

*The One Health Newsletter
is a collaborative effort by
a diverse group of scientists
and health professionals
committed to promoting
One Health.*

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One Health Newsletter

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*This quarterly newsletter is dedicated to enhancing the integration of animal, human,
and environmental health for the benefit of all by demonstrating One Health in practice.*



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Advancing the One Health Approach in the Arctic Region

Bruce Ruscio, Dr.PH., MPH

Climate change is transforming the Arctic at an extraordinary scale and pace. Because all life is intimately connected to its physical surroundings, even small changes in the environment will impact the health of each living thing. These impacts will reverberate through the entire Arctic ecosystem.

The Arctic, with its persistently cold temperatures and largely frozen land and sea, is often pictured as a rugged and enduring landscape with highly resilient inhabitants. However, the Arctic is particularly susceptible to the impacts of climate change. Arctic temperatures have risen at twice the rate of other parts of the world, resulting in decreased sea ice, coastal erosion, changes in precipitation magnitude and frequency, permafrost thawing, and altered distribution of animal species. The associated health risks for humans and animals include potential changes in pathogen proliferation, drinking water quality and availability, food quality and availability, and distribution of animal species, among others.

The Arctic's health is further at risk from environmental contaminants. Contaminants generated outside the Arctic region, such as heavy metals and persistent organic pollutants, are transported by man-made and natural mechanisms to the Arctic where they accumulate and enter the food chain, harming various animal species, including humans who depend on wildlife for food.

Health threats will evolve in type, frequency, severity and complexity as the dynamic impacts of climate change on the Arctic ecosystem unfolds. Efforts to identify and understand the risks will require innovative science, novel tools, and integrated approaches. Moreover, the complex and multifaceted nature of health risks associated with climate change require

multidisciplinary and diverse stakeholder collaborations to advance the fundamental understanding of emerging health threats and to develop initiatives that build the resilience of communities and ecosystems.

A One Health approach recognizes the world is interconnected and advances collaboration among diverse stakeholders to attain optimal health for people, domestic animals, wildlife, plants, and the environment.

Over the past decades, the concept of One Health has been iteratively advanced by Arctic communities, scientists, and policy makers. Addressing climate change in the Arctic provides an optimal opportunity for advancing a One Health approach at the regional scale. Moving to a regional One Health approach is particularly well-matched to advance the understanding of health threats from the direct and indirect impacts of climate change in the Arctic region. First, there is a strong history of local, national, regional, and international cooperation among diverse stakeholders with a strong history of integrating health sciences and policy development across disciplines, cultures, and borders. Second, networks are in place that can help coordinate different aspects of Arctic One Health, including ecosystem monitoring, and animal and human disease surveillance and reporting. Finally,

Arctic policy makers have a track record of being receptive toward, and influenced by, scientifically-generated evidence. This approach will provide an even stronger evidence base for developing decision making tools, frameworks, and sound policies.

Along these lines, during the U.S. Chairmanship (2015-17), the Arctic Council will undertake a project to further a One Health approach across the Arctic region as a strategy to enhance resiliency. The goal of this project is to stimulate greater circum-polar support for One Health projects, so as to link and strengthen networks, bolster One Health collaboration and enhance international cooperation. As it is implemented, this multi-phase project will encourage the transition from knowledge to action through the development of decision-making tools. Early project efforts included outreach and consultation to regional stakeholders at international conferences, such as the 16th International Congress on Circumpolar Health in Oulu, Finland (See: <http://icch16.oulu.fi/>) and the One Health Workshop held by the Arctic Council's Sustainable Development Working Group's Arctic Human Health Expert Group in Anchorage, Alaska.

During the next phase in the project, the Arctic Human Health Expert Group (AHHEG) will seek to catalogue and characterize the current status of One Health activities in the Arctic. To do so, they will deploy a survey aiming to improve the understanding of where, how and why individuals and organizations communicate and collaborate using a 'One Health approach' (such as the [Alaska Native Tribal Health Consortium, One Health Group](#)). The information collected in this survey will be used to develop a baseline inventory of self-identified One Health practitioners, initiatives and



Caribou graze on the coastal plain of the Arctic National Wildlife Refuge with the Brooks Range as a backdrop. Photo credit: US Fish and Wildlife Services

programs, and to assess the level of interest in enhancing the One Health community of practice as a route to greater Arctic climate resiliency.

Have you lived, worked, or conducted research in the Arctic over the past five years? If so, please take the AHHEG's quick survey!

(https://www.surveymonkey.com/r/AC_One_Health_Survey)

To learn more, visit the Arctic Council's Sustainable Development Work Group web-site at <http://www.sdwg.org/expert-groups/arctic-human-health-expert-group/> or contact Dr. Bruce Ruscio at ruscioba@state.gov.

