WVA/WMA GLOBAL CONFERENCE ON ONE HEALTH

Drivers towards One Health
“Strengthening collaboration between Physicians and Veterinarians”

21-22\textsuperscript{nd} May 2015, Madrid, Spain

SPEAKERS
Abstracts and Biographies

The WVA/WMA would like to thank very much the A.M.A. insurance company for the great contribution to the organization of the One Health Conference and for the support of the Spanish health professionals.

A.M.A. is specialized in providing insurance services to health sector professionals (physicians, veterinarians, pharmacists).
Day 1 | Welcome speeches | 9.30 – 10.15

Carlos Jesús Moreno Sánchez - Director General, Spanish Ministry of Health
Holds a degree in Law from the Complutense University of Madrid and Master in Health Administration from the Spanish National School of Health and Public Administration (INAP). He was the director of Management and General Services in Primary Care Management of Ávila, deputy director of Human Resource Management and General Services at the Hospital of Mostoles, director of Management and General Services in Primary Care Management Area 7 of Madrid, deputy Human Resources Alcorcón Hospital Foundation and HR director of the University Hospital Infanta Sofia. Since March 2012 he was deputy general manager of Human Resources of the National Health System.

René Carlson and – President of the World Veterinary Association
Dr. Carlson was in general private clinical practice for 34 years in Wisconsin of the United States of America. She continues to be highly active in national and international organizational leadership. She is a Past President of the American Veterinary Medical Association and has served on the AVMA Council on Education which accredits the 30 veterinary medical colleges in the United States and 17 other veterinary programs around the world. Dr. Carlson is the appointed volunteer Director of International Affairs for the AVMA, and was elected President of the World Veterinary Association for the 2014-2017 term.

Xavier Deau - President of the World Medical Association
A General practitioner, he has been working in group practice since 1987 in Epinal (Vosges), France. He has been President of the European and International Delegation of the French Medical Council since June 2013. He has been President of the Departmental Council of Medical Order of Vosges since 1993. He was Vice-president of the French Medical Council in charge of international relations from 2011 to 2013. He was Vice-president of the French Medical Council in charge of relations with University from 2009 to 2013.

Juan José Badiola Díez - President of the Spanish Veterinary Statutory Body
Juan José Badiola is Professor of Animal Health in the Faculty of Veterinary Medicine, University of Zaragoza; Director of the Centre for Research of Transmissible Spongiform Encephalopathies and Emerging Diseases; President of the Aragonese Food Safety Agency; Member of the EFSA’s Emerging Risks Exchange Network; Member of the Advisory Council of the Spanish Ministry of Health; and President of the Consejo General de Colegios Veterinarios de España (the Spanish Veterinary Statutory Body).

Juan J. Rodríguez Sendín - President of the Spanish Medical Statutory Body
Physician of Cuerpo Nacional de Médicos Titulares at Primary Care Unit in Noblejas (Toledo) since 1983. Dr. Rodríguez Sendín started his institutional career as National Representative of Medicos Titulares at the Spanish Medical Council (1986-2002). During this time he founded the Spanish Federation of Medicos Titulares Associations (1984) and was Secretary General of this group of physicians within the Spanish Federation of Physicians Trade Unions. He also founded the Sociedad Española de Medicina General (Spanish Society of General Medicine, SEMG) in 1988, and was President of this society from 1995-2001. Since April 2009 he is the President of Consejo General de Colegios Oficiales de Médicos (Spanish Medical Council).

Katinka DeBalogh - Tripartite FAO/OIE/WHO on One Health
Studied veterinary medicine in Berlin and Munich. She obtained her doctorate in 1984 in Tropical parasitology, and further specialized in Tropical animal production and health (France) and veterinary public health (Netherlands). Worked for over 9 years in Africa in various animal health projects and lectured in veterinary public health at the Veterinary faculty in the Netherlands. She also worked at the World Health Organization in Geneva and since 2002, at the Food and Agriculture Organization of the United Nations at its headquarters in Rome where she is responsible for the global veterinary public health programme and is the focal point for One Health.
Dr. Laura H. Kahn
A physician is a research scholar with the Program on Science and Global Security at the Woodrow Wilson School of Public and International Affairs, Princeton University. A native of California, Dr. Kahn holds a B.S. degree in nursing from UCLA, an M.D. from Mt. Sinai School of Medicine, a Master of Public Health from Columbia University and a Master of Public Policy from Princeton University. In April 2006, she published Confronting Zoonoses, Linking Human and Veterinary Medicine in the Center for Disease Control and Prevention’s (CDC) Journal of Emerging Infectious Diseases. That publication helped launch the One Health Initiative (http://www.onehealthinitiative.com). In 2010 and 2011, she taught, “When Cows go Crazy: The inextricable links between human and animal health,” to Princeton University freshman. She is the author of “Who’s in Charge? Leadership during epidemics, bioterror attacks, and other public health crises” published in 2009 by Praeger Security International. She writes regular online columns for the Bulletin of the Atomic Scientists, and has published in many peer-reviewed journals. She has recently completed a book tentatively titled, “Physicians, Farmers, and the Politics of Antibiotic Resistance: A One Health Analysis.” It will be published by Johns Hopkins University Press. Dr. Kahn is a fellow of the American College of Physicians (ACP) and is a recipient of the New Jersey Chapter’s Laureate Award. In 2010, the American Veterinary Epidemiology Society (AVES) awarded her with an honorary diploma for her work in One Health. In 2014, she received a Presidential Award for Meritorious Service from the American Association of Public Health Physicians.

