

One Health Newsletter



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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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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.

Vaccines against diseases transmitted from animals to humans: a One Health paradigm

One Health Initiative Autonomous pro bono team: Laura H. Kahn, MD, MPH, MPP, Bruce Kaplan, DVM, Thomas P. Monath, MD, Jack Woodall, PhD, and Lisa A. Conti, DVM, MPH

[Originally printed on the One Health Initiative website on October 9, 2013]

The One Health movement, during the 20th century and the early 21st century, has documented a powerful case for implementing this critically needed approach to assist solving many of the world's health problems in both the public health and clinical health sectors. Time is not on the side of the health care communities of planet earth. Witness the known crisis evolving with antibiotic resistance which is causing many to speak of threats to human (and animal) life with a frightening new "post-antibiotic" era lurking in the near future. We can imagine a time where a routine strep (sore) throat—a bacterial infection typically treated and cured with an antibiotic—could no longer have an effective antibiotic available or even be in the pharmaceutical pipeline!

Today we know that about 60% of all human pathogens are zoonotic (diseases transmissible from animals to humans) and approximately 75% of recently emerging infectious diseases affecting humans are diseases of animal origin. If mankind loses some more or most of the ability to treat these diseases with efficacious antibiotics, we are in trouble. Our immune systems are usually not capable of fending off most of these diseases resulting in high morbidity and a higher death rate than currently operational in our societies. However, if vaccine research and development is fast forwarded, some of these can be prevented, eliminating a need for antibiotics.

This particular pursuit is certainly doable with *adequate recognition and funding*. We consider it essential!

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Principles of utilizing the One Health approach, i.e. multidisciplinary/interdisciplinary collaborations between animal health and human health industries and regulators can definitely help develop immunization products for such purposes. A visionary landmark September 2013 article published online (<http://www.sciencedirect.com/science/article/pii/S0264410X1301270X>) by the notable medical virologist and vaccinologist physician, Thomas P. Monath, MD (a founding member of the One Health Initiative Autonomous *pro bono* team), gives reasonable guidelines to make it happen sooner rather than later. Examples of such vaccines include West Nile, brucellosis, *Escherichia coli*, O157:H7, rabies, Rift Valley fever, Venezuelan equine encephalitis, Hendra virus, *Mycobacterium bovis*, and Lyme disease. Indeed, another September 2013 publication was published that discussed the dramatic food safety potential for using a vaccine in cattle to protect against human foodborne illness caused by *E. coli*, O157 (<http://www.pnas.org/content/early/2013/09/10/1304978110.full.pdf+html>).

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.

The citation for the article discussed above is: Monath T. Vaccines against diseases transmitted from animals to humans: a one health paradigm. *Vaccine*. 2013. 31(46):5321-5338.

The One Health Initiative pro bono team is dedicated to the movement to forge co-equal, all inclusive collaborations between physicians, osteopaths, veterinarians, dentists, nurses, and other scientific health and environmentally related disciplines. The Initiative's distribution lists includes individuals in 61 countries.

An analysis of the linkages between public health and ecosystem integrity: Part 1 of 6

Steven A. Osofsky, DVM and Anila Jacob, MD, MPH

Health & Ecosystems: Analysis of Linkages (HEAL) is a consortium of more than 25 institutions collaborating to analyze and quantify relationships between the state of ecosystems and public health. The consortium comprises many of the world's premier public health and environmental science institutions working in both developing and developed countries. HEAL's mission is to increase support for integrated public health and environmental conservation initiatives as inti-

The HEAL consortium believes that there are important public health impacts associated with changes in the state of different ecosystems and that, frequently, degradation of these ecosystems leads to negative public health impacts.

mately related, interdependent challenges. The expectation is that a cross-sectoral attitudinal change will ultimately help to improve public health outcomes, equity, and resilience for some of the world's poorest people, often living in the world's most remote areas, while simultaneously conserving some of the most important natural landscapes and seascapes left on earth. It is a mission directly aligned with that of One Health.

