

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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Avian flu background and update

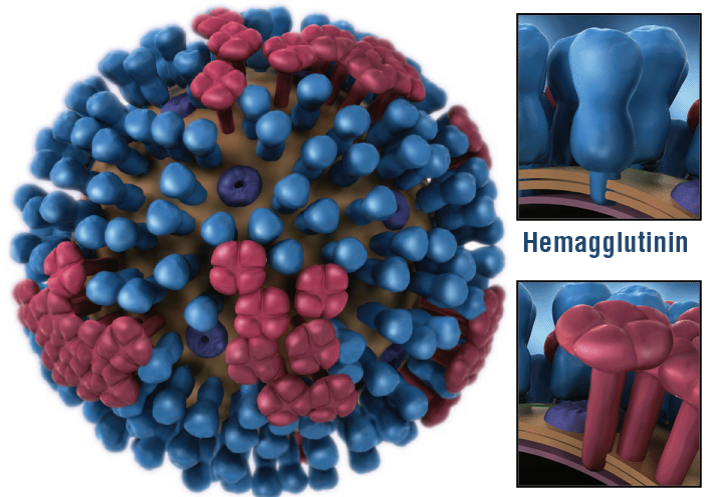
Carina Blackmore, DVM, PhD, Dipl. ACVPM

Early in the history of influenza science, it was recognized that influenza viruses have the potential of crossing species barriers. In the late 1920s, it was established that the “filterable agent,” which later would be identified as influenza, could cause illness in both people and swine. Then the first human influenza isolate was identified in 1933 by inoculating human throat washings into the nostrils of ferrets. It was also recognized early on that chicken embryos were excellent tissues for virus amplification, and bird influenza, or fowl plague, was documented in 1955. However, not until the late 1970s did we gain a clearer understanding of the true One Health implications of influenza and the wide variety of strains found in animals, particularly in aquatic birds (1).

Although two influenza types (A and B) cause the majority of human infections, influenza A is particularly important due to its many host animals and its ability to cause pandemics. Influenza A viruses are divided into subtypes on the basis of two proteins on the virus surface: hemagglutinin (HA) and neuraminidase (NA).

There are 18 known HA proteins and 11 NA proteins. The influenza A virus genome has 8 segments that are easily exchanged (reassorted) between viruses. As a result, influenza A viruses are a genetically and antigenically diverse group of viruses which continuously evolve. As the viruses exchange HA and NA genes, a large number of different virus subtypes (e.g. H1N1, H10N2, H5N2) are formed. Aquatic birds can be carriers of all influenza A subtypes except subtypes H17N10 and H18N11 which have only been detected in bats. Influenza A H1N1 and H3N2 are currently the most important subtypes in humans, influenza A H3N8 and H7N7 cause illness in horses, and influenza A H3N8 and H3N2 cause disease outbreaks among dogs.

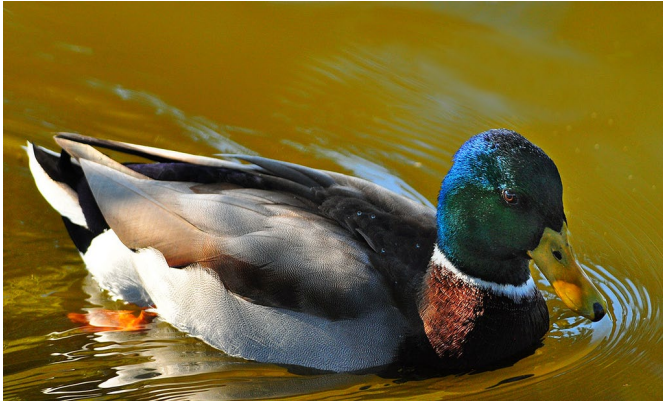
The global spread of the Asian-origin Highly Patho-



An influenza virus. Graphic from [US CDC](#)

genic Avian Influenza (HPAI) A H5N1 subtype generated concerns about wild birds migrating across continents and introducing the virus to the United States (US). Thanks to heightened avian influenza surveillance in US wild birds from 2006-2011, experts learned that influenza in wild birds has a seasonal pattern peaking in late summer to early fall. Influenza virus prevalence decreases during the fall and is at its lowest during winter. The surveillance data also show dabbling duck species such as Mallard, Wood Duck, and American Green-Winged Teal as the primary reservoir for avian influenzas in this country. These birds generally don't get sick but carry the viruses in their respiratory and intestinal tracts. Avian influenza viruses are likely spread from infected to uninfected birds via shared water bodies. The avian influenza prevalence is lower in watersheds at southern latitudes, especially during the hot breeding season (2).

Depending on the pathogenicity in domestic poultry, avian influenza viruses are divided into highly pathogenic (HP) and low pathogenic (LP) avian influenza (AI) strains. Highly pathogenic strains are always H5 or H7 subtypes, however, all H5 and H7 subtypes are



Mallard duck, one of the reservoirs for avian influenza in the US. Photo by [Bill Gracey](#) CC BY-NC-ND 2.0

not HP. While HPAIs often cause serious illness in poultry, the strains are often not particularly pathogenic to wild birds or mammals. Circumstantial evidence has historically implicated wild birds as the most important source of HPAI in domestic poultry. More recently, molecular sequencing has helped bring our understanding of the ecology of avian influenza viruses to a new level, and has informed the recent global spread of the Asian-origin HPAI A H5N1 subtype in wild birds. Based on sequence data, scientists have agreed on a nomenclature system to follow the evolution and spread of these H5 virus genotypes and have divided the strains into clades depending on the phylogenetic characterization and sequence homology of the H5 gene (4).

The Asian H5N1 was first recovered from geese in China in 1996. The virus was recognized as a potential human health concern after 18 people became ill and 6 people died as a result of influenza A H5N1 infections in Hong Kong in 1997. This was the first time influenza H5N1 infections had been identified in people. All of those who fell ill had close contact with infected poultry and 1.5 million chickens in Hong Kong were culled to prevent further disease transmission (3). The Asian H5N1 virus reappeared in Hong Kong in 2003 when two people were found infected with the virus. Strains that have evolved from the Asian HPAI A H5N1 virus (Eurasian HPAI H5 viruses) have since been detected in wild birds and poultry in more than 50 countries in

Africa, Asia, Europe, and the Middle East. Currently, six countries (Bangladesh, China, Egypt, India, Indonesia and Vietnam) are considered endemic for the virus. A number of reassortant HPAI viruses have been detected as the H5N1 viruses continue to evolve. Most influenza genes have been exchanged but the specific H5 HA gene continues to be present in all highly pathogenic isolates.

Molecular epidemiology from sequence data allows scientists to reconstruct the transmission and recombination history of viruses. One clade, the 2.3.4.4 HPAI A H5N8 virus was originally detected in China in 2010. The virus subsequently caused an HPAI outbreak in South Korea in January 2014, which resulted in the culling of 14 million poultry. By September 2014, the H5N8 virus had been detected in Japan, China, and Russia. By November 2014, it had reached Germany, the United Kingdom, and the Netherlands and by December 2014, it had been recovered in Italy.

An H5N2 reassortant that contained the Eurasian clade 2.3.4.4 H5 gene discussed above, was detected in domestic chicken and poultry in British Columbia, Canada in November 2014. Heightened surveillance by US Departments of Agriculture and Interior as a result of this finding resulted in the detection of an H5N8 strain in Washington State in December 2014 (5). The virus was almost identical to the H5N8 virus circulating in Eurasia; in other words likely spread by wild birds from Eurasia to North America. The wild bird surveillance efforts in Washington State also yielded a Eurasian clade 2.3.4.4. reassortant HPAI A H5N2 that was highly similar to the virus recovered from Canada the previous month and a reassortant clade 2.3.4.4 H5N1 virus containing genes from both Eurasian and American influenza viruses.

Subsequently, the HPAI H5N8 has been detected in wild and domestic birds along the Pacific flyway. Influenza A H5N2 reassortants have also been detected along the Central and Mississippi flyways (6) causing

large outbreaks on poultry farms affecting more than 48 million birds in 9 Western and Midwestern states during the spring of 2015 (7). The poultry industries in Minnesota, where 9 million birds (primarily turkeys) were culled, and Iowa where 32 million birds died, many of them layer hens, were particularly impacted. These states lost more than \$1 billion, and 8,400 jobs were lost in Iowa alone (8). Avian influenza is very contagious among poultry and it is believed that the rapid spread of viruses resulted both from wild bird introductions and human movement between farms. USDA has worked closely with state agriculture agencies to improve biosecurity measures and stamp out the virus in domestic bird populations. To date, no human illness has been associated with the 2.3.4.4 HPAI viruses found

in the US.