One Health: A Concept for the 21st Century
This presentation is a general historical overview of the One Health concept. Some of the greatest discoveries in the history of medicine and public health were made at the interface between human and animal health. Medicine and veterinary medicine are complementary and synergistic in developing new insights into global health. But over the course of the 20th century, they diverged, rarely communicating or collaborating with each other. The challenges of the 21st century, such as the emergence of zoonotic diseases, require that they re-establish collaborative efforts in clinical care, population health, and biomedical research.
Lisa Conti, DVM, MPH, Dipl ACVPM, AVES (Hon)
Dr. Lisa Conti serves as the Deputy Commissioner and Chief Science Officer of the Florida Department of Agriculture and Consumer Services, overseeing the divisions of Food Safety, Agriculture Environmental Services, Aquaculture, Animal Industry and Plant Industry. Prior appointments were with the Florida Department of Health, as Division Director of Environmental Health, Florida State Public Health Veterinarian and State HIV/AIDS Surveillance Coordinator. She has authored or co-authored numerous journal articles on One Health, public health, HIV/AIDS surveillance, vector-borne and zoonotic disease topics. She is Coeditor with Dr. Peter Rabinowitz, of the book Human-Animal Medicine: Clinical Approaches to Zoonoses, Toxicants and Other Shared Health Risks and Coeditor of Confronting Emerging Zoonoses: The One Health Paradigm. Dr. Conti serves on the NIH National Advisory Environmental Health Sciences Council. She is a member of the One Health Initiative pro bono team. She was a founding member and Chair of the State Environmental Health Directors with the Association of State and Territorial Health Officers. She was a founding member of the Florida Rabies Control and Prevention Advisory Committee, sat on the Rabies Compendium Committee of the National Association of State Public Health Veterinarians, was an Executive Board member of the Florida Veterinary Medical Association (FVMA) and established and chaired the FVMA One Health Committee from 1995-2013. Dr. Conti served on the American Veterinary Medical Association (AVMA) Council on Public Relations representing Public Health. She was an Affiliate with the Yale University School of Medicine on Human-Animal Medicine projects; an Adjunct Professor at Florida State University having taught Food Safety and Epidemiology courses; Courtesy Associate Professor at the University of Florida, College of Veterinary Medicine’s Department of Infectious Diseases and Pathology; and, has taught Anatomy and Physiology at Tallahassee Community College. She earned her Doctor of Veterinary Medical degree from the University of Florida, Master of Public Health (Public Health Administration) from the University of South Florida and Bachelor of Science (Chemistry/Math) from the University of Miami. She is a Certified Public Manager through Florida State University, and Board Certified in Preventive Medicine through the American College of Veterinary Preventive Medicine. She is a recipient of the Florida Public Health Woman of the Year Award and the AVMA Public Service Award.

One Health – the Bigger Picture
As an approach, One Health seeks to capitalize on the knowledge and experiential base of members, as well as novel perspectives from working across traditional disciplinary or professional boundaries. Therefore, professional segregation must be bridged and health sectors must be engaged to foster successes in One Health. In part, professional segregation occurs with training in separate institutions of human, animal, and environmental health, often with little opportunity to interact with each other, resulting in professionals who do not seek to communicate outside of their discipline. While human medicine has long relied on animal models of disease, most current comparative medicine research efforts involve laboratory animal models, and there has been little exploration of comparative clinical and observational approaches that could bring together human and animal health clinicians and epidemiologists. Clinicians play an important role in One Health efforts. Lessons learned from diagnosing and treating one species, including the recognition of particular susceptibilities to environmental stressors, can be used to improve the health care of other species. There is therefore a need to define pathways and procedures for routine clinical collaboration between human health care providers and veterinarians. In addition, to effectively work at the human-animal-ecosystem interface, there needs to be a foundation of ecological concepts using a systems approach. As the world’s human population increases, One Health models are critical for food animal production that simultaneously maximizes the health of the involved humans (workers and consumers of food), the animals, and the local environment and minimizes the risks. Another challenge is to define a One Health approach toward companion animal interaction. As evidence of the importance and possible health benefits of the human animal bond mounts, veterinarians and human health care providers, as well as environmental health specialists, need to collaborate to help define healthy models of living with companion animals, even for immunocompromised individuals.
Day 1 | Zoonotic Diseases | 11.30 – 13.30

Moderator

Juan José Badiola Díez - President of the Spanish Veterinary Statutory Body
Professor of Animal Health in the Faculty of Veterinary Medicine, University of Zaragoza; Director of the Centre for Research of Transmissible Spongiform Encephalopathies and Emerging Diseases; President of the Aragonese Food Safety Agency; Member of the EFSA’s Emerging Risks Exchange Network; Member of the Advisory Council of the Spanish Ministry of Health; and President of the Consejo General de Colegios Veterinarios de España (the Spanish Veterinary Statutory Body).
Dr. Prejit Nambiar, MVSc, Ph.D,
He is the Officer-In-Charge of Centre for One Health Education, Advocacy, Research and Training (COHEART) of Kerala Veterinary and Animal Sciences University, INDIA. He also serves as Assistant Professor in the Department of Veterinary Public Health of the same university. He did his Ph. D in Veterinary Public Health from India's premier research institute, IVRI, Bareilly, UP. Dr. Prejit has received various national awards for his contribution in the field of public health. This includes G.P Sen Endowment award at AIVPHS Conference, Best presentation award at National world rabies day seminar, Dr. SP Singh Best research paper award, ICFMH Travel grant to attend Food Micro 2012 at Istanbul-Turkey, International Society for Infectious Diseases travel grant to attend South Asia Regional Collaboration Workshop on One Health at Nepal, Young scientist award at X IAVPHS conference on “One health initiative in addressing food safety challenges” etc. He has published more than 30 scientific articles in national and international journals. He also serves as an advisor for the International Journal of One Health and extensively writes and lectures on Zoonotic Diseases and food safety. His commitment towards "One Health" could be explored through the activities displayed at www.coheart.ac.in

ONE HEALTH - MULTIDISCIPLINARY HOLISTIC APPROACH FOR HARMONY AMONG MAN, ANIMAL AND NATURE
One Health introduces a concept embedded in the philosophy of “co-existence” in which every other living being (and non-living beings like air, water and soil) influences the health of the fellow being. The Center for One Health Education, Advocacy, Research and Training or COHEART focuses on catalyzing resources from multiple disciplines for the betterment of M.A.N (Man, Animal and Nature). Nature, Plants and Animals are not just our neighbors, but essential for our survival. Mother earth is our home and takes care of man, animal and plants and has an indivisible, interdependent, complementary, and spiritual relationship with all these creations. “One Health” is now seen as a new development paradigm where man, animal and nature can complement each other by optimum (than maximum) use. It takes into account health and wellbeing of man, animals and nature or “Health for all” concept. Health emerges from a harmony among various organs and systems of the body (called internal homeostasis or IH). IH is constantly influenced by animals, environment and other men around us. Body constantly adjusts to interactions and maintain an external homeostasis (EH). EH may be influenced by events within biosphere (call it global homeostasis) or events among planets (celestial homeostasis). Many zoonotic diseases are continuously emerging. Recent outbreaks of Kyasannur Forest Disease in Kerala (India) have united the human, veterinary and allied departments in order to curb this disease and COHEART played a role in the development of integrated control guidelines. The human-animal bond can also have a mutually beneficial and dynamic relationship that is influenced by behaviors that are essential to the health and well-being of both. This reminds that our cognitive association with animals has profoundly shaped our modern lives. Man and nature interact dialectically in such a way that, as society develops, man tends to become less dependent on nature directly, while indirectly his dependence grows. Right relationship between the human, plant and animal nations is desperately needed in bringing balance to the Earth today. That is why COHEART has come up with propagating the One Health concept which could be an ideal parameter for planning sustainable development.
Ab Osterhaus
Internationally recognized and award-winning scientific researcher and principal investigator for numerous major scientific projects. As Professor of Virology in Rotterdam, Osterhaus ran the virology diagnostic and research labs at Erasmus MC. His research program involved an integrated ‘viroscience’ concept, bringing together world-leading scientists in molecular virology, immunology, epidemiology, pathogenesis, and intervention studies on human and animal viral infections. After handing over the chairmanship of the Erasmus MC Viroscience lab in 2014 he continues to work at Erasmus MC and is currently establishing new One Health Institutes in Utrecht and Hannover. His major accomplishments include the discovery of over 50 new viruses in humans and animals, influential work on the pathogenesis of major infections, and the development of innovative intervention strategies. His work has enabled health authorities including the WHO to combat outbreaks like SARS, MERS, and avian influenza. As Chief Scientific Officer at Viroclinics Biosciences BV, Osterhaus leads effective testing and refining of preventive, therapeutic, and diagnostic tools. He has mentored over 60 PhD students, holds several key patents, and has authored more than 1100 papers in peer-reviewed journals, cited over 45,000 times, and his H index is more than 90. Moreover, Osterhaus firmly believes scientists have a role to play in translating their knowledge for the benefit and protection of society.