The HEAL consortium believes that there are important public health impacts associated with changes in the state of different ecosystems and that, frequently, degradation of these ecosystems leads to negative public health impacts. However, relatively little peer-reviewed literature delves into the mechanisms underlying potential causal relationships between ecosystem degradation and public health outcomes. Policy-makers interested in understanding these relationships are left with largely anecdotal information that is clearly insufficient for informing decision-making in terms of conservation, public health, or both.



HEAL—Health & Ecosystems: Analysis of Linkages

Photo credit: Mike Kock, Wildlife Conservation Society. www.wcs-heal.org

A key component of HEAL's approach is to explore the currently understood linkages between human health and natural ecosystems, as a foundation for prospective applied research. In a 6-part series, we will explore some of the most important, and most effectively documented, linkages between ecosystems and health challenges. We will focus on communicable diseases, nutrition, non-communicable diseases, mental health, the loss of biopharmaceuticals and vulnerability to extreme events. In this first installment, we explore the effects of ecosystem degradation and biodiversity loss on the transmission of communicable disease.

In the last several decades, patterns of communicable disease emergence, re-emergence, and transmission have increasingly been influenced by globalization and ecological change.

The communicable diseases that are most strongly linked with ecological change and environmental degradation include certain vector-borne diseases, water-borne infectious diarrhea, certain neglected tropical diseases such as schistosomiasis, and some emerging infectious diseases such as Nipah virus.

Currently Understood Linkage #1: Ecosystem degradation, biodiversity loss and the transmission of communicable disease.

Communicable diseases such as tuberculosis, HIV/AIDS (human immunodeficiency virus/acquired immune deficiency syndrome), malaria, and a group of neglected tropical diseases cause close to nine million deaths per year, the vast majority of which occur in low- and middle-income countries (Lozano et al. 2012). Children under age five are particularly vulnerable to communicable diseases due to their immature immune systems; malaria, diarrheal disease, and lower respiratory infections alone cause millions of preventable deaths in young children annually (WHO 2012b). Despite concerted efforts and some success in preventing and treating communicable diseases, they remain among the leading causes of mortality in many countries, particularly in Africa and south Asia (Lozano et al. 2012). The economic and societal impacts of common communicable diseases such as AIDS, tuberculosis, and malaria are significant in low- and middle-income countries and can often impact long-term economic growth and development (Fonkwo 2008).



Photo credit: Mark Atkinson, Wildlife Conservation Society

In the last several decades, patterns of communicable disease emergence, re-emergence, and transmission have increasingly been influenced by globalization and ecological change. Human activities such as bushmeat hunting, the global wildlife trade, land conversion for agriculture, clear-cutting of forests, and the building of infrastructure such as roads, dams, and irrigation systems have led to widespread ecological disruptions that have been linked to certain communicable diseases. The communicable diseases that are most strongly linked with ecological change and environmental degradation in the scientific literature include certain vector-borne diseases such as malaria, water-borne in-

While the mechanisms underlying these linkages are poorly understood, current research suggests, for example, that changes in microclimate that favor a particular disease vector; human and livestock movements into opened-up areas resulting in the introduction of specific infectious agents into new hosts and areas; and direct human contact with “new” pathogens through interactions with wildlife all play a role.

fectious diarrhea, certain neglected tropical diseases such as schistosomiasis, and some emerging infectious diseases such as Nipah virus (Molyneux et al. 2008).



Photo credit: Christopher Golden

While the mechanisms underlying these linkages often remain poorly understood and vary depending on the specific disease, current research suggests, for example, that changes in microclimate that favor a particular disease vector; human and livestock movements into opened-up areas resulting in the introduction of specific infectious agents into new hosts and areas; and direct human contact with “new” pathogens through interactions with wildlife all play a role (Pongsiri et al. 2009, Molyneux et al. 2008).

Lyme disease as an important case study

Research on Lyme disease, a tick-borne infection that impacts parts of North America, has shed light on one possible mechanism of how ecosystem degradation may impact communicable disease transmission. The pathogen that causes the disease, *Borrelia burgdorferi*, is transmitted to humans from an animal host through the bite of a tick vector. White-footed mice are a particularly abundant and competent host for the pathogen while other species such as opossums are poor hosts; the mice thrive in both intact and degraded forests while populations of other mammalian hosts including the opossum tend to decrease with forest degradation. Research has shown that in areas with higher levels of biodiversity, there is reduced risk of Lyme transmission due to higher populations of incompe-

It is imperative that we improve our understanding of the complex and dynamic impacts of ecosystem change.