Additional information on the program was published in the *International Journal of Circumpolar Health*: B. A. Ruscio, M. Brubaker, J. Glasser, W. Hueston, and T. W. Hennessy. One health – a strategy for resilience in a changing arctic. *Int J Circumpolar Health* 2015, 74: 27913 - <http://dx.doi.org/10.3402/ijch.v74.27913>

Bruce Ruscio, Dr.P.H., MPH is an experienced public health professional with over 35 years of public health experience. Currently, he is a Senior Foreign Affairs Officer at the Department of State's Office of International Health and Biodefense, where he works on advancing the One Health approach with international partners to address complex health challenges at the animal-human-ecosystems interface.

When scientists meet policy-makers: an innovative way to execute the One Health approach to tackle zoonoses in the context of climate change, Québec (Canada)

Anne-Marie Lowe, M.Sc.

How should the Canadian province of Québec adapt to climate changes with regard to zoonoses? The best answer we have come up with is "let's work together." Through the Québec Action plan on climate change 2013-2020 (financed by Québec Green funds), the National Institute of Public Health of Québec (INSPQ) has been given the leadership to create an observatory on zoonoses and climate change adaptation.



The main mission of Observatories is to collect and synthesize information in an accessible way to facilitate decision making; with a main goal of establishing a relationship between academia and policy-makers. The activities of this Observatory include supplying expertise, monitoring the relevant scientific literature, knowledge transfer, and networking in these scientific areas. This Observatory provides an innovative way to put the One Health approach into practice, bringing scientists and experts from complementary fields of animal and human health, as well as environment sciences, together with provincial and regional policy-makers. The coordination of the activities of the Observatory is shared between INSPQ and the Veterinary medicine faculty of University of Montreal. This is fundamental to tackle zoonoses in a One Health manner.

The structure and disciplines involved in the Observatory on zoonoses and climate change adaptation include:

Experts in:

- human health
 - medicine (microbiology-infectiology)
 - public health (infectious diseases and environmental health)
 - laboratory sciences
- animal health and environment sciences
 - veterinary medicine
 - entomology
 - climatology
 - epidemiology of pathogens linked to agriculture
 - EcoHealth approach

Policy-makers:

- Representative of Quebec's Ministry of Health and Social services (MSSS)
- Representative of Quebec's Ministry of Agriculture, Fisheries and Food (MAPAQ)
- Representative of Quebec's Ministry of Forests, Wildlife and Parks (MFFP)
- Representative of the public health regional jurisdictions

Scientific discoveries will be made accessible to policy-makers through the networking created by the structure itself, but every discipline's preoccupations will be spoken about around the table and put in perspective.

The first meeting of the Observatory was held in Montreal on November 2, 2015. Since then, a lot of work has been done, including: publication of the first Observatory bulletin, a webinar about risk cartography applied to Lyme disease acquisition, the creation of an Observatory web page on the INSPQ website, and the development of a process to prioritize zoonoses in Québec. Items in progress include a program of knowledge transfer activities and annual reports of the

evolution of zoonoses in Quebec.

The Observatory officially launched on December 8, 2015, through a half-day meeting about climate change and zoonoses during the Annual Days of Public Health (JASP) that took place in Montreal.



Anne-Marie Lowe is a zoonoses scientific counsellor at the National Institute of Public Health of Québec and coordinator of the Observatory on zoonoses and climate change adaptation.

More information can be found at the following links:

Observatory Webpage: <https://www.inspq.qc.ca/zoonoses/observatoire>

PACC2013-2020: <http://www.mddelcc.gouv.qc.ca/changementsclimatiques/pacc2020.htm>

Green Funds: <http://www.mddelcc.gouv.qc.ca/ministere/fonds-vert/index.htm>

JASP, Montreal, December 8-9, 2015:

<http://jasp.inspq.qc.ca/2015-demi-journee-changements-climatiques-et-zoonoses.aspx>

New director appointed for Centers for Disease Control & Prevention's One Health Office (USA)

This announcement was originally published on the One Health Initiative [website](#).



Captain Casey Barton Behravesh MS, DVM, DrPH, DACVPM, a veterinarian, is the new Director for the [CDC One Health Office](#). She is a Captain in the United States Public Health Service. Dr. Barton Behravesh is an advocate of using an interdis-

ciplinary One Health approach involving human, animal, and environmental health to address emerging zoonotic and infectious diseases in order to best protect public health.

Dr. Barton Behravesh served as the Chief of the Epidemiology Activity in the Rickettsial Zoonoses Branch, Division of Vector-borne Diseases (2014-2015) where she worked on important One Health issues both domestically and internationally such as fighting Rocky Mountain spotted fever transmitted by the brown dog tick, which makes focusing disease control efforts on human, dog, and environmental health of critical importance.