From zoonosis to pandemic: are we prepared?*
The complex relationships between the human and animal species have never ceased to evolve since the emergence of the human species and have resulted in a human-animal interface that has promoted the cross-species transmission, emergence and eventual evolution of a plethora of infectious pathogens. Remarkably, most of the characteristics of the human-animal interface-as we know it today-have been established long before the end of our species pre-historical development took place, to be relentlessly shaped throughout the history of our species. More recently, changes affecting the modern human population worldwide as well as their dramatic impact on the global environment have taken domestication, agriculture, urbanization, industrialization, and colonization to unprecedented levels. This has created a unique global multi-faceted human-animal interface, associated with a major epidemiological transition that is accompanied by an unexpected rise of new and emerging infectious diseases. Importantly, these developments are largely paralleled by medical, technological, and scientific progress, continuously spurred by our never-ending combat against pathogens. The human-animal interface has most likely contributed significantly to the evolutionary shaping and historical development of our species. Investment in a better understanding of this human-animal interface will offer humankind a future head-start in the never-ending battle against infectious diseases. Recently emerging and ongoing events like the emergence of avian influenza, Ebola**, and MERS in humans, highlight the urgent need for this investment.

**Reperant LA, van de Burgwal LH, Claassen E, Osterhaus AD. Science 2014
Lisa Conti, DVM, MPH, Dipl ACVPM, AVES (Hon)

Dr. Lisa Conti serves as the Deputy Commissioner and Chief Science Officer of the Florida Department of Agriculture and Consumer Services, overseeing the divisions of Food Safety, Agriculture Environmental Services, Aquaculture, Animal Industry and Plant Industry. Prior appointments were with the Florida Department of Health, as Division Director of Environmental Health, Florida State Public Health Veterinarian and State HIV/AIDS Surveillance Coordinator. She has authored or co-authored numerous journal articles on One Health, public health, HIV/AIDS surveillance, vector-borne and zoonotic disease topics. She is Coeditor with Dr. Peter Rabinowitz, of the book Human-Animal Medicine: Clinical Approaches to Zoonoses, Toxins and Other Shared Health Risks and Coeditor of Confronting Emerging Zoonoses: The One Health Paradigm. Dr. Conti serves on the NIH National Advisory Environmental Health Sciences Council. She is a member of the One Health Initiative pro bono team. She was a founding member and Chair of the State Environmental Health Directors with the Association of State and Territorial Health Officers. She was a founding member of the Florida Rabies Control and Prevention Advisory Committee, sat on the Rabies Compendium Committee of the National Association of State Public Health Veterinarians, was an Executive Board member of the Florida Veterinary Medical Association (FVMA) and established and chaired the FVMA One Health Committee from 1995-2013. Dr. Conti served on the American Veterinary Medical Association (AVMA) Council on Public Relations representing Public Health. She was an Affiliate with the Yale University School of Medicine on Human-Animal Medicine projects; an Adjunct Professor at Florida State University having taught Food Safety and Epidemiology courses; Courtesy Associate Professor at the University of Florida, College of Veterinary Medicine’s Department of Infectious Diseases and Pathology; and, has taught Anatomy and Physiology at Tallahassee Community College. She earned her Doctor of Veterinary Medicine degree from the University of Florida, College of Veterinary Medicine, Master of Public Health (Public Health Administration) from the University of South Florida and Bachelor of Science (Chemistry/Math) from the University of Miami. She is a Certified Public Manager through Florida State University, and Board Certified in Preventive Medicine through the American College of Veterinary Preventive Medicine. She is a recipient of the Florida Public Health Woman of the Year Award and the AVMA Public Service Award.

One Health Approach to Invasive Species

The discovery of the giant African land snail (GALS) in Florida during September 2011 resulted in an immediate response. This snail is considered one of the world’s worst invasive species because of its environmental and health risks. This invader poses a major threat as it attacks over 500 species of plants, carries rat lungworm that can cause meningitis in humans and animals, and ingests stucco and other calcium products off houses and other structures to build its shell.

Spearheaded by the Florida Department of Agriculture and Consumer Services (FDACS), Florida’s One Health approach is focused on an eradication program intended to protect public health, natural environment and agriculture, and to prevent GALS from becoming an overwhelming urban nuisance as it has become in many places around the world.

FDACS multidisciplinary approach has included coordination with U.S. Department of Agriculture, the Florida Department of Health, Florida universities, veterinary medical and human medical associations. To date, over 156,000 snails have been collected and destroyed. Because of the resources that federal and state agencies have allocated to this eradication effort, the numbers of GALS being detected have dropped significantly to the point that the complete elimination of this unwanted invasive species is achievable in the near future if we maintain our current program approach.
Guillermo Vazquez-Mata, PhD.
Specialist in Intensive Care Medicine and professor and chair of internal medicine at the Medical Faculties of the University of Granada (Spain) and Autonomous University of Barcelona (Spain); the research activity is focus on physiopathology of critical patients, quality assessment of Intensive care units, and medical education; adviser of Spanish Medical Council for International Medical Cooperation; field experience in the current outbreak of Ebola in Liberia.

Ebola outbreaks in West Africa 2014
Currently, talking about Ebola is talking about three countries with unstructured health care systems and cities with poorly sanitized neighborhoods: Sierra Leona, Liberia and Guinea. These areas have poor medical care, absence of sanitation, difficult access to fresh water and families that survive with less than 1 $ a day, in extreme poverty. Without these socioeconomic characteristics Ebola would have never achieved the current epidemic characteristics.

The clinical characteristics of Ebola, also help explain the existing difficulties for its control. First, the symptoms are unspecific throughout the clinical course. This makes it difficult to differentiate from other high prevalence diseases like malaria, typhoid fever or severe diarrheas. The diagnosis can only be certain with the use of RNA amplification techniques that are only available at one or two hospitals per country. At the same time personal protective equipments (PPEs) add an extra layer of difficulty to the delivery of health care, they increase the risk of infection of health care personal at the time of removal, and carry a risk of dehydration and heat stroke that limit their use time to less than 60 minutes, which also contributes to suboptimal care.