Steven Osofsky

Photo credit: WCS

tent animal hosts such as the opossum; this is commonly referred to as the 'dilution effect' (Keesing et al. 2010, Barrett and Osofsky 2013). The loss of species richness may also play a role in the transmission of West Nile virus and hantavirus infections, among others (Keesing et al. 2010). It should be noted that one recent meta-analysis on the linkages between zoonotic diseases (diseases transmitted from animals to humans) and biodiversity didn't find a strong correlation, with the researchers suggesting that the relationship can be more subtle and heterogeneous than represented by the dilution effect alone (Salkeld et al. 2013).

To see other examples of ecosystem linkages to communicable diseases such as malaria, diarrheal disease, and neglected tropical diseases, check out the HEAL website at www.wcs-heal.org

Global trends such as population growth, migration, urbanization, and international travel have also influenced communicable disease patterns. More than half of the world's population now resides in cities and this trend is expected to continue in the coming decades. The crowded conditions and poor sanitation in many cities, particularly in poorer communities, can serve as the perfect setting for infectious agents to incubate and propagate. Cities also serve as hubs of international travel, which facilitates the spread of pathogens globally (Alirol et al. 2011).

It is imperative that we improve our understanding of the complex and dynamic impacts of ecosystem change. HEAL's applied research program aims to address these critical knowledge gaps through rigorous scientific inquiry, seeking to more comprehensively characterize how ecosystem change affects human health.

References available at: <http://www.floridahealth.gov/diseases-and-conditions/diseases-from-animals/one-health-newsletter/ohnl-references/HEALpt1.pdf>

In the next issue of the One Health Newsletter, our second installation explores the linkages between ecosystem change and non-communicable disease.

Steven Osofsky, DVM is the Executive Director of the Wildlife Conservation Society's (WCS) Wildlife Health & Health Policy Program, overseeing all of the WCS Global Conservation Program's work in the health realm. Anila Jacob is an internal medicine physician. She is currently a senior technical expert at ICF International, where she works on the Measuring Impact project with USAID's FAB Office.

Dr. James Steele's outstanding achievements have helped save countless human and animal lives and have encouraged the world's public health communities to realize higher standards of living through a better understanding of the epidemiology of infectious diseases transmissible from animals to humans.

In Memoriam, James Steel, DVM, MPH

Bruce Kaplan, DVM, Dipl AVES (Hon)

[Originally printed on the One Health Initiative website on November 15, 2013]

James H. Steele, DVM, MPH, considered by many as the doyen of veterinary medical public health in the 20th and early 21st centuries, died November 10, 2013 in Houston, Texas.

Dr. Steele received his Doctor of Veterinary Medicine degree (D.V.M.) from Michigan State College in 1941 and a Master's of Public Health (M.P.H.) from Harvard University in 1942. He established the veterinary division of the U.S. Centers for Disease Control and Prevention (CDC) in 1947. Steele pioneered introduction of the principles of veterinary public health to the U.S. and countries around the globe. His outstanding achievements have helped save countless human and animal lives and have encouraged the world's public health communities to realize higher standards of living through a better understanding of the epidemiology of infectious diseases transmissible from animals to humans, i.e. zoonoses. As a U.S. Public Health Service officer, Steele became the first Assistant Surgeon General for Veterinary Affairs and was later appointed Deputy Assistant Secretary for Health & Human Services with the rank of Admiral (two stars). He has received numerous awards over his distinguished career including the Surgeon General's Medallion in 2006, presented by then Surgeon General Richard H. Carmona, MD, MPH, a physician.