Wild bird influenza surveillance efforts continue to identify HPAI H5 viruses. It is anticipated that transmission among waterfowl will increase in the late summer and early fall when temperatures cool and a new generation of birds joins older waterfowl at the migration staging areas. When migration gets under way, these birds may yet again introduce HPAI H5 viruses to domestic poultry along their migratory flyways.



Carina Blackmore, DVM, PhD, Dipl. ACVPM, is the Deputy State Epidemiologist for the state of Florida, USA and Chief of the Bureau of Public Health Laboratories with the Florida Department of Health.

History of the One Health Initiative team (April 2006 through September 2015) and the One Health Initiative website since October 1, 2008

Laura H Kahn, MD, MPH, MPP, Bruce Kaplan, DVM, Thomas P. Monath, MD, Jack Woodall, PhD, Lisa A. Conti, DVM, MPH

Two separate historical interviews with One Health Initiative team members were published in the International Innovations magazine (Bristol, United Kingdom): [June 2010](#) and [June 2011](#). Subsequently a more comprehensive documented historical description was published in 2013 entitled "[One Health Initiative Advances Care for Humans, Animals and the Environment](#)." Below is a concise updated version as of **September 24, 2015**, originally printed on the One Health Initiative [website](#):

The One Health Concept is generally defined as a worldwide strategy for expanding interdisciplinary collaborations and communications in all aspects of health care for humans, animals and the environment. The synergism achieved will advance health care for the 21st century and beyond by accelerating biomedical research discoveries, enhancing public health efficacy, expeditiously expanding the scientific knowledge base, and improving medical education and

clinical care. When properly implemented, it will help protect and save untold millions of lives in our present and future generations. One Health has been the most commonly used term for the concept in the early 21 century. This evolved from the term One Medicine used during the latter half of the 20th century, first coined and promoted by veterinarian [Calvin W. Schwabe DVM, MPH, ScDm](#).

The One Health Initiative Autonomous pro bono team (OHI) was co-founded originally by physician [Laura H. Kahn, MD, MPH, MPP](#), veterinarian [Bruce Kaplan, DVM](#), and physician [Thomas P. Monath, MD](#) in 2006-2007 for the sole purpose of promoting the One Health concept nationally and internationally. The OHI team was expanded to include health research scientist [Jack Woodall, PhD](#) in February 2009 and public health veterinarian [Lisa A. Conti, DVM, MPH](#) in January 2012. Drs. Kahn, Kaplan and Monath [One Health Initiative website owner and his "brainchild"] initiated the [OHI](#)

[website](#) October 1, 2008. Dr. Kaplan is the primary OHI website contents manager/editor and Dr. Woodall, a co-founder of [ProMED mail](#), is the contents manager of the OHI website's popular [ProMED Outbreak Reports](#) page. The OHI team's purpose and goals are solely for educating international multidisciplinary scientific communities, political and governmental leaders, the general public, and news media about the One Health concept and helping to promote the One Health concept's expeditious implementation worldwide. This has been done via numerous national and international publications, book chapters, as well as through the OHI website's posting various One Health written contributions over the years, all of which have been document on the OHI website.

The June 2007 landmark [American Medical Association \(AMA\) One Health resolution](#) was primarily drafted by Dr. Kahn at the bequest of the late AMA President and great One Health advocate Ronald Davis, MD; Drs. Monath and Kaplan assisted. An established [Honorary Advisory Board](#), since December 1, 2010, consists of notable One Health VIPs from within the U.S., Canada and worldwide.

The OHI team has individually accepted national and international public speaker engagements, e.g. the milestone World Veterinary Association/World Medical Association [One Health Conference](#), [Drs. Kahn and Conti were keynote speakers at the May 2015 meeting in Spain. They have been and continue being highly sought after knowledgeable One Health speakers in other forums]. The OHI team has also helped provide other prominent One Health speakers for various One Health meetings upon request(s) over the years.

The OHI team works collaboratively with many prominent One Health national and international organizations like the [American Association of Public Health Physicians](#); the [U.S. One Health Commission](#) (OHC) [OHC and OHI letter to the AVMA](#) (American Veterinary Medical Association) —notably, Dr. Monath served on the

AVMA One Health Task Force in 2008, the precursor to the OHC and thereafter represented the American Society of Tropical Medicine & Hygiene (ASTMH) on the early commission activities - [One Health Sweden](#) (indeed the OHI team, working collaboratively with One Health Sweden physician and veterinarian representatives at a meeting in Sarasota, Florida, December 2013, helped develop the widely accepted and internationally recognized [One Health umbrella graphic](#)) and the nascent [One Health Platform](#). The OHI team currently participates in all known international One Health [journal endeavors](#).

In addition, since its inception, the OHI team/OHI website has worked closely with the [One Health Newsletter](#), a widely read online One Health product of the University of Florida ([Emerging Pathogens Institute, USA](#))—formerly produced by the [Florida State Department of Health](#) (USA).



The policy of the One Health Initiative team has always been to provide and continues to provide free access for reading and submitting acceptable One Health News, Publications, and Upcoming Events items for posting on the OHI website. All reputable One Health organizations, and individuals in the U.S. and worldwide are recognized and welcomed as [supporters/advocates](#). The OHI team works pro bono and requires/accepts no fees whatsoever from any and all One Health supporter/advocate organizations and individuals who wish to participate without discrimination. The OHI team works pro bono and requires/accepts no fees whatsoever from any and all One Health supporter/advocate organizations and individuals who wish to participate.

Over the last few years the OHI team website's monthly individual visits are roughly estimated to be

about 20,000 from over 150 countries. The OHI team's [email distribution list](#) totals 1168 individuals from 69 countries. The "One Health Initiative" [Supporters](#) list totals 865 to date. A September 24, 2015 OHI Publications page [item](#) lists some prominent U.S. and international individual and organizational One Health Endorsements (multidisciplinary) from June 2011 to July 2015.

The OHI website has been referred to internationally by many as the clearing house for all pertinent One Health information worldwide and recently some prominent One Health advocates have called it the New York Times of One Health. The OHI website is now known to have had at least 118 [reciprocal links](#), like [CEEZAD](#) and others, from within the U.S. and internationally. Most significantly, there is further evidence regarding the national and international One Health informational website status: among the recognized high profile search engines, the top three, i.e., Google, Bing and Yahoo list the [One Health Initiative](#) website first or among the first when either "One Health Initiative" or "One Health" are typed in. Nonetheless, there are numerous other informative One Health oriented national and international websites from U.S. Government agencies e.g. the [U.S. Centers for Disease Control and Prevention](#) (CDC); [U.S. Department of Agriculture-Animal Plant and Inspection Service](#) (USDA-APHIS); U.S. and worldwide university institutions, e.g. [University of Pennsylvania](#), [Kansas State University](#), [The University of Washington](#), the [One Health Commission](#) (OHC), a U.S. based incorporated organization, [The Royal Veterinary College](#), University of London, and many others.

The One Health concept has been successfully applied to many clinical health and public health milieus during the 19th, 20th and early 21st centuries. Some significant examples of clinical health advances through comparative medical/surgical endeavors occurred during the past centuries using the One

Health approach, i.e. these include public health and comparative medicine issues such as Heart Disease, Cancer, Orthopedic Disease, Anesthesiology, Obesity, Parasitic Diseases, Tuberculosis, Global Infectious Disease, Influenza, Human Hepatitis C virus, Tickborne Diseases, Food Safety, Hendra virus vaccine, Aspergil-lus felis, Immunizations (vaccinations), Lou Gehrig's Disease, Ebola, Antibiotic Use and Resistance, Staphylococcus resistant infections, Environmental health Policymaking, Crimean-Congo hemorrhagic fever viruses, Rinderpest, Emergency/Disaster preparedness and [many others](#).

Also documented on the OHI website is a relatively recent distinctive comparative medicine promotional activity termed "[Zoobiquity](#)" by its founder physician Barbara Natterson Horowitz, MD. This concept is essentially synonymous with "comparative medicine/translational medicine", recognizes some unique examples, reinforces the wisdom for encouraging physician-veterinarian collaborations and fits well under the One Health umbrella. Although there have certainly not been enough comparative medical/surgical research efforts (i.e., utilizing an interdisciplinary collaborative One Health approach), the One Health Initiative website has been posting important examples of One Health research advances since 2009 and these were noted on [this 2009-2012 link](#); more recently a more expanded list was chronicled in the above *paragraph.

As mentioned, there are many other significant illustrations of "One Health" clinical research and public health successes extending back through the 19th, 20th and 21st centuries and before. Public health achievements utilizing the One Health approach are prolific as are clinical health endeavors. Both have been described in the OHI website [NEWS](#) and [Publications](#) pages as well as in many other referenced publications worldwide.