These characteristics, the unspecific clinical syndrome, the complexity of the diagnostic techniques and the limitations inherent to the use of PPEs limit the operational capacity of medical teams.

The last topic deserving attention is the fact that despite having surpassed 10000 deaths, the only studies on Ebola describe infection rates and percent mortality; only three manuscripts added any novelty. The first, from Freetown, shows that a protocol of oral or intravenous hydration decreased mortality from 70 to <25%. The second and third describe patients flown to the USA and Germany for treatment, describing for the first time the electrolyte abnormalities, difficulties maintaining fluid balances with very high enteric looses (>10l/day); they also describe the persistence of the virus in sweat and urine beyond clinical cure.
David L. Heymann
Professor of Infectious Disease Epidemiology, London School of Hygiene and Tropical Medicine; Head of the Centre on Global Health Security at Chatham House, London and Chairman of Public Health England, UK. Previously he was the World Health Organization's Assistant Director-General for Health Security and Environment, and Representative of the Director-General for polio eradication. From 1998 to 2003 he was Executive Director of the WHO Communicable Diseases Cluster during which he headed the global response to SARS. Before joining WHO, Prof Heymann worked for 13 years as a medical epidemiologist in sub-Saharan Africa on assignment from the US Centers for Disease Control and Prevention (CDC) where he participated in the first and second outbreaks of Ebola Hemorrhagic Fever, and supported ministries of health in research aimed at better control of malaria, measles, tuberculosis and other infectious diseases. Prior to joining CDC, Prof Heymann worked in India for two years as a medical epidemiologist in the WHO Smallpox Eradication Programme. He is an elected fellow of the Institute of Medicine of the National Academies (United States) and the Academy of Medical Sciences (United Kingdom), and has been awarded several public health awards that have provided funding for the establishment of an ongoing mentorship programme at the International Association of Public Health Institutes (IANPHI). In 2009 Prof Heymann was appointed an honorary Commander of the Most Excellent Order of the British Empire (CBE) for service to global public health.

Infections at the animal/human interface: shifting the paradigm from detection and response to prevention at the source
The majority of emerging infectious diseases have their source in animals, and emergence occurs at the human/animal interface, when infections in animals breach the species barrier to infect humans, the population in which they are often first identified. The response is frequently characterised by a series of emergency activities to contain and manage the infection in human populations, and at the same time to identify the source of the infection in nature. If infection is found to have a source in animals, and if animals cause a continuous threat of human infection, culling is often recommended, with severe economic impact. It may be more cost-effective to shift the current paradigm of rapid response to prevention of emergence at the source by understanding and mitigating the factors, or determinants, that influence animal infection. Better understanding of these factors learned from surveillance; epidemiological investigation of past and present emergence events; and modelling and study of the cost effectiveness of interventions that could result in their mitigation could provide evidence necessary to better address potential barriers to prevention. These barriers are often driven by the basic difference between the goals and approach in the animal and human health sectors: profit versus saving lives at any cost.
Katinka de Balogh
Studied veterinary medicine in Berlin and Munich. She obtained her doctorate in 1984 in Tropical parasitology, and further specialized in Tropical animal production and health (France) and veterinary public health (Netherlands) Worked for over 9 years in Africa in various animal health projects and lectured in veterinary public health at the Veterinary faculty in the Netherlands. She also worked at the World Health Organization in Geneva and since 2002, at the Food and Agriculture Organization of the United Nations at its headquarters in Rome where she is responsible for the global veterinary public health programme and is the focal point for One Health.

The Tripartite FAO-OIE-WHO in One Health
Since the emergence of highly pathogenic avian influenza in South-east Asia and its subsequent spread to Europe and Africa during 2006, the urgent need for closer collaboration and communication between animal and human health sectors—as well as those in charge of wild birds became evident. Since then, the concept of One Health has gained momentum at global and national levels. At the international level, the Food and Agriculture Organization of the United Nations (FAO), the World Organisation for Animal Health (OIE) and the World Health Organization (WHO) as Tripartite have committed to addressing health risks at the animal-human-ecosystems interface. Putting One Health into practice at national and local levels still encounters various challenges. These challenges are often linked to the lack of resources and institutional mechanisms for inter-sectoral cooperation and coordination and the need for clear roles and responsibilities for all sectors involved. Zoonotic Influenza, rabies and antimicrobial resistance (AMR) are considered Tripartite priorities that require the One Health approach. In addition various Tripartite platforms, tools and mechanisms such as GLEWS, 4-way linking frameworks, GOARN/CMC responses, WHO-OFFLU-collaboration-network and GF-TADs are some examples of the three organizations joining forces and support countries in addressing complex health threats and improve food security in an ever globalizing world.
Louis Nel
A full Professor at the University of Pretoria and head of the Viral Zoonoses Laboratory. He has led numerous research programmes focused on improved understanding and control of lyssaviruses and rabies. His research relies on state of the art methods in molecular biology and specific research topics include diagnostic development, vaccinology, immune contraception, viral pathogenesis, host/virus ecology, molecular epidemiology and virus evolution. Prof Nel is a permanent member of the World Health Organization (WHO) expert advisory panel on rabies and served as chair for the WHO Expert Consultation on Rabies (2012) and as member of the international steering committee of the BMGates Foundation/ World Health Organization (WHO) rabies control programmes. He is also the coordinator for the Southern and Eastern African Rabies Group (SEARG) and scientific advisor as well as organiser and chair for the past five international conferences (since 2003). In other international and global roles he is an active member of the technical expert panel of the IAEA/FAO (International Atomic Energy Agency and UN Food and Agriculture Organization), and served on rabies committees of the OIE (World Organization for Animal Health). Prof Nel assisted the Global Alliance for Rabies Control (GARC) and the Partners for Rabies Prevention (PRP) in various capacities since 2008. In September 2014, he became the Executive Director of GARC.