James Steele, DVM, MPH
Photo credit: University of Texas

Steele's public health achievements included his contributions to the One Health movement. In 2007, at the age of 94, he was a co-author of "Confronting zoonoses through closer collaboration between medicine and veterinary medicine (as 'One Medicine')" in the Veterinaria Italiana journal http://www.izs.it/vet_italiana/2007/43_1/5_19.pdf. The senior author Laura H. Kahn, MD, MPH, MPP <http://www.onehealthinitiative.com/publications/Laura%20Kahn%20Biography%20Jan2012.pdf> is a worldwide One Health leader and recognized expert on the subject. Dr. Kahn is a physician and one of the founding members of the One Health Initiative Autonomous pro bono team. Steele's encyclopedic

Dr. Steele was one of several dynamic, visionary public health veterinarians and physicians to help integrate 'veterinary public health' into the vocabulary of human health significance.

memory and knowledge of historic events and people of past decades was an invaluable resource for enhancing the accuracy and value of this article.

Among Steele's numerous co-authored and co-edited book publications, will be the 3rd Edition of the authoritative text "Zoonotic Tuberculosis: *Mycobacterium bovis* and other pathogenic mycobacteria" by Charles O. Thoen, DVM, PhD <http://vetmed.iastate.edu/users/cthoen>, James H. Steele, DVM, MPH, and John B. Kaneene, DVM, PhD <http://cvm.msu.edu/research/research-centers/center-for-comparative-epidemiology-1/personnel/faculty/john-b-kaneene>, in press this year (2013). *Mycobacterium bovis* infection is an important global animal and public health problem. Past book editions have become "the de facto standard resource for up-to-date information regarding this [zoonotic] disease." It will incorporate the visionary theme of One Health and utilization of One Health principles for prevention and control. Dr. Thoen is also a prominent One Health leader, supporter and advocate <http://www.onehealthinitiative.com/supporters.php>. He is currently the President of the American Veterinary Epidemiology Society (AVES), founded by Steele in 1964.

The late public health intellectual giant, Calvin Schwabe, DVM, DSc coined the earlier term for One Health, i.e. "One Medicine" http://www.vetmed.ucdavis.edu/onehealth/local-assets/pdfs/schwabe_coins_onemedicine#schwabe_coins_onemedicine and originally championed the concept in the 20th century. In addition to Dr. Schwabe, Dr. Steele was one of several dynamic, visionary public health veterinarians and physicians (several in both professions being unsung heroes as well as other health scientists), to help integrate 'veterinary public health' into the vocabulary of human health significance as it coincides with animal and environmental health. Steele has been referred to by many as the "father of veterinary public health" — worldwide.

Steele's official biography is available entitled "One Man, One Medicine, One Health: The James H. Steele Story" <http://www.amazon.com/One-Man-Medicine-Health-Steele/dp/1439240043> by prominent veterinarian and his close friend, Craig N. Carter, DVM, PhD <http://www.lddc.uky.edu/people/ccarter.asp>. All proceeds of sales go to the Steele student endowments at the University of Texas School of Public Health. Drs. Steele and Carter have served as distinguished members of the One Health Initiative team's Honorary Advisory Board <http://www.onehealthinitiative.com/advBoard.php>.

On a personal note: Jim Steele was a longstanding valued friend, confidant and colleague since 1962; he shall be missed. I spoke with Jim on many occasions over the years. Indeed, we spoke by telephone on a monthly basis over

"...His spirit and accomplishments will live on."



The new Middle East respiratory syndrome coronavirus (MERS-CoV) continues its spread.

the last 15 plus years, primarily pertaining to One Health and public health issues, among others. As our other physician One Health Initiative team colleague, Tom Monath, MD said, "Jim had an unbelievably long and remarkable life. His spirit and accomplishments will live on."

Bruce Kaplan, DVM is a founding member of the One Health Initiative Autonomous pro bono Team.

ProMED Fall 2013 Outbreak Roundup

Jack Woodall, PhD

Many things tend to slow down in the Northern hemisphere as it enters fall, but not outbreaks. In the Southern hemisphere, "Summer is comin' in" in the words of the 13th-century English folk song. At this writing, in mid-November, things are popping.