University of Florida and Kenyan university students partner to explore One Health issues

Jill Pease, Public Relations Director, University of Florida's College of Public Health & Health Professions

Originally published on the University of Florida's College of Public Health and Health Professions [website](#).

"Worth a million lectures"

In communities in and around Kisumu, Kenya, examples of the link between human, animal and environmental health are easy to spot. Clean water and adequate sanitation can be scarce and chickens and goats roam freely before being brought into homes in the evening.

A group of graduate students from the [Department of Environmental & Global Health](#) in the University of Florida [College of Public Health and Health Professions](#) recently saw the challenges firsthand when they conducted field work in the Kisumu area, working alongside students of [Great Lakes University of Kisumu](#), as part of UF's One Health certificate program.

"They (animals, humans, and the environment) are inseparably entwined, and the effects on health become easy to see."

"What we saw was worth a million lectures," said Bahareh Keith, D.O., a master's student in One Health and a UF Health pediatric physician. "The connection between animals, humans and the environment is glaring here. They are inseparably entwined, and the effects on health become easy to see."

The One Health approach recognizes the connection between the health of people, animals and the environment and seeks to bring together expertise in public health, veterinary medicine and environmental health to solve complex health problems. The University of Florida is one of the first institutions in the world to offer academic programs in One Health, including master's and doctoral degrees in addition to the certificate.

"I don't think there's a single other field course in environmental health or One Health, that has this level of hands-on engagement and partnerships with communities and local students. I think it's unparalleled," said instructor Richard Rheingans, Ph.D., an associate professor in the department of environmental and global health and the UF Center for African Studies.

Rheingans began working with Great Lakes University of Kisumu (GLUK), nearly a decade ago on a study of school-based water and sanitation improvements. He felt the institution's mission of training students to work with communities to enable them to overcome their own development challenges would provide a valuable perspective for UF students.

"At Great Lakes University of Kisumu, we believe that communities have the ability to solve their own problems. This is enhanced by building their capacities through partnerships," said Kevin Achola, M.Sc., a lecturer in environmental health and epidemiology at GLUK. "Students benefit by looking, listening and learning from the communities they are exposed to."

In turn, "UF brings the research experience for our



UF graduate students Dr. Bahareh Keith (left) and Makyba Charles (second from right) and GLUK students Martha Onyango and Sambu Cheruiyot process fish samples collected from Lake Victoria.. Photo by Caronne Rush



GLUK and UF Students discuss water sampling methods at a community well. *Photo by Caronne Rush*

students a notch higher with laboratory skills" in microbiology, monitoring for particulate matter, DNA. During the two-week field course, UF students collaborated with GLUK students to identify One Health issues and collect samples for analysis. Bahareh Keith and Makyba Charles, M.S., a doctoral student in environmental and global health, worked with a pair of GLUK students to test lake and farmed fish for the presence of bacteria.

"This experience would have not been as valuable and productive without the collaboration with GLUK," Charles said. "Coming into an established community with unspoken rules and hierarchies can lead to a steep



Team members meet with workers at the Nyalenda Health Care Centre to gain trust in the community. *Photo by Caronne Rush*

learning curve. Working with local residents and trusted establishments facilitated an increase in our credibility and our ability to make meaningful scientific contributions."

Rheingans hopes that future One Health field work experiences in Kisumu also include UF students in other disciplines, such as veterinary medicine, social sciences, medicine, engineering and business.

"UF is unique because it has all of these different disciplines and One Health problems require interdisciplinary understanding and creative, diverse and innovative solutions," he said. "There are very few institutions that have the breadth of expertise that UF does."

Extraordinary One Health leader awarded Gold Headed Cane (USA): An internationally recognized physician virologist and vaccine developer

Laura H. Kahn, MD, MPH, MPP, Bruce Kaplan, DVM, Jack Woodall, PhD, and Lisa A. Conti, DVM, MPH

Originally published on the One Health Initiative [website](#).

Dr. Thomas P. Monath [MD, FACP, FASTMH] received the prestigious American Veterinary Epidemiology Society (AVES) Gold Headed Cane Award at the July 10-14, 2015 annual American Veterinary Medical Association (AVMA) convention in Boston, Massachusetts 7

(USA) on July 13 at a breakfast ceremony. The AVMA, founded in 1863, is one of the oldest and largest veterinary medical organizations in the world, with more than 86,500 member veterinarians worldwide engaged in a wide variety of professional activities and dedicated to the art and science of veterinary medicine.

An internationally renowned physician virologist and

dexterous vaccinologist pioneer, Dr. Monath was a co-founder of the *One Health Initiative Autonomous pro bono Team (OHI team); the originator and sponsor of the highly successful [One Health Initiative](#) website; and a former member of the landmark AVMA's One Health Initiative Task Force (OHITF) and its current successor, the [One Health Commission](#).

Monath's One Health colleagues on the OHI team, comprised of two physicians, two veterinarians and a PhD health-research scientist, are the managers and creators of the One Health Initiative website. Primarily due to his inimitable visionary leadership, the highly successful "One Health Initiative" website — frequently dubbed "the international clearing house for significant One Health information" and by some the "New York Times of One Health."— came to fruition on October 1, 2008. Without fanfare, Monath altruistically helped initiate and support implementation of numerous other notable One Health projects (his "brainchildren") by the OHI team over the past eight (8) years: these are included among others listed [here](#) and [here](#).

Indeed, Monath has had a lifetime of adopting and practicing the One Health approach during his illustrious medical career. See "[One Medicine/One Health](#)": [Personal Reflections of a True Believer](#) and more [here](#).

Monath's broad spectrum One Health/public health endeavors include a benchmark 2013 Vaccine journal publication "[Vaccines against diseases transmitted from animals to humans: A one health paradigm](#)." This review focuses on the immunization of animals as a means of preventing human diseases (zoonoses) like rabies. From the review: "In simple terms, the idea is to develop vaccines that protect domestic animals and wildlife thereby establishing effective barriers against human infections. Developing animal

vaccines are less expensive and are less strictly regulated than are those for humans. Hopefully a common sense One Health approach can go forward." See more [here](#) and learn more about Monath's pertinent past and current enterprising work related to Ebola vaccine development activities [here](#) and [here](#).

This AVES Gold Headed Cane award is in recognition of Monath's heretofore unheralded monumental achievements in the advancement of One Health—maximizing the collaboration of human, animal and environmental professionals to achieve optimal health for humans. As previously noted, he has been and continues to be a paragon in development of critical vaccines like smallpox (that replaced the previous vaccine in the U.S. national stockpile), Ebola (mentioned above), yellow fever and others for many years and has a distinguished [global reputation](#).

Inaugurated by AVES in 1964, the Gold Headed Cane Award was approved as an AVMA award by the Executive Board in 1996 and is sponsored by Hartz Mountain Corporation, Secaucus, NJ (USA). The award recognizes the achievement of an individual concerned with animal health who has significantly advanced



Left to right: Charles O. Thoen, DVM, PhD, President, American Veterinary Epidemiology Society, Thomas P. Monath, MD, and Georgette D. Wilson, DVM, Director, Scientific & Medical Affairs, The Hartz Mountain Corporation

human health through the practice of veterinary epidemiology and public health. Dr. James H. Steele [DVM, MPH], founder of the [U.S. Centers for Disease Control and Prevention's \(CDC\) veterinary division](#) in 1947, established the award to recognize the outstanding contributions of veterinarian, physician and scientist, Dr. Karl F. Meyer [DVM, PhD, MD (Hon.)]. Originally named the K.F. Meyer Gold Headed Cane Award, it was renamed the K.F. Meyer-James H. Steele Gold Headed Cane Award in 1985 to recognize Steele for his outstanding contributions to epidemiology and veterinary public health. Today, this award has gained in relevance and stature in concert with AVMA's and many

other health oriented organizations' endorsement and development of the philosophy of One Health throughout the world.

Note: In addition to Dr. Monath, [Isabel de Kantor, PhD](#) was recognized as one of this year's recipients of the K.F. Meyer-James H. Steele Gold-Headed Cane Award. Honorary AVES Diplomas were awarded to: Rene Carlson, DVM; Bruce Akey, DVM; Gopal Reddy, BVSc, MS, PhD; Theodore Cohn, DVM; Jonna Mazet, DVM, MPVM, PhD; Jacqueline Smith, PhD; Charles Muscoplat, PhD; Timothy Stevenson, DVM, PhD; and Cheryl Stroud, DVM, PhD.