From 2006-2014, Dr. Barton Behravesh worked in 4

the Division of Foodborne, Waterborne, and Environmental Diseases. She most recently served as the Deputy Branch Chief of the Outbreak Response and Prevention Branch, Division of Foodborne, Waterborne and Environmental Diseases (DFWED) and as the DFWED Coordinator for Enteric Zoonoses and One Health. During her 8 years with DFWED, she focused her efforts on investigating outbreaks of human illnesses caused by enteric pathogens, including Salmonella and Escherichia coli O157:H7, due to foodborne, waterborne, and contact with animals and their environments. These multistate foodborne and zoonotic outbreaks include E. coli O157:H7 infections linked to petting zoos, unpasteurized dairy products, and contaminated meat products, as well as human Salmonella infections linked to backyard poultry, reptiles/amphibians, rodents, dry pet food, and variety of foods such as peanut butter and produce. Her work led to the formation of the Enteric Zoonoses Team in the Outbreak Response and Prevention Branch. She has extensive experience bridging the gap between human and animal health officials at the local, state, federal, and international level related to emerging zoonotic and infectious diseases.

Dr. Barton Behravesh serves as the CDC liaison to the National Association of State Public Health Veterinarians <http://www.nasphv.org/>, and as the CDC representative to the American Veterinary Medical Association Council for Public Health and Regulatory Veterinary Medicine and the United States Animal Health Association. Since 2013, she has served as adjunct faculty in the Texas A&M University (TAMU), College of Veterinary Medicine and Biomedical Sciences, Department of Veterinary Integrative Biosciences; TAMU also has a notable One Health program (<http://onehealth.tamu.edu/>). Dr. Barton Behravesh enjoys mentoring the future public health work force

and has supervised dozens of EIS officers and epidemiology elective students since joining CDC in 2006.

Dr. Barton Behravesh has a Master of Science in Veterinary Parasitology from Texas A&M University. She received her Doctor of Veterinary Medicine degree from Texas A&M University and a Doctor of Public Health degree from the University of Texas Health Science Center at Houston, School of Public Health, both in 2005. She was an Epidemic Intelligence Service (EIS) Officer from 2006-2008 with the Enteric Diseases Epidemiology Branch at the CDC. She is board certified in the American College of Veterinary Preventive Medicine.

One Health at the 36th annual Society of Environmental Toxicology and Chemistry meeting

Tara Sabo-Attwood, PhD

During the 36th annual Society of Environmental Toxicology and Chemistry (SETAC) meeting, a plenary session entitled, **"One Health": Opportunities for SETAC Leadership in Integrating Environmental, Human, and Animal Health** was held. The session was organized around the One Health framework with a particular emphasis on further developing environmental quality connections and expanding collaborations among environmental scientists concerned with the role that natural ecosystems play in influencing health. A poster session also included a handful of studies and ways to integrate One Health. The afternoon session of eight speakers offered an assortment of perspectives, visions and case studies related to the continually evolving One Health paradigm.

Dr. Sabo-Attwood presented a case study that showcased the One Health Certificate Program that is offered by the Department of Environmental & Global Health at the University of Florida (featured in [Volume 8 Issue 3](#) of the OHNL). As part of this program, students engaged in a field course in Kenya, Africa where they are exposed to several facets of human, 5

animal and environmental science and discuss how these disciplines intersect and influence issues related to water sanitation and infectious disease. Her talk particularly focused on how the program expands environmental toxicology in One Health by studying the role of contaminants in complex health problems using a suite of bioassays to identify hormonal activity present in water samples. Data from such experiments are being considered in the context of larger issues related to infectious disease from an animal and human health perspective. This session represents a contemporary movement of integrating environmental toxicology into the One Health approach. More information on the SETAC annual meeting can be found at <http://slc.setac.org/>



Tara Sabo-Attwood, PhD is an Associate Professor and Chair of the Department of Environmental and Global Health at the University of Florida. Her research expertise is in the area of environmental toxicology with a focus on water and air pollution.

New diseases, old ones spreading to new countries: ProMED Quarterly Review

Jack Woodall, PhD

Unfortunately, after weeks of null reports, Ebola is still alive and kicking in West Africa. Pilgrims to Mecca returned home without taking a single case of MERS with them, while cases continue to appear in Saudi Arabia and across the border in Jordan. New cases and strains of avian influenza have come roaring back after the lull in the last quarter of the year, and hemorrhagic fevers continue to cause outbreaks around the world.

A new disease has popped up in China: severe fever with thrombocytopenia syndrome (SFTS), with a fatality rate of up to 30%. A mosquito-borne virus not seen before in the Americas called Zika has spread widely, and in Brazil it has apparently been causing an outbreak of a birth defect known as microcephaly (small head and brain, due to failure of the skull to grow normally).