Middle East respiratory syndrome coronavirus

The new Middle East respiratory syndrome coronavirus (MERS-CoV), which appeared for the first time in Saudi Arabia in 2012 with a case fatality rate approaching 50%, was reported from more countries – United Arab Emirates, Kuwait, Qatar & Oman. The victims were usually people with underlying conditions that compromised their immune systems – including several who had performed the hajj pilgrimage to Mecca and related cities in October, which was also the case for a the first victim in Spain. There were two cases (one fatal) in expatriates (presumably westerners) in Qatar, and the first paired case of a man in Saudi Arabia in contact with a sick camel from whom a coronavirus was also isolated. If the two isolates are shown to be identical, this will suggest a link by which this bat coronavirus makes its transit to humans, as was the case for SARS coronavirus, with a palm civet intermediate host.





Aedes aegypti mosquito
Photo credit: Muhammad Mahdi Karim

Yellow fever in Africa

Yellow fever in Darfur, western Sudan, which was controlled by vaccination at the start of 2012, is suspected to have broken out again in the states of West & South Kordofan and Kassala, immediately to the east of Darfur. But instead of introduction by immigrant mineworkers from Chad in the west, this time it was by immigrant agricultural workers from the border with Ethiopia in the east. Ethiopia is suffering its first outbreak of yellow fever in 45 years. Mass vaccination has been implemented in Kordofan.



Arboviruses in the Asia- Pacific region

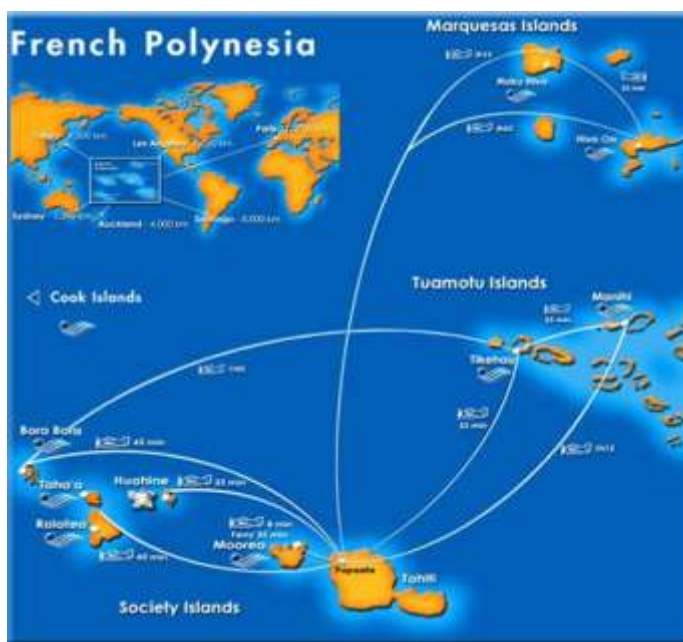
In November, Pakistan reported its third death this year from Crimean-Congo hemorrhagic fever (CCHF), caused by a tick-borne virus that is endemic there. Pacific islands have been suffering in November from outbreaks of fever, rash and joint pain, notably Yap island in Micronesia, caused by chikungunya virus (usually non-fatal) -- its name is not capitalized because it is a descriptive term like dengue, in an African language). There were also hundreds of cases of Zika

virus infection in French Polynesia. The latter epidemic was first reported by the public health authority to the European Centre for Disease Prevention and Control, since those islands are considered part of France.

Yap had a big Zika epidemic in 2007, which spread to Guam. Although both



Hyaloma tick
Photo credit: CDC



Researchers and public health officials are monitoring H6N1, H7N9, and H5N1 avian influenza viruses.

mosquito-borne viruses were originally isolated in East Africa, chikungunya virus caused widespread virgin soil epidemics in Indian Ocean islands from 2005-2011 and Zika virus was reported from Thailand as far back as 1954. In May this year, a Canadian tourist returned home from a trip to Thailand with a bad case of Zika infection (posted on ProMED), which suggests that the origin of Pacific arbovirus infections has been via Asia rather than directly from Africa.

Avian influenza – ‘bird flu’



Researchers in another island, Taiwan, reported in the journal *Lancet* on the still unique human case of avian influenza H6N1, the commonest strain of low-pathogenic poultry influenza, that they found in May 2013 (and posted by ProMED). A 64-year-old farmer in east China's Zhejiang Province was confirmed to have contracted the deadly avian influenza H7N9 virus infection,

bringing the total number of human cases of this strain of avian influenza virus in China to four this fall, local health authorities said. There was a fatal case of avian influenza H5N1 in Indonesia (West Java) and a non-fatal case in Cambodia in November. Indonesia had reported over 190 cases by October 2013 with 161 fatalities – a third of the world's cases and almost half the world's deaths due to H5N1 since it erupted in 2003. Of the 35 confirmed human cases of H5N1 avian influenza virus recorded globally during 2013, a total of 24 have occurred in Cambodia. Fatal cases there in 2013 remain at 13; the majority of cases in Cambodia have been children.