The relevance of "One Health" to South Africa

Brigid Letty, MSc.Agric¹, Alan Rowe, BVSc.², Nkululeko Manci, MBChB³, and Debbie Rowe, CPDH⁴

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INTRODUCTION

One Health, being a strategy that aims to expand interdisciplinary collaboration and communication between actors involved in human, animal and environmental healthcare (Kahn et al. 2007), is very relevant in the context of South Africa, particularly as a mechanism for strengthening the efficacy of public healthcare (Monath et al. 2010). The need to promote the concept of One Health forms the basis for a partnership that has been established in the Creighton-Centocow area of KwaZulu-Natal Province, South Africa. St Apollinaris is the hospital based at the Centocow Mission. It provides healthcare support to the surrounding rural communities.

Livestock healthcare support is largely provided through the services of the provincial department of agriculture's veterinary services, which is under the management of Dr. Alan Rowe, the State Veterinarian based in the small town of Ixopo some 30km from Centocow Mission. The current programme is building on past linkages between these parties, where veterinarians and physicians worked together in an effort to control scabies outbreaks.

It is more than 20 years after democracy, but we are still dealing with the settlement patterns and associated economic circumstances associated with the apartheid era, specifically rural homelands and urban townships. The



Photo courtesy the authors.

previous homeland areas are fairly densely populated rural areas where many black families have their roots, and where many people still live. These households, while relying on government grants and remittances from family members living and working elsewhere, still have a rural nature and most households own some form of livestock – at least chickens, but also goats, sheep, cattle, donkeys and/or horses. Townships and the more recently established RDP (Reconstruction and Development Programme) housing projects are urban or peri-urban settlements often established adjacent to formal middle class/upper class suburbs).

Many towns and cities are also characterised by informal settlements, where people seeking employment find accommodation. Many township and RDP households also own livestock and traditional “companion animals”, namely cats and dogs. Townships, rural areas and informal settlements are characterised by varying degrees of poverty and lack of service provision. Most have inadequate municipal services in terms of refuse removal and water supply. The impacts of HIV/AIDS are also felt in these settlements, resulting in women and child-headed households, reliance on social grants (including pension, disability, foster and child support grants) to support extended families. The health of animals found within poor households in South Africa often reflects the socioeconomic circumstances of their owners, but in turn the animals can affect the health and wellbeing of those same people. The interactions between human and animal health as well as environmental health warrant more attention.

LINKS BETWEEN ANIMAL HEALTH, HUMAN HEALTH AND ENVIRONMENTAL HEALTH

Given that many rural and urban households have dogs this is the starting point for discussions about the potential for people’s health to be negatively impacted by their animals. The situation is exacerbated by the presence of many stray dogs in urban and peri-urban

areas, possibly related to the high incidence of HIV/AIDS, which leads to break down of families and increasing poverty levels which see households not being able to manage or care for dogs. Many dogs are malnourished, have high numbers of internal parasites and develop conditions such as mange as people do not have access to veterinary services and furthermore cannot afford them. Since government Veterinary Services mainly focus on notifiable diseases that have serious consequences for humans, support for dog owners is mainly limited to the provision of rabies vaccinations. This is an important service as outbreaks are fairly common in the KwaZulu-Natal Province. Additional support is provided in certain communities by organisations such as People’s Dispensary for Small Animals (PDSA), Society for the Prevention of Cruelty to Animals (SPCA) and the South African Veterinary Association (SAVA) Community Veterinary Clinics.



Photo courtesy the authors.

Despite the government efforts to control rabies outbreaks, one still visits rural households and finds that cases go unreported. One household head in Msinga, KwaZulu-Natal, when visited in 2013 said that he had a rabid dog tied up in the back of the yard while he waited for it to die. He knew that it was a danger to his family and his other dogs so he had taken measures to reduce risk by keeping it isolated – but that was all that he could do.

Awareness needs to be created regarding the importance (and legal requirement) of reporting cases of rabies to police, State Veterinary Services or Department of Health. A fairly recent occurrence, or one receiving attention on news, is attacks by packs of dogs in urban and peri-urban areas. News reports have covered cases and there are certain areas where people do not walk at night for fear of such attacks.

The high incidence of mange in dogs sparks discussion about the impacts on human health. Both types are encountered, namely sarcoptic mange and demodectic mange, both of which are generally referred to in isiZulu as 'utwayi'. Outside of the zoonotic concerns related to sarcoptic mange in dogs (which may not be substantial given that *Sarcoptes scabiei* is generally self-limiting in humans), the indirect effects of demodectic mange, which we see frequently, cannot be ignored. Dogs with severe demodectic mange are also likely to carry large populations of other parasites and these pose a danger to the humans with whom they come in contact, especially small children, who are more prone to infection. For example, the Hydatid tapeworm (*Echinococcus granulosus*) can result in infections in humans (echinococcosis). This tapeworm has a lifecycle that normally involves sheep and dogs, but can infect people where it results in the development of cysts.

Besides the dog-related zoonoses that affect people, our work in rural communities has revealed a number of other cases that are of concern, given the associations that exist between people and livestock.

Recently the Provincial Department of Agriculture's Veterinary Services have become aware of, and are taking action to address, incidences of Bovine Tuberculosis (BTB) in cattle belonging to communities in the vicinity of the Hluhluwe-Umfolozi Game Reserve in KwaZulu-Natal. Bovine tuberculosis is caused by a bacterial pathogen, *Mycobacterium bovis*, while human Tuberculosis (TB) is caused by *Mycobacterium tubercu-*

losis. M. bovis can affect all animals (including humans), while *M. tuberculosis* does not affect cattle. The former causes the same disease as *M. tuberculosis* in humans. Given the delays encountered in distinguishing between the two strains, this is often not undertaken and therefore the causative organism is not clearly identified. BTB can be transmitted through aerosol pathways (breathing in the bacteria), saliva and consumption of milk.

BTB was introduced with infected cattle from Europe in the 18th Century. It then moved into wildlife populations. In Hluhluwe-Mfolozi Game Reserve, there are incidences of BTB in black rhino and buffalo. The original source of recent incidences of BTB in cattle belonging to black smallholder farmers is unknown and could be due to proximity to the game reserve or due to the incidence of the disease in a commercial herd in the area in the past. The risk for people contracting BTB from their cattle is greatest for those who have close contact with sick animals during herding and milking.

For people with compromised immune systems as well as children, the elderly and the malnourished, BTB can be more easily contracted when ingesting raw milk. The BTB infections that result from consumption of infected meat and milk often present as enteric TB, which is frequently not diagnosed. BTB is more resistant to many of the cheaper TB drugs. The impacts of HIV/AIDS in terms of leaving people with compromised immune systems that make them susceptible to infection has led to government taking action to address the issue.