A Global Campaign for Rabies Control
The Global Alliance for Rabies Control (GARC) was founded in 2007 as a non-profit organization and is now registered in the UK, USA, India, Philippines, Switzerland and South Africa. With a singular focus to improve rabies prevention and control, one core strength of GARC lies in its unique role in education, public awareness and global communication. GARC continually strives to fulfill a niche space, complementary to the roles and mandates of other players in the global human and animal health communities, including the intergovernmental tripartite agencies, WHO, OIE and FAO. In doing so, GARC facilitated stronger bonds and resolve within the global rabies community. One of GARC’s first initiatives, in 2007, was to launch an annual World Rabies Day (WRD), which falls on 28 September – the anniversary of the death of Louis Pasteur. Appreciating the increasingly wide-spread impact and value of this event, GARC aims to continually develop initiatives around the WRD theme, to the benefit of the global rabies community. After establishing the Partners for Rabies Prevention (PRP), one of the first outputs of GARC/PRP was the blueprint for rabies control (www.rabiesblueprint.com). GARC, with the PRP, continues to update and promote the blueprint and the growing number of different elements within the blueprint including an educational platform and the stepwise approach to rabies elimination (SARE – a planning, monitoring and evaluation mechanism for rabies control programmes). With our partners, GARC currently works on an ‘End Rabies’ campaign as a communications, advocacy and policy campaign aimed at the broadest possible audience towards building an ever growing international support base for the prevention of human rabies and the elimination of dog rabies.
Ardis Dee Hoven, MD

An internal medicine and infectious disease specialist in Lexington, Ky., was president of the American Medical Association from June 2013 to June 2014. Dr. Hoven has been a member of the AMA Board of Trustees (BOT) since 2005, serving as its secretary for 2008–2009, chair for 2010–2011, and immediate past chair from 2011 to 2012. Prior to her election to the AMA-BOT, Dr. Hoven served as a member and chair of the AMA Council on Medical Service. She was a member of the Utilization Review and Accreditation Commission for six years and served on its executive committee. Additional activities have included service on the AMA Foundation board of directors, the Group Practice Advisory Council of the AMA, the AMA-convened Physician Consortium for Performance Improvement®, the COLA board of directors, the National Advisory Council for Healthcare Research and Quality, as well as an appointment to the Practicing Physicians Advisory Commission. Currently Dr. Hoven serves as the AMA-BOT representative on the Board of Directors of the National Quality Forum, the Quality Alliance Steering Committee, and is the chair of the AMA delegation to the World Medical Association. Dr. Hoven’s involvement at the state level has been extensive. She was president of the Kentucky Medical Association from 1993 to 1994 and served as a delegate to the AMA from Kentucky prior to her election to the AMA-BOT. She has also been actively involved in medical staff issues at her local hospital and has held a variety of positions, including president of the medical staff, member of the board of directors and president of the hospital foundation board. Born in Cincinnati, Dr. Hoven received her undergraduate degree in microbiology and then her medical degree from the University of Kentucky, Lexington. She completed her internal medicine and infectious disease training at the University of North Carolina, Chapel Hill. Board-certified in internal medicine and infectious disease, Dr. Hoven is a fellow of the American College of Physicians and the Infectious Disease Society of America. She has been the recipient of many awards, including the University of Kentucky College of Medicine Distinguished Alumnus Award and the Kentucky Medical Association Distinguished Service Award. In 2013 Dr. Hoven was named one of Modern Healthcare Magazine’s Top 25 Women in Healthcare, in addition to its list of the 100 Most Influential People in Healthcare (No. 54), and its 50 Most Influential Physician Executives and Leaders (No. 5). Dr. Hoven is married to Ron Sanders, PhD, an economist and college professor. They share a mutual enjoyment of two grandchildren, sports, travel and philanthropic activities. 2014–2015
Dr. Laura H. Kahn
A physician is a research scholar with the Program on Science and Global Security at the Woodrow Wilson School of Public and International Affairs, Princeton University. A native of California, Dr. Kahn holds a B.S. degree in nursing from UCLA, an M.D. from Mt. Sinai School of Medicine, a Master of Public Health from Columbia University and a Master of Public Policy from Princeton University. In April 2006, she published Confronting Zoonoses, Linking Human and Veterinary Medicine in the Center for Disease Control and Prevention’s (CDC) Journal of Emerging Infectious Diseases. That publication helped launch the One Health Initiative (http://www.onehealthinitiative.com). In 2010 and 2011, she taught, “When Cows go Crazy: The inextricable links between human and animal health,” to Princeton University freshman. She is the author of “Who’s in Charge? Leadership during epidemics, bioterror attacks, and other public health crises” published in 2009 by Praeger Security International. She writes regular online columns for the Bulletin of the Atomic Scientists, and has published in many peer-reviewed journals. She has recently completed a book tentatively titled, “Physicians, Farmers, and the Politics of Antibiotic Resistance: A One Health Analysis.” It will be published by Johns Hopkins University Press. Dr. Kahn is a fellow of the American College of Physicians (ACP) and is a recipient of the New Jersey Chapter’s Laureate Award. In 2010, the American Veterinary Epidemiology Society (AVES) awarded her with an honorary diploma for her work in One Health. In 2014, she received a Presidential Award for Meritorious Service from the American Association of Public Health Physicians.

Physicians, Farmers, and the Politics of Antibiotic Resistance: A One Health Analysis
The rise of antibiotic resistant bacteria has created a crisis in medicine and veterinary medicine. The use of antibiotics as growth promoting agents in livestock has been a highly political issue. In 2006, Europe banned the use of all growth promoting agents in livestock. The rise of vancomycin resistant enterococci (VRE) precipitated the EU ban. In contrast, the US has requested that its livestock producers voluntarily stop using antibiotic growth promoting agents. Using a One Health approach by integrating the perspectives of medicine/public health and veterinary medicine/agriculture, this presentation briefly compares and contrasts the EU versus the US experience regarding antibiotic use, antibiotic resistance, and livestock production.
Nadav Galon
Is the Chief Veterinary Officer and the director of the Veterinary Services of the state of Israel since 2011. He graduated in Veterinary Medicine at Pretoria University (Onderstepoort, South Africa) in 1987, received a Herd Health Diploma at Rupin Institute (Israel) in 1994, and MPA (Master of Public Administration)-Health Systems at Clark University (USA) in 2010. He worked as a farm animals’ veterinarian at Hachaklait Veterinary Services in Israel since 1988. From 2004 to 2011 he was the Chief Veterinarian of the cooperative, coordinating a group of 50 vets serving more than 1,200 farms, among them close to 1,000 dairy farms. He is a non-faculty lecturer at the Koret Vet School of the Hebrew University, Israel since 2003 on cattle management, diseases and welfare, and regulatory veterinary medicine. He conducted and participated in numerous field trials and studies, writes in several local magazines and a frequent speaker at professional meetings in Israel. His international experience includes consulting on farms, advising to commercial companies and public bodies, training in technical courses and many appearances at various conferences worldwide.

