Princeton University freshmen. Dr. Kahn is a leader and spokesperson for the expanding One Health movement. She is a co-founder of the One Health Initiative with her colleagues Drs. Bruce Kaplan, Thomas P. Monath, and Lisa Conti. Dr. Jack Woodall passed away in 2016.

THE THREAT OF ANTIMICROBIAL RESISTANCE

“Antibiotics are the foundation of modern medicine, but with increasing resistance to drugs, many of the therapies that we take for granted – like elective surgeries and cancer chemo- therapies – might not be feasible because the risk of infection is too high. In addition, many of our treatments for tuberculosis and sexually transmitted diseases are less effective due to antimicrobial resistance. In fact, the United Nations General Assembly met in September 2016 to deliberate on this important issue.”

“I really believe we need a One Health approach to achieve a sustainable existence in the 21st century and beyond.”

“Antibiotics are the foundations of modern medicine, but with increasing resistance to drugs, many of the therapies that we take for granted – like elective surgeries and cancer chemotherapy – might not be feasible because the risk of infection is too high. In addition, many of our treatments for tuberculosis and sexually transmitted diseases are less effective due to antimicrobial resistance. In fact, the United Nations General Assembly met in September 2016 to deliberate on this important issue.”

Interview with One Health pioneer Dr. Laura H. Kahn
A One Health approach that integrates human, animal and environmental approaches in the management of zoonotic diseases has gained momentum in the last decade as part of a strategy to prevent and control emerging infectious diseases. However, there are limited examples of institutionalized OH approaches. Could Kenya’s roadmap towards the establishment of a sustainable OH system be a blueprint for national One Health action?

The Zoonotic Disease Unit of Kenya: a blueprint for national One Health action?

East and Central Africa is considered a hotspot for emerging and re-emerging diseases: besides being home to millions of livestock farmers, changes in the ecosystem, population growth coupled with increased demand for animal source proteins and industrialization are some of the key drivers. Kenya is an East-African country, bordering Uganda to the West and Tanzania in the South. The country has a population of 46 million people and an approximate livestock population of 70 million. Arid and semi-arid lands make up more than 80% of the landmass supporting up to 6 million livestock farmers.

Since 2006, the government of Kenya has worked to institutionalize One Health approaches through the creation of a multisectoral working group to manage zoonotic outbreaks like H5N1 influenza and Rift Valley Fever. These efforts culminated in the establishment of a One Health coordinating unit, referred to as the Zoonotic Disease Unit (ZDU) in August 2012. The signing of a Memorandum of Understanding between the Ministry of Health and the Ministry of Agriculture indeed marked the official start of the unit.

The ZDU bridges between the ministries of animal and human health, with an epidemiologist deployed from each ministry aimed at establishing and maintaining collaboration at the animal and human health interface towards better prevention and control of zoonoses.

As a guide for the ZDU, the country has a Strategic Plan for the Implementation of One Health. This 5-years plan has three main objectives:
1. To strengthen surveillance, prevention and control of zoonoses
2. To establish structures and partnerships to promote One Health
3. To conduct and promote applied research

ZOO DISEASE UNIT (ZDU) ORGANOGRAM

Director of Veterinary Services (MALF) → Director of Medical Services (MaH) → Zoonotic Technical Working Group → A committee of OH stakeholders in Kenya (both international and national)

ZDU Head, Veterinary Epidemiology and Economics Unit (VEEU) → ZDU Two Epidemiologists Administrator Data analysts → Sub-County Animal/Human Health Coordinators

CHALLENGES
1. Limited data on priority diseases. Many zoonotic diseases are neglected in nature, and getting valid data on the true burden is challenging because of the gross underreporting. One of the objectives of the ZDU is to implement applied research at the human-animal-ecosystem interface to establish the true burden of zoonotic diseases. An example is a nationwide brucellosis prevalence study to establish data on the national prevalence of this disease.
2. Limited capacity for lab diagnoses of zoonotic diseases in Kenya especially at sub-national level. ZDU is working to validate rapid kits for field diagnosis to improve utility of surveillance data.

Despite these challenges, Kenya has made significant progress in implementing One Health in the last 7 years.

A SUCCESSFUL MODEL
The benefits of the enhanced collaboration are becoming apparent. Recent outbreaks of zoonotic diseases, including Rift Valley Fever, rabies and anthrax, were detected more rapidly, effectively responded to, better documented and the understanding of animal-human linkage of the diseases improved. The ZDU indeed is a successful model for coordination between human and animal health sectors that can probably be adopted in other settings.

STRATEGIC PLAN FOR THE IMPLEMENTATION OF ONE HEALTH
Using a CDC multiple criteria decision-making AHP process, the ZDU developed a priority list of diseases in Kenya:
1. Anthrax
2. Human trypanosomiasis
3. Rabies
4. Brucellosis
5. Rift Valley Fever

In 2014, ZDU developed a national rabies elimination strategy to guide the systematic approach to a rabies free Kenya. Rabies is a classical example of a disease that demonstrates the advantages of collaboration: an intervention in animals with human health benefits. Its implementation started in some smaller pilot counties in the middle part of the country and well then extended outwards towards larger counties.

In 2014, the ZDU developed a national rabies elimination strategy to guide the systematic approach to a rabies free Kenya. Rabies is a classical example of a disease that demonstrates the advantages of collaboration: an intervention in animals with human health benefits. Its implementation started in some smaller pilot counties in the middle part of the country and well then extended outwards towards larger counties.
The ONE HEALTH PLATFORM Communicator

The 5th International One Health Congress will have a unique congress concept:

"Our top-level scientific programme committee has direct access to all leading One Health experts around the globe. Their unique position in the One Health arena allows us to capitalize on the growing interest and believe in an integrated approach to solving global health threats. The 5th International One Health Congress will carefully evaluate the most imminent potential hazards from various perspectives, from pathogen discovery and drivers for emerging diseases to diagnostics and intervention strategies."