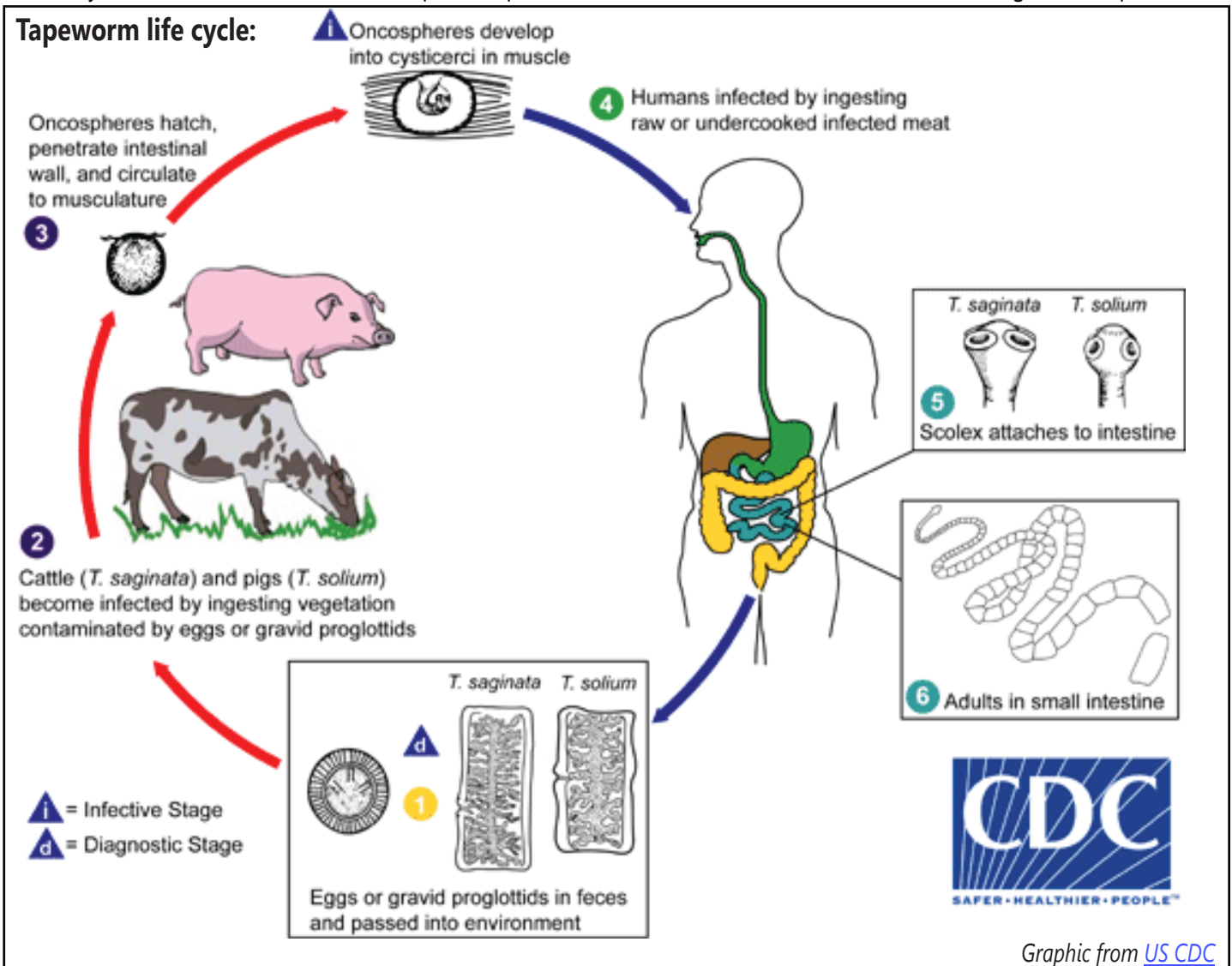
There are a number of conditions seen in livestock, which can potentially affect people, though we have not actually encountered this. It does however form the basis for creating awareness regarding the need for good hygiene practices. For example, abscesses are frequently seen in goats in rural areas in KZN, often along their jaws. One of the causes of these is Caseous

lymphadenitis, which involves abscessation of the lymph nodes and other internal organs caused by *Corynebacterium pseudotuberculosis*. The abscesses contain material which contaminates the environment allowing bacteria to enter other goats through any sorts of wounds, especially when goat owners do not manage the situation hygienically. Opportunity also exists for the bacteria to cause infections in people who handle infected animals. Another condition frequently seen in goats and known to also affect people is Orf, which is highly infectious and can spread to people that handle them.

Infection of humans with tapeworms is another common condition that results from poor hygiene. It is normally due to infection with the pork tapeworm

(*Taenia solium*), but can also be caused by the beef tapeworm (*Taenia saginata*). Infection occurs when humans ingest raw or under-cooked meat containing larval cysts (commonly known as measles). They develop in the human intestine and the adults release proglottids that contain eggs, which in turn contaminate the environment if sanitation is poor. Neuro

Cysticercosis is a more serious complication associated with pork tapeworm infections and can cause seizures and headaches if the parasite encysts in the brain. At St Apollinaris Hospital, some cases have been identified, but one major complication is that people often first visit a traditional doctor (isangoma) when they experience a seizure, believing it to have some link with their ancestors, before visiting the hospital. This



delays treatment and leads to more damage. The persons are treated and the larva dies, but the associated necrosis often leads to continuing seizures. Neuro Cysticercosis is generally due to auto-infestation (where persons re-infect themselves with proglottids through poor hygiene practices). The need to create awareness about good hygiene as well as cooking practices to avoid tapeworm is essential.

Liver flukes are sometimes found to be responsible for symptoms of jaundice as they can result in blockages of the ducts in the liver. While this is not commonly encountered at St Apollinaris, attention should also be given to possibility of human fasciolosis in areas where people and animals are sharing the same water source – especially where animal fasciolosis is endemic.

The discussions above highlight the linkages that exist between human and animal health, but the linkages with environmental health also deserve attention, not least of all because of the anticipated impacts of climate change. Climate change is expected to raise temperatures such that winter minimums are not as low and areas that previously experienced sub-zero temperatures may no longer do so. This is likely to cause higher levels of pathogens and higher levels of disease.

Environmental health in the rural, urban and peri-urban areas where poor people reside in South Africa is often compromised by poor service delivery and lack of access to facilities such as landfill sites. Disposal of dead animals and infected material (such as material

from abscesses or aborted fetuses - which is a concern due to the prevalence of *Brucella abortus* in some parts of KwaZulu-Natal) is often handled poorly. Besides lack of access to facilities, there is often a lack of awareness amongst communities about the potential dangers with simply dumping these items. From the discussion above, it is clear that there are direct links between human health, animal health and environmental health. This calls for awareness creation of potential hazards and ways of avoiding them, further investigation of the prevalence of parasites in both people and animals and lobbying for improved access to services in townships and rural areas.

PUTTING ONE HEALTH INTO ACTION

The Centecow partnership has initiated a programme that focuses on detection, surveillance and treatment to address tapeworm infections in people and animals. The three main tapeworms that are targeted are *Taenia solium* (the pork tapeworm), *Echinococcus granulosus* (the Hydatid tapeworm) and *Taenia multiceps* (the dog tapeworm), which frequently causes *Coenurus cerebralis* in sheep and goats (Alcock et al. 2011), which is locally known as *amanzi ekhanda* ("water on the head"). The focus on tapeworms is seen as an effective mechanism for strengthening linkages between the livestock and human health care sectors. It is anticipated that this will form basis for improved communication and collaboration around other zoonotic infections that are prevalent in the area.

ProMED Quarterly Update: Ebola - the long goodbye, MERS still active, & more

Jack Woodall, PhD

There seems to be no end to the plague of outbreaks originating from animals and the environment, affecting both our immediate health and our food crops. **Ebola** is taking its time to go away in West Africa and **MERS** is still spreading in Arabia, due to

failure to take proper infection control measures in homes and hospitals. **Avian influenza** continues to kill poultry in West Africa and the Far East; however only four human casualties have been reported from China in July (one from H5N6, three from H7N9). Bangladeshi

health officials reported to the World Health Organization (WHO) in September a human infection with an avian influenza A(H9N2) virus. The case, which occurred in a toddler in February, who recovered, is only the second known human case in Bangladesh.



Tsetse fly, the vector of sleeping sickness, taking a blood meal. Photo from [US CDC](#)

Yellow fever killed a zoo monkey in the capital of Brazil in September, meaning there are infected mosquitoes in the riverine forest between the zoo and the international airport, threatening an urban outbreak. A woman who returned to Canada after visiting two National Parks in Zambia was diagnosed in July with **African trypanosomiasis** (sleeping sickness); fortunately, there are no tsetse flies in Canada to spread it. **Legionnaire`s disease** outbreaks, caused by environmental contamination of water supplies, were reported from the USA, France, Portugal, and China. **Eastern equine encephalitis** has begun its annual appearance in the USA, killing unvaccinated horses and one elderly New Yorker. Compared to previous years, the USA is so far having a rather mild **West Nile fever** season. Accumulating evidence indicates that **hepatitis E** is a zoonotic disease, as Public Health England officials have determined that a virus which caused hundreds of cases of human illness in 2014 is identical to a strain causing infection in pig farms throughout Europe. Three workers cleaning the tunnels of a dam in the Dominican Republic have been killed by the fungal disease **histoplasmosis**, which occurs in bird and bat droppings in humid caves.

There are alerts and recalls out for the following: **paralytic shellfish poisoning** in West Australia; **listeria** in soft cheeses in the USA (following a fatality); the rabies-like **Australian bat lyssavirus** in flying fox bats; misuse of **chlorhexidine digluconate** in newborns causing blindness in Nigeria; **Salmonella** in the USA in chicken and pork and also in cucumbers imported from Mexico, and in Sweden in spice mix; **toxic algae** in the UK and USA; **lumpy skin disease** in cattle in Bulgaria, Greece, and Russia; **canine distemper** in raccoons in the USA; severe **Japanese encephalitis** in the UK (Wales) and China; **tularemia** in the USA; a new strain of **rabbit hemorrhagic disease** in Australia; **anthrax** in livestock and attendant humans from many countries; and the annual sporadic cases of plague in the USA and Madagascar (a fatal case was also reported in Kyrgyzstan).