Novavax expects to start a clinical trial of its H7N9 vaccine in the USA in the first half of 2014. A trial of Sanofi's (\$SNY) H7N9 vaccine in conjunction with adjuvants from GlaxoSmithKline (\$GSK) and Novartis (\$NVS) is already under way.

Poliomyelitis in Syria

More than a dozen cases of wild poliovirus type 1 (WPV1) have been confirmed in the war-torn Syrian Arab Republic. Genetic sequencing indicates that the viruses isolated are most closely related to virus detected in sewage samples



Photo credit: UN

in Egypt in December 2012. Given that 95% of polio infections are asymptomatic, there must be more than 2000 infected people in Syria and among refugees fleeing to neighboring countries; a serious situation.

Salmonellosis, serotype Heidelberg in the USA: recall

As of 15 November 2013, a total of 389 individuals infected with the outbreak strains of the *Salmonella enterica* serotype Heidelberg had been reported from 23 states and Puerto Rico, linked to cooked chicken. Most of the ill people (74%) had been reported from California. Since 30 October 2013, 28 new cases had been reported from eight states: Arizona, California, Idaho, Illinois, Louisiana, Nevada, Oregon and Virginia. A Costco wholesale store in San Francisco, California, recalled at least 87,000 pounds of rotisserie chicken and products made with the cooked bird because they might have been contaminated with salmonella linked to the ongoing outbreak. Department of Agriculture food safety officials said that the chicken was probably contaminated in the store's preparation area after cooking.



This serotype is normally only rarely found in the USA, but it was implicated in a 2011 outbreak linked to broiled (but only partially cooked) chicken livers from California and a multi-drug-resistant strain of Heidelberg was the cause of an outbreak traced to (uncooked) frozen ground turkey from Arkansas which sickened over 100 people in 31 states, also in 2011.

Outbreaks in domestic and wild animals

Outbreaks in animals and food plants may also have a bearing on human health. Foot & mouth disease (FMD) is important because of its negative effect on meat and milk production. Twelve outbreaks had been reported in November from Libya, seven of them identical to the serotype O vaccine strain from India. What that was doing in Libyan cattle is a mystery. There is no mystery regarding the out-of-season November outbreak of FMD on the Israeli side of the Golan Heights, given the chaos on the Syrian side. There was an outbreak in November of a low-pathogenic strain of avian influenza H5 in poultry in Germany, origin uncertain. Anthrax was reported in cattle in Buenos Aires province Argentina, Texas USA and Orebro Sweden; there was no indication of any foul play connected with the outbreaks.



By mid-November the deadliest outbreak ever recorded of cetacean morbillivirus (a measles-like virus) in bottlenose dolphins has killed a record number of the animals -- more than 750 -- along the Atlantic coast of the USA since July

2013. They get pneumonia and brain infections which cause drowning. However, no case of human infection has ever been reported.

Outbreaks in food plants

Lethal wilt, a severe disease of oil palm, is spreading through South America. An incidence of about 30 percent was recorded in four commercial fields in Colombia. Palm oil is preferred to soybean oil because it doesn't produce trans fats and it isn't made from genetically modified (GM) crops. It is also used in making biofuel. Indonesia and Malaysia are the world's top palm oil producers.

In 2013, foliage of potatoes grown in Ireland showing mosaic, veinal necrosis, and chlorosis was sampled and serologically and molecularly analysed. Presence of Potato virus Y (PVY) was confirmed. Tubers from the infected plants were harvested and, following storage at ambient temperature for 28 days, developed typical superficial necrotic ringspot disease. This is the 1st report (November 2013) of Potato tuber necrotic ringspot disease associated with PVY recombinant strains in Ireland.