Koi fish, Photo credit: Stan Shebs, [WikiMedia Commons](#)

There have been first reports this quarter of avian influenza HPAI H5N9 in Europe, aquatic bird bornavirus in Denmark, West Nile virus in horses in Tunisia, koi herpesvirus disease in carp in Austria, and grapevine Pinot gris virus in the USA (California).

Alerts and recalls

This quarter the following advisories have been posted: plague in prairie dogs, USA (don't feed them on your visit to the Grand Canyon); nosocomial hepatitis C in Utah, USA; bat rabies in Texas, USA; canine distemper in raccoons, Canada. And in farms and food products: seasonal pasture myopathy, UK; hepatitis A imported frozen berries from China, New Zealand; Salmonella paratyphi raw nut butter, USA; vegetable viruses Spain; brown rot stone fruit, Australia; multiple diseases turmeric (spice), India; Enterohaemorrhagic E. coli (EHEC) unpasteurized apple juice, USA; botulinum toxin smoked sausage, Portugal. It is beginning to seem nothing is safe anymore.

What emerging diseases concern WHO most?

A panel of scientists and public health experts convened by the World Health Organization (WHO) met in Geneva in December to prioritize the top emerging pathogens likely to cause severe outbreaks in the near future, and for which few or no medical countermeasures exist. These diseases will provide the basis for work on the WHO Blueprint for research and development (R&D) preparedness to help control potential future outbreaks.

The initial list of disease priorities includes: Crimean Congo hemorrhagic fever (CCHF), Ebola virus disease and the related Marburg virus disease, Lassa fever, MERS and SARS coronavirus diseases, Nipah and the related Hendra virus disease, and Rift Valley fever; three other diseases were designated as "serious," requiring action by WHO to promote R&D as soon as possible: chikungunya, severe fever with thrombocyto-

paenia syndrome (SFTS), and Zika. The list will be reviewed annually or when new diseases emerge.

Ebola

Liberia has now been declared Ebola-free by WHO 3 times, only to see sporadic cases return, nobody quite knows how. The virus is lurking undetected in the population, perhaps in the semen of a few of the thousands of male survivors, to be spread by sexual intercourse. WHO has now determined that, after the declaration and celebration of freedom from the disease, countries must enter a 3-month period of heightened vigilance to detect any possible new case, and thousands of reports of suspect cases are being made in West Africa. But on the same day in January 2016 that the whole of West Africa was declared free of Ebola by WHO, a new case cropped up in Sierra Leone.

A Scottish nurse has survived a relapse of Ebola nine months after her original infection, and being on the critical list both times. The virus had been hiding in her body ever since it was cleared from her blood in January 2015. An American doctor who survived Ebola is now having vision problems, along with hundreds of recovered West Africans who have many other painful sequelae, so effects of the disease can linger.

MERS-CoV

Since September 2012, WHO has been notified of more than 1600 global laboratory-confirmed cases of infection with MERS, including at least 579 related deaths. The large majority of these have been in Saudi Arabia, but since South Korea received an imported MERS case on 20 May 2015, the disease has infected 186 people there, 36 fatal. Most lethal cases had been suffering from a concurrent health problem. South Korea's 80th confirmed MERS case, the last to recover and be released from the hospital, has had a relapse. He was initially exposed to the virus while hospitalized for cancer at the prestigious Samsung Medical Center

in May. So MERS turns out to be another disease that won't go away.

Many Saudi patients owned dromedary camels and gave a history of frequent contact with them and consuming their raw milk. The majority of camels in Saudi Arabia are infected with the virus, but asymptomatic. On the other hand, in Kenya and Nigeria, camels are seropositive but the disease has not been detected in humans there.

Avian influenza

The alphabet soup of bird flu slops on. There were no reports of human H5N1 cases during the quarter, but new human cases have been reported since June (in Egypt). Highly pathogenic **HPAI H5N1** has decimated poultry in Ghana, Nigeria, Cambodia and Viet Nam; new human cases have been reported in Egypt and China in January 2016. A new strain of **HPAI H5N2** has appeared in poultry in France, while Taiwan culled a flock with HPAI H5N2. But in the USA, quarantine imposed because of H5N2 infection on a poultry farm has been lifted. **HPAI H5N6 infected nine people in China in January 2016 and killed poultry in Laos,**



Photo credit: [The Daily Star](#)

HPAI H5N8 killed 3 goslings on a *foie gras* production farm in Taiwan and led to the culling of 8881 ducks on a single farm there, and **HPAI H5N9** killed poultry in France.