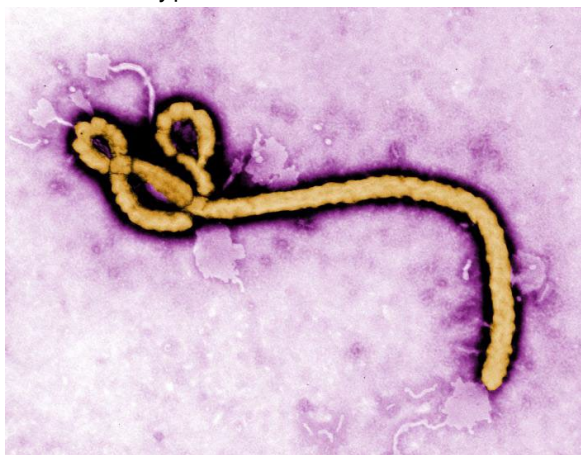
On the bioterror front, there were prosecutions in the UK and USA of people who tried to procure, or succeeded in the home production of **ricin**, the castor bean poison, and the government and the rebels accused each other of using **chemical weapons** (mustard gas) in the conflict in Syria.

Ebola

WHO proclaims a country free of an infectious disease when twice its maximum incubation period has passed without a new case having been reported. But this criterion has stopped working for Ebola. Liberia has been declared free of Ebola virus disease twice now, in May and September. Each time Guinea and Sierra Leone start their countdowns, another case pops up. The problem seems to be with contacts lost to follow-up or escaping from quarantine – there is even a substantial reward offered for information on the whereabouts of one escapee – and some cases are still being covered up and their bodies buried unsafely. Plus there is increasing circumstantial evidence of sexual transmission by long-term male survivors via

semen, even months after recovery.

By mid-September 2015, the weekly rate of new cases in the region had slowed down to single figures. Official cumulative numbers supplied to WHO were: laboratory confirmed >15,000, probable >2,600, and suspected cases >10,000, cumulative total >28,000 cases and >11,000 deaths (case fatality rate 40%). This case fatality rate is less than half the almost 90% recorded in the first Ebola epidemic in 1976. But initially in the current outbreak, lab capacity was not adequate to test every case, so many reported Ebola cases and deaths were likely due to clinically similar endemic diseases such as Lassa fever, yellow fever, severe malaria, typhoid, and others.



Colorized transmission electron micrograph of an Ebola virus virion. Image by [Frederick A. Murphy, US CDC](#)

Front-line health workers are now being vaccinated in the hope of reducing the horrendous total of nearly 900 cases and more than 500 deaths among them, as also are potential contacts in a ring around the sporadic cases that continue to appear. ZMapp, the synthetic antibody cocktail originally grown in tobacco plants (now in fermenters) and credited with saving the life of one of the first American missionary cases, is resuming field trials, and several drugs based on antiviral molecules are being fast-tracked by the Food & Drug Administration for approval for general, as opposed to emergency, use.

Unfortunately, Ebola cannot be eradicated from West Africa given the presence of the virus in wildlife, 15

often hunted for sale as bushmeat. Progress is being made on developing a vaccine to protect endangered gorillas and chimpanzees in their reserves, but there is no hope of vaccinating the tiny antelopes and millions of migratory bats that are also Ebola virus reservoirs.

The World Health Organization (WHO) has been widely castigated in the headlines for doing too little too late about the epidemic, but it is also acknowledged that the bulk of the blame lies with the afflicted countries themselves for neglecting their basic infrastructure and primary health care services over decades.

Middle Eastern Respiratory Syndrome (MERS)

ProMED first posted on 20 September 2012 an e-mail from the Ministry of Health of Saudi Arabia notifying the world of a novel coronavirus causing fatal pneumonia. At the

time of writing this article we still don't know if we will get away with a MERS-free Hajj, as thankfully happened last year. The prospect of infected pilgrims returning to their homes in developing countries lacking the capacity to diagnose the disease before it spreads through their hospitals is too dreadful to contemplate. Although there is a ban on slaughtering camels in Mecca, restaurants serving camel meat continue to be crowded with camel meat lovers who refuse to believe there is a link between the virus and the meat of their beloved animal. Although camels have been proved to be a source of infection, a worrying development is that many cases are occurring with



Drinking camel milk is common in Saudi Arabia, despite known links between camels and MERS. Photo from [Principle into Practice](#)

no history of contact with camels or their products (milk, meat, or urine - drunk as a folk medicine) or with other cases. But the majority of infections are contracted in hospitals by health workers and the elderly, and most deaths are in patients with co-morbidities. In spite of the advanced level of Saudi Arabia's flagship hospitals, they are being overwhelmed by massive overcrowding in their emergency departments and wards.

MERS cases have been identified in newly arrived passengers in 24 more countries, and have given rise to secondary cases in 13 of those. The fourth Kuwait case of MERS-CoV infection was recently reported – after 2 cases in 2013 and 1 in 2014. In Saudi Arabia as of 1 Oct 2015, there have been a total of 1251 cases of laboratory-confirmed MERS-CoV, including 536 deaths, 692 recoveries and 23 currently active cases. Globally, WHO has been notified of 1,593 laboratory-confirmed cases of infection with MERS-CoV, including at least 568 related deaths, giving a reported case fatality rate of 36%. For comparison, the average Ebola case fatality rate (although including suspected cases) in West Africa is around 40%.

Louse-borne relapsing fever (LBRF)



Lice on a person's skin and clothing. *Image from [Stanford](#)*

A ProMED reader submitted this comment which was posted on 11 September: "The cluster of LBRF-cases diagnosed in Germany (n=11), Switzerland (n=2), and the Netherlands (n=2) is likely the tip of the

iceberg. Given the communal travel route via Libya, often with long waiting periods there, the maximal incubation period of LBRF of less than 20 days, and the fact that untreated LBRF causes severe illness and substantial lethality, it seems very likely that lice bearing *Borrelia recurrentis* are currently being transmitted among migrants in camps in Libya."

New zoonoses

Human anaplasmosis is a tickborne disease caused by the bacterium *Anaplasma phagocytophilum*. It was previously known as human granulocytic ehrlichiosis (HGE) and has more recently been called human granulocytic anaplasmosis (HGA) (CDC). Chinese researchers have reported that the newly identified *Anaplasma capra*, found to infect goats, can also affect humans resulting in varied signs and symptoms similar to those caused by *A. phagocytophilum*. *A. capra* is spread via the taiga tick (*Ixodes persulcatus*), which is also found in Russia, Japan and Asia.

Tick-borne **Heartland virus**, first identified in 2009, was so named because it was isolated from a handful of patients in central US states, but a new serological study shows that it (or a close relative) is widespread in wildlife from Maine to Texas.

An outbreak of **hepatitis E** disease in the Protection of Civilians site in the UN base in Bentiu, South Sudan, killed 3 people out of 9 total cases, UNICEF said. The spread of hepatitis E is linked to contamination by fecal matter, usually in drinking water.

Wildlife diseases

A new virus related to **hepatitis A** virus, named phopivirus has been found in seals. It doesn't seem to make the seals sick but it's a possible ancestor of hepatitis A. It has not been found in humans. Recently strains of **hepatitis E** virus have been genetically identified from deer, mongooses, rabbits and rats, in addition to swine and chickens, revealing it as a zoonosis.

Livestock diseases

There were first reports this quarter of **bluetongue** in Canada (bovine, serotype 13); **small hive beetle** infestation in bees in Costa Rica; and **peste des petits ruminants** in sheep and goats in Liberia. **Besnoitiosis**, a protozoan disease of the skin, blood vessels, mucous membranes, and other tissues of animals, is endemic in tropical and sub-tropical regions with a high infection rate but low mortality. The disease is rare elsewhere, but has been found in cattle in Germany and for the first time in Ireland. **Crayfish plague** has hit Ireland also. New cases of **glanders** and other equine diseases continue to appear in Brazil, casting doubt on the ability of the country to host equestrian events in next year's Olympic Games, given international quarantine regulations.

Crop diseases

During the quarter outbreaks of serious diseases occurred in the following: grapevines in India and Sicily; rice in Costa Rica, India, and Spain; coconut in Guyana; mango in Ghana; maize in USA; barley in Australia; citrus in Italy, UK, and South Africa; chili in Fiji; pomegranate in India; lettuce in USA; tomato in India; wheat in Europe and USA; cassava in the Philippines; hops in Slovenia; light leaf spot is spreading on oilseed rape in the UK; a new strain of *Ascochyta* blight has appeared on chickpea in Australia; and Shiraz disease is affecting grapevine in Australia.