Prudent use of Antimicrobials
Antimicrobials (AM) use in food supply veterinary medicine vastly expended in the second half of the 20th century. Supplying food to hungry nations, increasing production efficiency with little scientific or social objection brought to almost free use. In most countries veterinary pharmaceuticals are registered under Human Health authority, allowing barriers and controls. However, once registered, the AM quantities used were mostly decided by veterinarians and farmers and promoted by national and global veterinary pharmaceutical companies as a business. For some veterinarian selling pharmaceuticals AM is part of their service and income. In developed countries the number of farms is reducing and the average farm size is increasing. As the technical skills of farm managers and staff are improving they are trying to reduce production costs, taking treatment decisions by themselves with a limited involvement of the veterinarian. Fewer vets are entering farm animal medicine after graduating vet school. Many vet schools are still teaching the classical pattern of "etiology- diagnosis- treatment" and hardly touch on AM residues and resistance risks. In recent years, the awareness to AM resistance is growing by all stake holders; human medicine, veterinary medicine, the consumer and the media. Pressure is building and measures are taken to rationalize and drastically change the "traditional" use of AM in farm animals. Some countries set quantitative targets to AM reduction; others begin to monitor the usage; qualitative and later quantitative, convincing and even forcing the "industry"; vets, feed suppliers, farmers and production agencies to shrink the use of AM. The consumer influence seems to equal the regulatory steps by food to be "AM free". Where technology enables, like in raw milk, every shipment is tested for AM residues before entering the processing plant. In other food types national residues control plans are placed with follow-up interrogations against producers exceeding the MRL's. Some leading food producers are adding tests and buy raw material only from farms not using AM. Changing farmers and vets habits is not easy yet possible task, mostly by regulation, education and commercial means.
Delia Grace,
Delia Grace, Program Leader Food Safety and Zoonoses, International Livestock Institute, Nairobi and Theme Leader, Agriculture Associated Disease, CGIAR Research Program Agriculture for Nutrition and Health. Delia is an epidemiologist and veterinarian with 20 years experience in developing countries. She leads research on zoonoses and foodborne disease at the International Livestock Research Institute in Kenya and the CGIAR Research Program on Agriculture for Human Nutrition and Health. Research interests include emerging diseases, participatory epidemiology, gender and animal welfare. Her career has spanned the private sector, field-level community development and aid management, as well as research. She has lived and worked in Asia, west and east Africa and authored or co-authored more than 70 peer-reviewed publications as well as training courses, briefs, films, articles and blog posts. Her research program focuses on the design and promotion of risk-based approaches to food safety in livestock products in sub-Saharan Africa and South Asia. She is also a key player on ILRI’s Ecohealth/ One health approach to the control of zoonotic emerging infectious diseases project for Southeast Asia. She graduated as a veterinarian from the University of Ireland, obtained a MSc in tropical veterinary medicine from the University of Edinburg and a doctorate in epidemiology from the Free University of Berlin. She undertook post-doctoral studies at Cornell University in risk analysis.

Antimicrobial use in developing countries
Delia Grace1, Johanna Lindahl1,2, Hung Nguyen1,3,4, Tim Robinson1 and Manish Kakkar5
1 International Livestock Research Institute, Nairobi, Kenya 2 Swedish University of Agricultural Sciences, Uppsala, Sweden 3 Swiss Tropical and Public Health Institute, Basel, Switzerland 4 Hanoi School of Public Health, Hanoi, Vietnam 5 Public Health Foundation of India, Delhi, India

We conducted a study on agriculture related antimicrobial resistance (AMR) in developing countries. AMR pathogens are commonly found in animals, animal food products and agro-food environments, but the lack of surveillance systems means there are no reliable national data on the level of AMR in animals and their products. While AMR infections in animals and their products contribute to AMR infections in people in developing countries the literature is insufficient to draw firm conclusions on the extent of this contribution, which is likely to vary in different contexts. For example, a recent study found high levels of multi-drug resistance in goats kept by pastoralists in remote, isolated areas and never given treatments by veterinarians or farmers. The key driver of agriculture-related AMR is the quantity and quality of use of antimicrobials in livestock production and aquaculture. In developing countries as much as several hundred thousand tons may be used every year, agricultural use probably exceeds medical use, and most use is probably in intensive systems. The underlying driver for antimicrobial use and development of AMR is the livestock and aquaculture revolution that is the rapid growth in intensive production systems in response to increased demand for livestock and fish products. Based on livestock intensification patterns, China, Brazil and India are current hotspots, and future hotspots with fastest growth of the intensive livestock sector in Myanmar, Indonesia, Nigeria, Peru and Vietnam. China is a hotspot for aquaculture and Indonesia, Thailand, Vietnam, Bangladesh, India and Chile are other countries where antimicrobial use in fish production may be problematic. AMR is intrinsically a global problem that can only be managed at supra-national scale and the current strong momentum to take action on AMR provides an opportunity to address the problem globally and comprehensively, addressing medical and veterinary use. This will require better evidence on the use of antimicrobials in agriculture, the impacts of this use on human and animal health, the acceptability and feasibility of stricter control of antibiotic use in agriculture, and the costs and benefits of stricter control taking into account trades offs between overuse and lack of access to antimicrobial drugs.
Carl Llor
A Family Physician at the University Rovira i Virgili and works as a GP at the Primary Healthcare Centre Jaume I, in Tarragona. His primary research interests include infectious diseases in the community, particularly respiratory tract infections, urinary tract infections, rational use of antibiotics, and utilization of rapid diagnostic tests for infectious disease in primary care. He is a member of numerous professional societies, including the Spanish Society of Family Medicine (semFYC), the General Practice Respiratory Infections Network (GRIN-WONCA). He is also a member of the Group of Study for Infectious Diseases in Primary Care in semFYC.

Over-the-counter sales of antimicrobials
Carl Llor, Maria Guinovart, Josep M. Cots, Ana Moragas. Research Institute of Primary Care Jordi Gol i Gurina, Barcelona, Catalonia

Over-the-counter sale of antimicrobials is common outside northern Europe and North America and should be accounted for in public health efforts to reduce antimicrobial resistance. In general, governments support and encourage policies on the prudent use of antimicrobials in order to control resistance and recommend control measures to support this careful use by promoting the appropriate use of antimicrobials from the doctor and the pharmacist to the patient. However, implementation has generally been weak in many countries, and the prevalence of bacterial resistance continues to increase since antimicrobial resistant bacteria are common in communities with frequent non-prescription use. Over-the-counter sale of antibiotics is associated with storage of antibiotics. With the use of a mystery shopper who presented at community pharmacies with three different clinical scenarios requesting an antibiotic in 2014, our group observed that in Spain these drugs were sold in 54.1% of the cases. The pharmacists who refused to sell antibiotics without a prescription gave responses related to health or resistance issues in only 30% of the cases. Similar results were also observed in other studies carried out previously. In another study carried out in the same area, 38.2% of patients claimed to have antibiotics stored at home, being amoxicillin and clavulanate the most frequently stored. Despite being illegal, these drugs are still freely available for purchase without a medical prescription in our country, thereby aggravating self-medicating. Another factor is the patients’ non-adherence to antibiotic therapy. Our group observed an intentional non-adherence of 35% plus an unintentional non-adherence of 30% to antibiotic regimens for respiratory tract infections with the use of Medication Event Monitoring System containers, resulting in the presence of some leftover drugs that might be used on future occasions by the members of the household. In-home antibiotic storage could also increase the risk of self-prescription of antibiotics to families and friends. Safety issues associated with non-prescription use include adverse drug reactions and masking of underlying infectious processes. Antimicrobial resistance is a global issue. Eliminating the dispensing of antibiotics without a prescription constitutes one of the most valuable strategies to accomplish this objective.
Day 2 | Antimicrobial Resistance | 11.30 – 13.00