Low pathogenic strains (LPAI) which do not kill poultry are notifiable, and affected flocks are culled, because of the risk their virus might mutate and become infectious to humans. **LPAI H5N2** was found in poultry in France, **LPAI H5N9** was detected in poultry in Germany, and **LPAI H7N9** was found in China (see Environmental hazards section below).

A fourth wave of human **H7N9** has begun in China, where there were two suspected cases of nosocomial transmission among a total of six cases in Anhui, Guangdong, Hunan and Zhejiang provinces; at least three of the cases had contact with live poultry. Taiwan issued a travel advisory warning of the risk of travel to the mainland.

Zika virus

Zika virus is endemic in Africa (where I isolated it in Uganda in the 1960s from mosquitoes caught in the location where it was originally discovered a decade earlier -- Zika forest, Entebbe, just down the hill from the virus lab) and Asia, where it has produced large outbreaks in virgin populations such as in Yap Island in the Pacific in 2007 and 2013. It was imported into Brazil in 2014, possibly by a football fan from Africa incubating the virus who attended a World Cup match in the state of Bahia, fell ill there, and infected local mosquitoes. It has since spread to more than a dozen other states, causing thousands of suspected cases. It has also spread across Central and South America. The U.S. Centers for Disease Control and Prevention (CDC) issued travel notices in December regarding recent outbreaks of Zika virus in Mexico and the following eight countries: Brazil, Colombia, El Salvador, Guatemala, Panama, Paraguay, Suriname, and Venezuela. Imported cases have been found in Mexico and the Netherlands.

In December, Brazil declared a national health emergency because of a sudden spike in the birth defect microcephaly, with nearly 4000 possible cases in the last few months in 13 states and the Federal district, probably due to their mothers having had a Zika virus infection early in their pregnancy. Afflicted babies may not live for more than a few months, and if they survive longer can learn to walk but not talk or function fully. On average most children with micro-cephaly will live until they are 20-35 years of age. The symptoms of Zika fever are indistinguishable from those of dengue and chikungunya, but no birth defects caused by those two viruses have been reported.

Severe fever with thrombocytopenia syndrome

This new infectious disease was discovered in 2009 in northeast and central China. It is caused by a bunya-virus which has been found in ticks. It has fatality rates as high as 30%. Japan and Korea have also reported several cases including deaths. The major clinical symptoms are fever, vomiting, diarrhea, multiple organ failure, thrombocytopenia (low platelet count), leucopenia (low white blood cell count), and elevated liver enzyme levels.

Hemorrhagic fevers

Sylvan (jungle) yellow fever outbreaks were reported from Peru, and in monkeys in forest near the international airport in the capital of Brazil, where preventive ring vaccination of the population has been done in response. UNICEF says that the world is only producing about 35 million of the 64 million doses of Yellow Fever (YF) vaccine needed. Even 64 million would not be enough if YF were to be introduced into Asia, where it has never been known before. Fake vaccination cards are being sold in South Sudan, posing a public health risk for countries having the mosquito vector admitting travelers from there. There is also an outbreak of mortal fever in the refugee

camps in Darfur, Sudan, which is reported to be different from YF, although camps in the Darfur states and elsewhere in Sudan had YF outbreaks in 2013. Sporadic cases of **Crimean-Congo hemorrhagic fever** were reported from India (fatal), Pakistan, and Senegal.

Other zoonoses

Anthrax in cattle is a worldwide problem, with reports from Benin, Burkina Faso, Ghana, Kenya, Niger and Togo in Africa, and also from Bulgaria, India, Kyrgyzstan, Macedonia, and the United Kingdom (UK), where it recently killed two cows. The last anthrax outbreak in UK livestock was in 2006. A risk for epidemics is revealed after a report and video were posted online showing hippos eating a dead zebra



Hippos consuming a dead zebra. Image credit: [Five Zero Safaris](#)

which may have died from anthrax. There are several other photos online showing hippos eating game animals.

Raccoon **rabies** has spread from the USA into Canada; rabies was reported in dogs in Indonesia (Bali) and the Philippines. Ferret-badgers infected with a new rabies virus variant emerged in 2013 in previously rabies-free Taiwan, with spillover into Formosan gem-faced civets. In October, a 79-year-old woman was attacked by a rabid ferret-badger in the yard of her home in Taiwan. The animal was killed and the victim was vaccinated.



Ferret badger. Photo credit: Livestock Disease Control Center of Chiayi County, Taiwan

A new method to control the spread of **sleeping sickness** has been unveiled. In rural Uganda cases dropped 90% after more than 500,000 cattle were injected with a cheap drug that successfully killed the parasite before it could be transmitted humans.