There are continual multiple attacks on the world's food supply, requiring ever greater use of chemicals with their collateral damage in poisoning agricultural workers. But without the constant development of improved pesticides and microbicides, many now common staple foods would be much scarcer and more expensive. Reflecting on the increasing number of pills I have been prescribed for various conditions I have developed as I age, I realize that many of us seniors are being kept alive by chemicals – both in the drugs we take for prevention and cure of disease and the agricultural chemicals sprayed to ensure cheap and abundant food. However, much agrochemical use could be avoided by resistance breeding of the hosts, developing biocontrol and using best practices for farm management.



Small hive beetle larvae cause extensive damage to beehives. *Photo from [USDA](#)*



Spraying crops with pesticide can protect them from certain diseases, but may expose agricultural workers to high levels of dangerous chemicals. *Photo from [Field Robotics Center](#)*



Oilseed rape, which is the third largest source of vegetable oil in the world, is currently under attack from light leaf spot. *Photo by [Stuart Richards](#) CC BY-ND 2.0*



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

XII Central American & Caribbean Congress of Parasitology & Tropical Medicine

With the support of the Autonomous University of Santo Domingo (Universidad Autónoma de Santo Domingo, UASD), scientific organizers of the Central American and Caribbean Association of Parasitology and Tropical Medicine held the [XII Central American & Caribbean Congress of Parasitology & Tropical Medicine](#) (ACACPMT 2015) from June 12-14, 2015, in Punta Cana, Dominican Republic. Using the theme, "Scientific advances and innovation in morphological and molecular diagnostics," they welcomed the participation of national and international scientists to present and exchange advancements across multiple infectious disease concentrations, including One Health. Of those investigators and institutions focusing on One Health, Ross University School of Veterinary Medicine, located in St. Kitts, West Indies, presented on their [One Health Center for Zoonoses and Tropical Veterinary Medicine](#) and [Master of Science degree in One Health](#) programs. (Reported by Helena Chapman, MD, MPH)



CDC Unveils Redesigned Healthy Pets Healthy People Website

CDC has launched its redesigned [Healthy Pets Healthy People](#) website to coincide with World Animal Day on October 4th. The enhanced site offers information about zoonotic diseases that can spread to people from pets, farm animals, and wildlife. Users can now search alphabetically by animal and learn which zoonotic diseases they may carry. It is a unique "one-stop-shop" where people can learn simple actions to protect themselves and their pets.

Healthy interactions between humans and animals are becoming more significant as experts continue to learn about zoonotic diseases. Approximately 75% of recently emerging infectious diseases affecting people are of animal origin. In recent years, CDC has responded to many human illness outbreaks associated with animal contact, including Ebola, avian influenza, and *Salmonella*.

The Redesigned Website Offers:

- Detailed information about the [health benefits](#) of owning a pet.
- An alphabetized [list](#) and description of diseases that can spread from animals to humans.
- A [list](#) of animals with details of the diseases they can carry or transmit.
- Specific [groups](#) of people that may be at an increased risk of getting diseases from animals.
- [Tips](#) for preventing illnesses acquired from pets and other animals.

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Action Steps You Can Take:

- Share the [Healthy Pets Healthy People website](#) with your members and partners.
- Look for tweets on [@CDC_NCEZID](#) and consider retweeting.
- Send this suggested tweet or create your own: New [@CDC_NCEZID](#) resource keeps you and your pets healthy <http://1.usa.gov/1QnvHvI>

Resources You Can Access:

- Explore the [A-Z list](#) of diseases that can be spread from pets to people.
- Read [stories](#) of real-life people and their pets putting advice into practice or describing animal conservation/education projects.
- Access posters, infographics, a pet disaster preparedness kit, recommendations, and guidelines on the [Publications and Materials](#) page.

Please follow [@CDC_NCEZID](#) on Twitter. (Submitted by Lauren Stevenson, MHS)



Photo from US CDC

Four Multistate Outbreaks of Human *Salmonella* Infections Linked to Live Poultry in Backyard Flocks

CDC, public health, veterinary, and agriculture officials in many states and the U.S. Department of Agriculture's Animal and Plant Health Inspection Service collaborated on an investigation of four multistate outbreaks of human *Salmonella* infections linked to contact with live poultry. Contact with live poultry and their environment (e.g., where they live and roam) can result in human salmonellosis. Live poultry might have *Salmonella* bacteria in their droppings and on their bodies (feathers, feet, and beaks) even when they appear healthy and clean. The germs also get on cages, coops, hay, plants, and soil in the area where the birds live and roam. Additionally, the germs can be found on the hands, shoes, and clothing of those who handle the birds or work or play where birds are present. The 2015 multistate outbreaks of *Salmonella* linked to live poultry resulted in 252 human infections across 43 states. Sixty-three ill people were hospitalized and no deaths were reported. In interviews, ill people answered questions about contact with animals in the week before becoming ill. Of people who reported contact with live poultry, some reported keeping baby poultry indoors, holding or snuggling baby poultry, or kissing baby poultry. These behaviors increase a person's risk of *Salmonella* infection.

For more information please see the CDC's original article on their [Salmonella website](#) or see the [outbreak feature](#). (Submitted by Lauren Stevenson, MHS)

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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.

Ebola Vaccine Successes

NewLink Genetics [announced](#) in late July that the international partnership researching an Ebola vaccine in Guinea had preliminary results from a large clinical trial suggesting that the vaccine is effective against the virus.

"ONE HEALTH" at International Conference on Emerging Infectious Diseases (ICEID) Atlanta, Georgia - USA

One Health was featured in many presentations at the [ICEID](#) in Atlanta. Presentations included water sanitation, avian influenza, microbial resistance and Ebola. See the conference program and abstracts [here](#).

There was also a well-attended session on the concept of One Health, opportunities for using this approach for policy development and research, and in the training of medical, wildlife and environmental professionals with Carol Rubin, DVM, MPH, Gregory C. Gray, MD, MPH and Cheryl Stroud, DVM, PhD, as featured speakers.

Dr. Rubin, a veterinarian, was formerly with the U.S. Centers for Disease Control and Prevention's [One Health Office](#); Dr. Gray, a physician, is a Professor at [Duke University](#), Durham, NC with affiliations in the School of Medicine's Infectious Diseases Division, the Duke Global Health Institute, & the Duke Nicholas School of the Environment, and he is a member of the One Health Initiative team's [Honorary Advisory Board](#); and Dr. Stroud, a veterinarian, is Executive Director of the U.S. [One Health Commission](#).

(Originally reported on the One Health Initiative [website](#) by Carina Blackmore, DVM, PhD, DACVPM)



OHNL Associate Editors Marissa Valentine-King (UF) and Lauren Stevenson (CDC ORISE), second & third from left, with Duke and UF colleagues at ICEID. Photo courtesy Marissa Valentine-King.

AVMA Supports U.S. Surgeon General's Call to Action on Walking and Walkable Communities

The American Veterinary Medical Association (AVMA) released a report announcing their support for the U.S. Surgeon General's "Call to Action to Promote Walking and Walkable Communities." This call to action includes five goals focusing on increasing walking and walkable communities within the United States. Reaching these goals would provide health benefits for both people and their pets. The full AVMA statement can be read [here](#).

Upcoming Events

Free Webinar: MERS/Ebola/One Health, and the Global Health Security Agenda

Hosted by Georgetown University
October 29, 8:30 AM - 3 PM EST
Must register [here](#) to attend.
Thanks to the [One Health Commission](#) for sharing.

64th Annual American Society of Tropical Medicine & Hygiene Meeting

Philadelphia, PA
October 25-29, 2015
<http://www.astmh.org/Home.htm>

143rd American Public Health Association Annual Meeting & Exposition

Chicago, IL
October 31-November 4, 2015
<https://www.apha.org/events-and-meetings/annual>

The Princeton-Fung Global Forum: Modern Plagues—Lessons Learned from the Ebola Crisis

Dublin, Ireland
November 2-3, 2015
<http://fungforum.princeton.edu>

National Institute for Animal Agriculture (NIAA) ABX Symposium

Atlanta, GA
November 3-5, 2015
www.animalagriculture.org/2015-Antibiotics-Symposium

23rd Biennial Coastal and Estuarine Research Federation Conference

Portland, OR
November 8-12, 2015
<http://www.erf.org/cerf2015>

10th International Conference on HFRS, HPS and Hanaviruses

Colorado State University, Fort Collins, CO
May 31-June 3, 2016
<http://hantavirus2016.org/>

One Health EcoHealth 2016

Melbourne Convention & Exhibition Centre, Australia
December 4-7, 2016
<http://oheh2016.org>

Featured Events

ISDS Webinar: Economic assessment of zoonoses surveillance in a One Health context

Sara Babo Martins, DVM, MSc, PhD candidate



November 17, 2015
12 - 1PM EST
[Register here](#)

"This webinar presents a conceptual framework that describes the links between zoonotic disease surveillance in animal populations and the wider public health disease mitigation process and how these relations impact the costs and benefits of the surveillance activities. ... Practical examples of the implementation of the conceptual framework are presented and challenges discussed."