Arturo Anadón, DVM, PhD, DipECVPT
Full Professor and Head of Department of Toxicology and Pharmacology, Faculty of Veterinary Medicine, Universidad Complutense de Madrid (Spain). Professional Positions, Government Committees and Academies held:
Scientific Expert in Biological Sciences for the Joint FAO/WHO Expert Committee on Food Additives (JECFA), WHO, Geneva, Switzerland, 2003-Present. Membre Associé Etranger de l’Académie Vétérinaire de France, 2001-Present, Corresponding Member of the Royal National Academy of Pharmacy, 2005-Present, Member and President of the Royal National Academy of Veterinary Sciences, 2011-Present, Foreign Corresponding member of the National Academy of Agronomy and Veterinary, Argentina, 2011-Present, President of the Royal National Academy of Veterinary Sciences, 2011-Present, Member and Vice President of the Spanish Committee for Veterinary Medicinal Products, Spanish Agency for Medicinal Products, Madrid, Spain, 2012-Present, Member of the Royal National Academy of Doctors, 2013-Present, 2013-Present, Member and President of the Consumer Section of the Scientific Committee of the Spanish Consumer, Food Safety and Nutrition Agency, Madrid, Spain, 2014–Present, Honorary member of the Royal Academy of Medicine, Tenerife, Spain.

Examples of Responsible Antimicrobials Use in Veterinary Practice
The responsible use of antimicrobials drugs for treat and prevent diseases in animals for therapeutic and prophylactic purposes is one of the major skills of a veterinarian and is crucial to animal welfare and maintenance of public health. Containment of antimicrobial resistance relies on a transverse, integrated, and globally approach. The human, animal and plant sectors all have a shared responsibility and role in efforts to prevent and minimize antimicrobial resistance selection by both human and non-human use of antimicrobials. The risk mitigation measure most important to decrease the risk of antimicrobial resistance from the use of antimicrobials agents in animals is to promote their responsible use (also termed ‘prudent use’); responsible use optimizes clinical efficacy while minimizing development of resistance. In recent years, various international organizations such as WHO (World Health Organisation), OIE (World Organisation for Animal Health), FAO (Food and Agricultural Organisation) and EU Commission have emphasized the importance of responsible antimicrobial use in animals. This has been recognized by professional associations such as WVA (World Veterinary Association), COMISA (World Federation of Animal Health Industry), FVE (Federation of Veterinarians of Europe), EPRUMA (European Platform for Responsible Use of Medicines in Animals), AVMA (American Veterinary Medical Association), BSAVA (British Small Animal Veterinary Association) and organizations for veterinary practitioners, diagnosticians, and researchers interested in poultry, pigs, cattle, and equines among other. All these entities have emphasized that responsible antimicrobial use is important, not only to safeguard the efficacy of antimicrobial drugs in veterinary medicine, but to prevent the emergence and spread of undesirable resistance phenotypes in zoonotic pathogens and in commensal bacteria that can be transmitted between animals and humans. All of these organizations and authorities formulated a set of principles; particular attention was devoted to addressing both benefits to animal health and consequences to public health. These principles embrace the disease prevention, the diagnosis tests (including antimicrobial susceptibility test), the restriction of new and critically important antibiotics, the minimum prophylactic use of antimicrobials, the justification of correctly antimicrobial use, the choice of an appropriate antimicrobial product, the dosage regimen and route of administration and the ethical aspects related to compulsory prescription of antimicrobial drugs (i.e. never should be prescribed without doing an examination and clinical diagnosis). Moreover, other principles are included such as recommendations to avoid ‘off label use’ whenever possible, to keep accurate records of treatment and outcome to help evaluate therapeutic regimens, and to report suspected treatment failure to the antimicrobials.
Arnauld Nicogossian, MD, FACPM, FACP

Arnauld Nicogossian is a Distinguished Research Professor and Director of the Center for Study of International Medical Policies and Practices, at the School of Policy [CSIMPP.gmu.edu], Government and International Affairs, George Mason University (SPGIA/GMU). He conducts research in medical and health policy, and teaches the concentration and certificate “Global Challenges and Threats and Medical Policy” graduate courses that he helped create for GMU. He is also the Director of Public Policy for the International Society of Microbial Resistance (ISMR). Dr. Nicogossian served as the National Aeronautics and Space Administration (NASA) Associate Administrator for Life and Microgravity Sciences, Designate Agency Health and Safety Official, Chief Medical Officer and Senior Advisor for Health Affairs. Dr. Nicogossian is a diplomate of the American Board of Preventive Medicine (Aerospace), holds a Masters in Science degree from the Ohio State University. He is licensed to practice medicine in four States. He served as President of three professional societies. He is a fellow of the American College of Physicians, American College of Preventive Medicine, Aerospace Medical Association, and the American Astronautical Society and is a full member of the International Academy of Astronautics. Dr. Nicogossian is a Foreign Member of the Armenian Academy of Sciences and a Distinguished Lecturer at the Moscow State University, Russia. He is the recipient of numerous awards and medals from the U.S. and foreign governments for contributions to space medicine, medical education and humanitarian assistance using telemedicine. Dr Nicogossian research interest is in program management, strategic planning, health and medical policy analysis and evaluation, global public health, aerospace and extreme environments and internal medicine. His work has been cited 1,164 times (h-index 17 and i10-index 35).

Education to Avoid Antimicrobial Resistance [AMDR]

**Background and Statement of the Problem:** Inappropriate and careless use of antibiotic drugs in healthcare and agriculture is a major contributing factor to the rise of AMDR. In 2005, the WHO reported that more than 50% of all medicines (including antibiotic drugs) are prescribed, dispensed, or sold inappropriately, with 50% of patients failing to take them correctly (World Health Organization 2010). Today fewer new antibiotics are being developed, and with increases in treatment failure rates a significant burden is placed on patients and the health care system.

**Approach:** Literature, using data from systematic reviews, identifies effectiveness of educational programs for medical, veterinary and allied professionals. Additional information was identified suitable for information for the agricultural sector and consumers, including political leaders. Plans and guidelines for agricultural use of antibiotics by US and EH were reviewed.

**Conclusions and Policy:** In the fall of 2008 the World Medical Association (WMA) updated its 1996 resolution on microbial resistance, in response to the risk of an emerging AMDR pandemic (World Medical Association 2011). This action was sponsored by the American Medical Association. The School of Public Policy at George Mason University contributed to the peer review and update of the proposed resolution. Additional efforts are necessary to inform the developing economy countries. Effective educational and outreach programs in developing economy countries, targeting all producers, users and consumers of antibiotic drugs did yield positive actions.