Other wildlife diseases and poisoning

Aquatic bird bornavirus was isolated from wild geese in Denmark, a first report for the country and for Europe. There has been a dramatic increase in **canine distemper** in raccoons in Ontario, Canada. Ivory poachers killed more than 200 elephants with **cyanide** in a National Park in Zimbabwe.

Livestock diseases

Sheep in the Palestinian Authority and sheep and goats in Bulgaria tested positive for **brucellosis**. **Foot & mouth disease** spread in cattle in Israel, Morocco, Saudi Arabia and Zambia, in pigs in China and Israel, and was detected in Russia in buffalo meat imported from India. A new foot & mouth disease genotype, strain A Asia, genotype VII, for which current vaccines may not be protective, appeared in Saudi Arabia and Turkey. **Small hive beetle** infestations in honeybees are spreading in Italy, threatening the pollination of fruit orchards.

Environmental and nosocomial hazards

Avian influenza LPAI H7N9 was found in China in

a water sample, presumably taken from a live animal market. Seventy workers at a battery factory in China are claiming compensation for occupational disease due to **cadmium**. Excessive cadmium exposure causes harm to bones and kidneys, leading to painful illness and osteocarcinoma.

Last year there was a nationwide outbreak of **fungal meningitis** and other infections caused by injections of a contaminated drug. CDC has now received 8 reports of relapse of the fungal infection after treatment, accounting for 1% of 753 patients. A recently identified relapse that occurred 21 months after cessation of therapy points to the need for continued vigilance by those involved in this outbreak. From 2012-15, investigators said at least 141 patients in nine U.S. cities were infected with antibiotic-resistant **Enterobacteriaceae** from duodenoscopes that could not be completely sterilized.

There were 4 cases of **legionellosis** suspected to have been caused by contaminated grocery produce misters in Washington, USA. A Pennsylvania, USA hospital is telling about 1300 open-heart surgery patients they could have been exposed to a bacterial infection after identifying 8 patients who contracted infection with the soil-borne **nontuberculous mycobacterium** (NTM), which causes a pulmonary illness that can take more than a year of antibiotic treatment to cure; 4 of those patients died. A heater/cooler machine was suspected to have been the source.

Red tide, an algal bloom, shut down all of the beaches on the Mississippi Gulf Coast, USA, because of



Red tide. Photo from [The Sydney Morning Herald](#)/Fairfax Media via Getty Images

the possibility of respiratory problems and irritations to the eyes, nose and throat. The bloom has also caused closure of many of its oyster reefs because they may have become toxic.

Crop plant diseases

Outbreaks of many crop plant diseases were reported. Among staple crops there were reports of rice diseases India and Bangladesh; bacterial ring rot potatoes in Russia; wheat diseases Ethiopia and New Zealand; clubroot oilseed rape, Canada; an undiagnosed disease of coffee Kenya; and suspected Huanglongbing disease of citrus Portugal. Also citrus canker is re-emerging in the USA (Texas), so breakfast is under threat.



Jack Woodall, PhD, is Co-founder and Associate Editor of [ProMED-mail](#). He is also a member of the [One Health Initiative](#) team.

Brief Items in One Health

Eradicating Guinea worm

Only two diseases have ever been eradicated: smallpox in humans and rinderpest in even-toed ungulates. However, thanks in large part to the work of President Jimmy Carter and the Carter Center, guinea worm may soon be the second human disease to be stopped in its tracks. Guinea worm is spread by drinking stagnant

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water contaminated with Guinea worm larvae, which months later emerge from beneath the skin as worms. There is no drug treatment or vaccine against this very painful disease, which was at one time present in 22 countries across Africa and Asia.



A person with Guinea Worm.
Photo credit: UNICEF Ethiopia/2014/Ayene

Eradication is difficult to achieve as it depends on cooperation from multiple partners including the Carter Center, the World Health Organization, the U.S. Centers for Disease Control and Prevention, and the United Nations Children's Fund (UNICEF). Elimination programs also depend on continued energy and support from local ministries of health and community-based volunteers. Other environmental and biological factors can complicate eradication efforts. For example, a study conducted in Chad and published in *The American Journal of Tropical Medicine and Hygiene* identified Guinea worm in more dogs than people. This raises the possibility of association between dog and human infections, and adds another dimension to ensuring elimination of the disease.

Despite the aforementioned challenges, the community-based interventions and relentless efforts dedicated to eradication are working. Cases of Guinea worm disease have almost disappeared. In 1986, an estimated 3.5 million cases were reported; in 2015, the Carter Center reports only 22 cases, and only four countries are now considered endemic. In addition to eliminating Guinea worm cases, many local health programs established to address the disease also provide health interventions and education to prevent other diseases.