14th International Society for Disease Surveillance Conference

Denver, Colorado
December 9-10, 2015
<http://www.syndromic.org>

Pre-conference tracks (December 8) providing instruction on technological tools to improve biosurveillance and example applications of One Health surveillance solutions:

- Track 1: Biosurveillance for Beginners
- Track 2: Introduction to R for Biosurveillance
- Track 3: Advanced Use of R for Biosurveillance
- Track 4: Biosurveillance in the One Health Context
- Track 5: Assessing the Current State of Biosurveillance and Syndromic Surveillance

Recent Publications

Journal Articles

The network for evaluation of One Health: evidence-based added value of One Health. E. Haxton, Š. Šinigoj, A. Rivière-Cinamond. *Infection Ecology & Epidemiology*. September 2015. 5:28164.
<http://www.infectionecologyandepidemiology.net/index.php/iee/article/view/28164>

Integrating interdisciplinary methodologies for One Health: goat farm re-implicated as the probable source of an urban Q fever outbreak, the Netherlands, 2009. G.A. Ladbury, J.P. Van Leuken, A. Swart, P. Vellema, B. Schimmer, R. Ter Schegget, W. Van der Hoek. *BMC Infectious Diseases*. September 2015. 15:372.
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4558730/>

One Health, one literature: weaving together veterinary and medical research. M.M. Christopher. *Science Translational Medicine*. September 2015. 7(303):303fs36.
<http://www.ncbi.nlm.nih.gov/pubmed/26333932>

Human brucellosis trends: re-emergence and prospects for control using a One Health approach in Azerbaijan (1983-2009). I.T. Kracalik, R. Abdullayev, K. Asadov, R. Ismayilova, M. Baghirova, N. Ustun, M. Shikhiyev, A. Talibzade, J.K. Blackburn. *Zoonoses and Public Health*. September 2015.
<http://www.ncbi.nlm.nih.gov/pubmed/26403990>

Fascioliasis: an ongoing zoonotic trematode infection. M. Nyindo, A.H. Lukambagire. *BioMed Research International*. August 2015. 2015:786195.
<http://www.hindawi.com/journals/bmri/2015/786195/>

Pharmaceutical stewardship – a strategic priority for the World Veterinary Association. R.A. Carlson. *International Animal Health Journal*. August 2015. 2(3):30-35.
http://www.worldvet.org/uploads/news/docs/08-a303_wva_pharmaceutical.pdf

Neurocysticercosis in Europe: need for a One Health approach. B. Devleeschauwer, G.S. Smit, P. Dorny, J.W. van der Giessen, S. Gabriël. *Neuropediatrics*. August 2015.
<https://www.thieme-connect.com/DOI/DOI?10.1055/s-0035-1558437>

Planning for the next global pandemic. A. Ross, S. Crowe, M. Tyndall. *International Journal of Infectious Diseases*. August 2015. 38:89-94. <http://www.sciencedirect.com/science/article/pii/S1201971215001836>

From “One Health” to “One Communication”: the contribution of communication in veterinary medicine to public health. M. Cipolla, L. Bonizzi, A. Zecconi. *Veterinary Sciences*. July 2015. 2(3):135-149.
<http://www.mdpi.com/2306-7381/2/3/135/html>

Call for “One Health” manuscripts

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”.
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International Journal of One Health (India)

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

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>

Recent Publications (continued)

Journal Articles

Veterinary and medical associations mark a One Health milestone. Veterinary Record. August 2015. 177(6):138-139. <http://www.ncbi.nlm.nih.gov/pubmed/26251536>

Willingness to consult a veterinarian on physician's advice for zoonotic diseases: a formal role for veterinarians in medicine? R. Speare, D. Mendez, J. Judd, S. Reid, S. Tzipori, P.D. Massey. PLoS One. August 2015. 10(8):e0131406. <http://www.ncbi.nlm.nih.gov/pubmed/26237399>

Effective coordination and management of emerging infectious diseases in wildlife populations. A. Hyatt, A. Alonso Aguirre, M. Jeggo, R. Woods. Ecohealth. August 2015. <http://link.springer.com/article/10.1007%2Fs10393-015-1045-0>

The healthy pets healthy families initiative as an example of One Health in action. K. Ehnert, G. Lamielle, T. Scott, E. Beeler, D. Tack, J. Fielding. Journal of the American Veterinary Medical Association. July 2015. 247(2):143-147. <http://avmajournals.avma.org/doi/full/10.2460/javma.247.2.143>

An integrated systems approach is needed to ensure the sustainability of antibiotic effectiveness for both humans and animals. A.D. So, T.A. Shah, S. Roach, Y. Ling Chee, K.E. Nachman. Journal of Law, Medicine and Ethics. June 2015. 43 (Suppl 3):38-45. <http://onlinelibrary.wiley.com/doi/10.1111/jlme.12273/abstract>

Miscellaneous Publications

L. H. Kahn. **One Health: A Concept for the 21st Century.** World Medical Journal. July 2015. <http://www.wma.net/en/30publications/20journal/pdf/wmj201502.pdf>

Texas A&M University. **Texas A&M One Health summer research program in Nicaragua a success.** August 2015. <http://vetmed.tamu.edu/news/for-deans-corner/september-2015/texas-am-one-health-summer-research-program-in-nicaragua-a-success>

Texas A&M University. **New minds, new ideas in One Health.** August 2015. <http://onehealth.tamu.edu/news/new-minds-new-ideas-in-one-health>

PHG Foundation. **One health genomics - why animal diseases matter for human health.** August 2015. http://www.phgfoundation.org/briefing_notes/422/

BusinessWire. **PetCure Oncology Changes the Landscape for Pets with Prostate Cancer.** September 2015. <http://www.businesswire.com/news/home/20150923005457/en/PetCure-Oncology-Landscape-Pets-Prostate-Cancer#.VhPOy7RVikp>

Center of Excellence for Emerging and Zoonotic Animal Disease. **Avian Influenza Update: The Lull before the Storm?** September 2015. <http://www.ceezad.org/resources/index.html>

Article References

Avian flu background and update

- (1) Brown IH and Alexander DJ. Influenza. In Zoonoses Eds. Palmer S.R et al. pp 365-386.
- (2) Surveillance plan for HPAI in Waterfowl in the United States.
https://www.aphis.usda.gov/animal_health/downloads/animal_diseases/ai/2015-hpai-surveillance-plan.pdf Accessed September 8.
- (3) Chan PKS Outbreak of Avian Influenza A(H5N1) virus infection in Hong Kong in 1997. Clin Infect Dis. (2002) 34 (Supplement 2): S58-S64. doi: 10.1086/338820
- (4) WHO. Updated unified nomenclature system for the highly pathogenic H5N1 avian influenza viruses.
http://www.who.int/influenza/gisrs_laboratory/h5n1_nomenclature/en/ Accessed September 8.
- (5) USGS National Wildlife Health Center Wildlife Health Bulletin 2014-05.
http://www.nwhc.usgs.gov/publications/wildlife_health_bulletins/WHB_2014-05_H5N8.pdf Accessed September 8.
- (6) Avian Influenza. USGS. http://www.nwhc.usgs.gov/disease_information/avian_influenza/ Accessed September 8.
- (7) Avian Influenza. USDA.
http://www.usda.gov/wps/portal/usda/usdahome?contentidonly=true&contentid=avian_influenza.html September 8.
- (8) Report finds \$1.2 billion in Iowa avian flu damage. CIDRAP <http://www.cidrap.umn.edu/news-perspective/2015/08/report-finds-12-billion-iowa-avian-flu-damage> Accessed September 8.

The relevance of “One Health” to South Africa

- Alcock, R., de Villiers, J., Dugmore, T., Gcumisa, S., Gumede, S., Hornby, D., Letty, B., Mann, J., Mbatha, G., Mbizeni, S., Perret, K. and Rowe, A. 2011. Guidelines to ensure your animals are healthy. Produced by KwaZulu-Natal Department of Agriculture, Environmental Affairs & Rural Development and Mdukutshani Rural Development Trust.
- Kahn, L.H., Kaplan, B. and Steele, J.H. 2007. Confronting zoonoses through closer collaboration between medicine and veterinary medicine (as ‘one medicine’). *Veterinaria Italiana* 43 (1) 5-19.
- Monath, T.P., Kahn, L.H. and Kaplan, B. 2010. Introduction: One Health Perspective. *ILAR Journal*, Vol 51, Number 3.