The journal *Plant Disease* posted online at the end of October, picked up by ProMED via a Science Daily news release in early November, a paper reporting that there have been suspicions for a few years that some banana plantations in Jordan were infected with Panama disease. During the twentieth century, tens of thousands of hectares of banana plantations in Latin America were destroyed by Panama disease. They were replanted with resistant Cavendish bananas, but every plantation of Cavendish bananas in Malaysia was wiped out within 4 years of the detection of TR4 (Tropical Race 4) in the country. The authors have established by molecular tests that TR4 has now spread beyond Southeast Asia. Relatively few bananas are grown in Jordan, but 80% of the plantations are now infected. It is unclear how this race of Panama disease spread from Southeast Asia. It is argued that it is only a question of time before TR4 reaches Africa where it would threaten the food security of millions. A concerted international approach is now needed to prevent the spread of Panama disease and contain it.

For details of all the above (and more), you can search the ProMED outbreak page on the OHI website or ProMED at www.promedmail.org.

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



Lethal wilt, oil palm



Jack Woodall

One Health Newsletter

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Brief Items in One Health

New One Health Journal—*Veterinary Sciences*

The new online open access journal *Veterinary Sciences* (ISSN 3206-7381, <http://www.mdpi.com/journal/vetsci>) will focus on publishing original studies and reviews with species comparisons of physiology, disease pathogenesis, and/or treatment. The first issue, planned for late 2014, will have the theme: *Animal Models and Better Understanding of "One Medicine"*. Editor-in-Chief: Duncan C. Ferguson, VMD, PhD, DACVIM, DACVCP. (originally printed on OHI website).

New One Health textbook available—*Zoonoses: Protecting People and Their Pets*

This textbook was developed to help human and veterinary healthcare professionals and students enhance their knowledge of zoonotic diseases, especially those associated with companion animal species. The textbook also provides educational materials to educate clients, patients, and staff on the risks and prevention of zoonotic diseases. The development of this textbook was a One Health effort involving input and review from a number of human and veterinary medical experts. Contributing authors and reviewers for the textbook include: Margaret Chorazy, MPH, PhD; Lisa Conti, DVM, MPH, DACVPM, CPM, CEHP; Kathleen F. Gensheimer, MD, MPH; Rebecca Johnson, PhD, RN, FAAN; Laura Kahn, MD, MPH, MPP; Kerry Leedom Larson, DVM, MPH, PhD, DACVPM; William McCulloch, DVM, MPH; Peter M. Rabinowitz, MD, MPH; Gary Simpson, MD, PhD, MPH; and Anna Rovid-Spickler, DVM, PhD. For more information, please see: <http://www.cfsph.iastate.edu/Products/zoonoses-protecting-people-and-their-pets.php?lang=en>. (originally printed on OHI website)



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, or Newsletter Contributors.

One Health Newsletter

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Coming Events

3rd International One Health Congress

Amsterdam, the Netherlands

March 15-18, 2015

<http://www.iohc2015.com/>



Emerging Disease Symposium

Houston Zoo, Houston, TX

February 13-15, 2014

<http://www.houstonzoo.org/edsymposium/>

Annual Conference on Vaccine Research

National Foundation for Infectious Diseases

Bethesda, MD

April 28-30, 2014



National
Foundation for
Infectious
Diseases

<http://nfid.org/professional-education/conferences>

Massachusetts Veterinary Medical Association Winter CE Conference

“Zoobiquity: How Veterinarians will Transform Human Medicine”



Westborough, MA

February 5, 2014

<https://m360.massvet.org/event.aspx?eventID=93513>

World Association for History of Veterinary Medicine Meeting

Imperial College, London, England

September 10-13, 2014



<http://www.veterinaryhistorylondon.com/>

3rd Global Risk Forum One Health Summit

Davos, Switzerland

October 5-8, 2014

<http://onehealth.grforum.org/home/>

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Recent One Health Publications

Review of Institute of Medicine and National Research Council Recommendations for One Health Initiative. C. Rubin, T. Myers, et al. *Emerging Infectious Diseases*. December 2013. 19 (12). http://wwwnc.cdc.gov/eid/article/19/12/12-1659_article.htm.

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