More information can be found at the following links:

http://www.cartercenter.org/health/guinea_worm/index.html

<http://www.cdc.gov/parasites/guineaworm/epi.html>

http://www.nytimes.com/2016/01/12/health/progress-in-jimmy-carters-quest-to-end-guinea-worm-disease.html?ref=health&_r=0

<http://www.nytimes.com/2014/09/30/health/a-dogs-life-in-chad-filling-up-on-fish-guts-and-on-guinea-worms.html>

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3886430/>

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The One Health Newsletter is interested in publishing articles from a variety of view points and perspectives, and thus any opinions or statements made in the Newsletter's articles belong solely to the respective author(s), not the Editor, Editorial Board, Newsletter Contributors, or the University of Florida.

Redesigning the airplane to reduce carbon emissions

A NASA project referred to as "LeapTech" is currently exploring alternate options for powering airplanes with the aim to one day reduce carbon emissions produced by them.¹ Instead of the traditional large, fuel-burning engines, LeapTech engineers and technicians are testing various innovative designs. For example, one concept employs multiple electric motors attached to small propellers.

The aviation industry produces roughly two percent of the total annual carbon dioxide released due to human activity. Though aircraft have become more efficient over the years with respect to fossil fuel use, the expansion of air travel has resulted in increased emissions overall. New designs and adaptations to existing designs are hoped to decrease carbon emissions and make air travel more eco-friendly and sustainable.

Learn more:

1. Original New York Times [article](#)
2. International Council on Clean Transportation: <http://www.theicct.org/>

Guinea, Liberia, and Sierra Leone Declared Ebola Free, One Day before Sierra Leone confirms another Death from Ebola

On January 14, 2016, the World Health Organization (WHO) declared Liberia free of Ebola transmission. With this declaration, Guinea, Liberia, and Sierra Leone were all considered to be free of transmission, though some smaller outbreaks may still occur. There were 28,637 confirmed, suspected, and probable cases of Ebola during the 2014 outbreak in West Africa that lasted two years and claimed at least 11,315 lives.¹ According to WHO officials, health officials in affected countries have put in surveillance and rapid response mechanisms, which have helped contain smaller outbreaks.²

On January 15, the WHO confirmed that a new case of Ebola was discovered in Sierra Leone.³ Prepared for this possibility, Sierra Leone's government responded quickly - tracing contacts and implementing control measures.

For more information:

1. <http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/index.html#ebola-case/en/>
2. New York Times [article](#)
3. <http://www.who.int/mediacentre/news/statements/2016/new-ebola-case/en/>

Upcoming Events

17th International Congress on Infectious Diseases

Hyderabad, India

March 2-5, 2016

<http://www.isid.org/acid/welcome.shtml>

19th Annual Conference on Vaccine Research

Baltimore, MD

April 18-20, 2016

<http://www.cvent.com/events/19th-annual-conference-on-vaccine-research/event-summary-9c2a6b5301a64921afbd9c07a4cfa14.aspx?refid=spcoc>

4th International Climate Change Adaptation Conference

Rotterdam, Netherlands

May 10-13, 2016

<http://www.adaptationfutures2016.org>

Society for Healthcare Epidemiology of America Spring Conference: Science Guiding Prevention

Atlanta, GA

May 18-21, 2016

<http://sheaspring.org>

10th International Conference on HFRS, HPS and Hantaviruses

Colorado State University

Fort Collins, CO

May 31-June 3, 2016

<http://hantavirus2016.org/>

5th World Congress of Clinical Safety

Joseph B. Martin Conference Center,

Harvard University Medical School, Boston, USA

September 21-23, 2016

<http://www.iarmm.org/5WCCS/>

One Health EcoHealth 2016

Melbourne Convention & Exhibition Centre, Australia

December 4-7, 2016

<http://oheh2016.org>

Featured Symposium

International Symposium on One Health Research

Ulaanbaatar, Mongolia

June 15-16, 2016

Pre-conference workshops: June 14th

Post-conference excursions: June 17th -19th

<http://sites.globalhealth.duke.edu/dukeonehealth/5th-international-symposium-on-one-health-research-mongolia/>

Travel to Ulaanbaatar, Mongolia to learn from and forge research collaborations with high-ranking Mongolian leaders that specialize in human and animal research. The conference also features pre-meeting workshops focusing on tick-borne research methods and on mobile infection response. Explore Mongolia's cultural, historical, and rugged, yet pastoral wilderness on any of the three post-conference excursions to either National Parks or on a guided fishing-trip.