Prof. Ab Osterhaus, Congress co-Chair

"In September 2016, the World Health Organization officially stated that "antimicrobial resistance is a global societal challenge and threat." Antimicrobial resistance, however, is not a new problem. To bring international attention to a growing public health threat, WHO launched its policy package to combat AMR in 2011 already. The 2016 Declaration on Combating Antimicrobial Resistance, issued at the occasion of the World Economic Forum in Davos, complements WHO’s policy package as it calls for urgent measures to reduce the development of drug resistance, increased investment in research into new medicines, and ensuring that these new products are available to all those who need them. These urgent issues will be at the core of the discussions during the 5th International One Health Congress."

Prof. John Mackenzie, Congress co-Chair

"In many parts of the world, especially in developing countries and underserved communities, society is confronted with spread of infectious diseases, rampant foodborne disease outbreaks, sick livestock and chronic water shortages. These challenges require global solutions in a One Health approach and we will therefore pay special attention to implementing One Health in underserved communities. At the same time, we hope to reinforce the increasing number of excellent One Health activities in developing countries."

Prof. Vikram Misra, Congress co-Chair

"The Science Policy Interface track is a tailor-made programme for public health officials and government representatives. It is specifically designed to bridge the gap between evidence and health policy and to that end, our scientific faculty will discuss the policy implications of their research on the most intriguing topics with leading policy makers. Experts will use high-quality data to guide discussions, and - ultimately - to improve the health of humans, animals and the environment through evidence-based policy."

Prof. John Mackenzie, Congress co-Chair

CONGRESS THEME: ONE HEALTH IN UNDERSERVED COMMUNITIES
"In many parts of the world, especially in developing countries and underserved communities, society is confronted with spread of infectious diseases, rampant foodborne disease outbreaks, sick livestock and chronic water shortages. These challenges require global solutions in a One Health approach and we will therefore pay special attention to implementing One Health in underserved communities. At the same time, we hope to reinforce the increasing number of excellent One Health activities in developing countries."

Prof. Vikram Misra, Congress co-Chair

FELLOWSHIP FUND
Early-career scientists are often very innovative and they inspire the entire One Health research community. We therefore plan to establish a One Health Fellowship Fund and provide travel grants to promising scientists. In addition, early career scientists will act as co-chairs during the scientific conference sessions while the most promising academics may be offered the chance to present their work in a plenary session entirely devoted to the work of promising scientists. We firmly believe this support can be critical for building a successful career.

ABOUT SASKATOON
The city of Saskatoon is favourably positioned with the South Saskatchewan River winding through it. Eight bridges span its gentle flow, linking east to west. An active city, residents and visitors alike flock to the Meewasin Valley trails, traversing sixty kilometres of pathways in all seasons. The city’s youthful vitality and cultural richness are evident in every neighbourhood, thanks in part to the University of Saskatchewan, where leading-edge technology such as the Canadian Light Source synchrotron draws the best minds from around the world. A vibrant, sophisticated arts community is tangible at the assortment of events and festivals taking place throughout the year. Boutique shopping, challenging golf courses, and fresh local cuisine round out Saskatoon’s appeal.
The Joint endeavour to improve the health of humans, animals and the environment.

From the very first beginning, the One Health Platform has been conceived as a strategic forum of stakeholders, a One Health network of advocates who strongly support the idea of an integrated approach to human, animal and environmental health as the best solution to complex and urgent health threats.

The past one and a half year have been instrumental to forge a strong partnership, bringing together major One Health leaders in a collaborative structure. Our Scientific Advisory Board now comprises of 20 key scientific experts, representing the different One Health disciplines. In regular meetings, they determine the organisation’s policy roadmap and coordinate the implementation of our jointly developed Public One Health Agenda.

The fight against antimicrobial resistance and the development of better and safer medicines for zoonoses and emerging infectious diseases are at the core of this Agenda. To address these challenges successfully, however, we urgently need to integrate know-how, evidence and technologies from key players involved in healthcare research, including academic institutions and pharmaceutical companies. The Scientific Advisory Board therefore also interacts with our Industry Advisory Board to determine the most urgent research gaps, investigate possibilities to apply for funding, assemble powerful consortia, coordinate research and disseminate study results.

The third indispensable partner in the implementation of the Public One Health Agenda are medicine regulators and public health authorities. To bridge the gap between evidence and policy, the One Health Platform has established an International One Health Coalition, a collaborative network of existing international governmental and non-governmental organizations and institutions. The idea is to provide high-quality data to guide policy discussions, and ultimately to improve the health of humans, animals and the environment through evidence-based policy.

It is interesting to see how our organizational structure and research focus nicely reflect in the concept of the 5th International One Health Congress that we will organize in Saskatoon, Canada, from 22 to 25 June 2018. In four dedicated parallel programme tracks, renowned specialists will address the many aspects of the multifaceted One Health concept. World experts will showcase recent advances in pathogen discovery, diagnostics, drivers for emerging infections, vaccinology and political and social science in two One Health Science tracks. A separate programme track will be dedicated to antimicrobial resistance, recently declared “a global societal challenge and threat” by WHO. Public health officials and government representatives will assemble in the fourth set of sessions, called the Science Policy Interface.

In conclusion, it is important to emphasize that the One Health Platform is a tool, a vehicle, for all partners to use in our joint endeavour to improve the health of humans, animals and the environment.