Photos courtesy Greg Gray

Recent Publications in One Health

Journal Articles

Genomics, animal models, and emerging diseases: Relevance to One Health and food security. J.C. Harding. Genome. December 2015. 58(12):499-502. <http://www.nrcresearchpress.com/doi/pdf/10.1139/gen-2015-0148>

Joint China-US call for employing a transdisciplinary approach to emerging infectious diseases. J.A. Mazet, Q. Wei, G. Zhao, D.A. Cummings, J.S. Desmond, J. Rosenthal, et al. Ecohealth. December 2015. <http://link.springer.com/article/10.1007%2Fs10393-015-1060-1>

One health, multiple challenges: The inter-species transmission of influenza A virus. K. Short, M. Richard, J. Verhagen, D. van Riel, E. Schrauwen, J. van den Brand, B. Mänz, R. Bodewes, S. Herfst. One Health. December 2015. 1:1-13. <http://www.sciencedirect.com/science/article/pii/S2352771415000026>

Antibiotic resistance: Are we all doomed? P. Collignon. Internal Medicine Journal. November 2015. 45(11):1109-1115. <http://onlinelibrary.wiley.com/doi/10.1111/imj.12902/abstract>

Ecological determinants of health: Food and environment on human health. A.M. Li. Environmental Science and Pollution Research International. November 2015. <http://link.springer.com/article/10.1007%2Fs11356-015-5707-9>

Reassessing biological threats: Implications for cooperative mitigation strategies. S.E. Galloway, S.R. Petzing, C.G. Young. Frontiers in Public Health. November 2015. 3:251. <http://journal.frontiersin.org/article/10.3389/fpubh.2015.00251/full>

Featured Book:

Global Population Health and Well-Being in the 21st Century: Toward New Paradigms, Policy and Practice

George R. Lueddeke, PhD
Springer Publishing, New York, USA, 2016

"The only way forward for the UN 2030 Agenda for Sustainable Development is to embrace 'One World, One Health' - working collaboratively to ensure the health and well-being of humans, animals, plant and the environment, now and for future generations!"

- George R. Lueddeke, PhD

"Dr Lueddeke presents a manifesto for collective public health action through the 'One Health' movement, recognising the inter-dependencies in the health of people, other animals and the environment we live in."

- Behrooz Behbod, MB ChB MSc ScD MFPH

Dr. Behbod's full review of the book, from which the above quote is taken, will appear soon in the [Oxford Public Health Magazine](#), Issue 3, page 6.

Recent Publications (continued)

Journal Articles

Vets and doctors pledge to cooperate on One Health. Veterinary Record. November 2015. 177(21):533.

<http://www.ncbi.nlm.nih.gov/pubmed/26612902>

Economic assessment of zoonoses surveillance in a 'One Health' context: A conceptual framework. S. Babo Martins, J. Rushton, K.D. Stärk. Zoonoses and Public Health. November 2015.

<http://www.ncbi.nlm.nih.gov/pubmed/26607752>

Bradford Hill's criteria, emerging zoonoses, and One Health.

G.V. Asokan, V. Asokan. Journal of Epidemiology and Global Health. November 2015.

<http://www.sciencedirect.com/science/article/pii/S2210600615300484>

Self-reported acute health effects and exposure to companion animals. W.S. Krueger, E.D. Hilborn, A.P. Dufour, E.A. Sams, T.J. Wade. Zoonoses Public Health. October 2015.

<http://www.ncbi.nlm.nih.gov/pubmed/26514953>

Combined veterinary-human medical education: A complete One Health degree? P. Eyre. Journal of Veterinary Medical Education. Winter 2015. 42(4):283.

<http://jvme.utpjournals.press/doi/pdf/10.3138/jvme.0615-093>

Miscellaneous Publications

Duke University. **One Health training program.** 2015.

<http://sites.globalhealth.duke.edu/dukeonehealth/trainingprogram/>

State of Michigan. **Emerging disease issues: One Health webinar series.** 2015. <http://www.michigan.gov/emergingdiseases/0,4579,7-186--307782--,00.html>

Call for "One Health" Manuscripts

International Journal of One Health (India)

This open access, peer reviewed journal focuses on One Health topics in a global context.

<http://www.onehealthjournal.org/>

One Health

This new open access journal supports multi-disciplinary research collaborations that focus on the One Health platform, in order to provide rapid dissemination of scientific findings related to zoonotic pathogens, as well as their inter- and subsequent intra-species transmission.

http://onehealthplatform.com/engine/?page_id=89

Veterinary Sciences

This open access journal supports original scientific research, review articles and short communications that promote theoretical and experimental studies in the veterinary sciences and improve understanding of "One Medicine" and "One Health".

<http://www.mdpi.com/journal/vetsci>

Infection Ecology & Epidemiology: The One Health Journal

This open access journal features original research articles, review articles, or other scientific contributions in One Health, that motivate interdisciplinary collaborations between researchers in various clinical and environmental health disciplines.

<http://www.infectionecologyandepidemiology.net/index.php/iee>