**References**

3. U.S. President’s 2016 Budget Proposes Historic Investment to Combat Antibiotic-Resistant Bacteria to Protect Public Health
Dr. Juan Jose Rodriguez Sendin

Dr. Rodriguez Sendin started his institutional career as National Representative of Medicos Titulares at the Spanish Medical Council (1986-2002). During this time he founded the Spanish Federation of Medicos Titulares Associations (1984) and was Secretary General of this group of physicians within the Spanish Federation of Physicians Trade Unions. Member of the Spanish Delegation at UEMO (1987-1992) Dr. Rodriguez Sendin also founded the Sociedad Española de Medicina General (Spanish Society of General Medicine, SEMG) in 1988, and was President of this society from 1995-2001. From June 2002 until April 2009 he was Secretary General of Consejo General de Colegios Oficiales de Médicos (Spanish Medical Council). Since April 2009 he is the President of Consejo General de Colegios Oficiales de Médicos (Spanish Medical Council).
Day 2 | Other Aspects of One Health | 14.30 – 16.30

General considerations

Professor Alasdair “Alex” Cook
A veterinary epidemiologist with more than 25 years national and international experience in livestock animal health in Government, academic and development environments. He joined the new School of Veterinary Medicine in the University of Surrey in January 2013 where he is Head of the Department of Veterinary Epidemiology and Public Health. Previously, he worked in the Animal Health and Veterinary Laboratories Agency (AHVLA) where he was a senior member of staff engaged in leading research and surveillance programmes. His interest in epidemiology grew from working in farm animal veterinary practice in the UK and in preventive veterinary medicine. A decade of overseas experience in Yemen, Zambia and Mexico working with disadvantaged rural communities underlined the important role that veterinary epidemiology plays in supporting animals in sustainable livelihoods and poverty alleviation. A professional life engaged with and leading multi-disciplinary teams makes Alex a natural proponent of the One Health perspective. Alex’ research interests are primarily in the epidemiology and control of zoonotic diseases, especially foodborne zoonoses. He also has a strong interest in surveillance and the impact of endemic disease on farm animal welfare and productivity. He is a firm believer in a multi-disciplinary team approach to research.

Evaluating the interactions between people and animals in different environments from a One Health perspective
One Health has many definitions and arguably, may have become debased through use as a “flag of convenience” by diverse interests. However, the purpose of One Health in stimulating new approaches to understanding the interactions between people and animals in a shared environment and the impact of these interactions upon health remains valid. In this presentation, examples of different patterns of interactions will be compared and contrasted. These will include for example, companion animals kept in a family home environment in a relatively wealthy society, intensive livestock production systems and the population that is supplied by them and small scale, backyard or subsistence systems in less developed economies. Key parameters that indicate the nature and risk of interactions will be considered - for example, the hazards that may exist, the cultural behaviours that may mitigate or amplify risk, the potential size of the animal and human populations and their connectivity and the environmental factors that may be implicated.
General considerations

Thijs Kuiken
After graduating as a veterinarian from Utrecht University in 1988, Dr Kuiken worked in London, England, for three years as a marine mammals stranding coordinator for England and Wales. There he discovered that a large proportion of small cetacean strandings on the British coast were caused by accidental entrapment in fishing nets. He did his Ph.D. from 1993 to 1998 at the University of Saskatchewan, Saskatoon, Canada, where he characterized the epidemiology of Newcastle disease in the double-crested cormorant. Following his Ph.D., Dr Kuiken specialized in pathology and moved to the Department of Viroscience at the Erasmus University Medical Centre in Rotterdam, The Netherlands, in 1999, where he is now Professor of Comparative Pathology. He was part of the team that identified the etiological agent of Severe Acute Respiratory Syndrome (SARS), and determined that avian H5N1 influenza virus was highly virulent for cats and other carnivores. Recent achievements of his group include the discovery of novel routes of entry of influenza virus in mammalian hosts, identification of an unusual pattern of attachment of the recently emerged H7N9 influenza virus to the human respiratory tract, and elucidation of the clinical effect of influenza in the wild bird reservoir. His current focus is the pathogenesis of influenza-associated pneumonia and encephalitis, comparison of viral infections between bats and people, and identification of underlying factors for viruses to cross the species barrier from wildlife reservoirs to humans.

One Health approach to use of veterinary pharmaceuticals
Use of veterinary pharmaceuticals (VPs) is much greater than is generally appreciated. Based on annual 2004 data, about 6050 tons of active substances went into the production of VPs for food animal treatment in the EU, and their use is predicted to increase. While VPs may benefit health and welfare of domestic animals and efficiency of food animal production, they can contaminate the environment and threaten non-target species, including humans. The example of diclofenac illustrates the inadequacy of the current system of environmental risk assessment. During the 1990s, populations of Gyps vultures’ endemic to South Asia were reduced to near extinction. The non-steroidal anti-inflammatory drug diclofenac was identified as the primary cause of these declines. India, Pakistan, Nepal, and Bangladesh banned production, importation and sale of veterinary diclofenac, and over the past eight years, vulture population declines in South Asia have slowed. Despite this history, Spain authorized the marketing of diclofenac for farm animals in 2013. Given the extremely high sensitivity of vulture populations to diclofenac, it is insufficient to rely on regulatory guidance of the disposal of treated carcasses to guarantee the safety of European vultures. It is clear, then, that veterinary use of diclofenac should be suspended in the EU. Although providing important checks on applications for new VPs, there are flaws in current environmental risk assessment. Because we may never have the knowledge required to adequately assess their environmental risk, we should aim to prevent environmental contamination with VPs in the first place. To do so, we advocate a "cradle-to-cradle" stewardship programme for VPs that promotes a culture of environmental responsibility, involves all sectors of society and considers environmental effects during their production, use, and disposal. This would mirror similar programmes that have been proposed for human pharmaceuticals and personal care products and would help to restrict the effects of pharmaceuticals to where they belong: in the target species. This integrated effort to link the health of people, animals and the environment is a good example of the One Health approach, and would make an important step in the transition to a more sustainable society.
Yoshitake YOKOKURA, MD
Dr. Yoshitake Yokokura graduated from Kurume University School of Medicine in March, 1969, and worked for the surgery department of the University as an assistant. After that he worked for the surgery department of the Detmold Hospital in West Germany for two years. He has served as president of Yokokura Hospital since 1990. He took office as President of the Fukuoka Prefecture Medical Association in 2006. He was elected as President of the Japan Medical Association in April 2012. He is also serving Council Member of the World Medical Association.

Japan Earthquake 2011 and Fukushima nuclear Accident - experience and Physicians–Veterinarians collaboration to recover
The Great East Japan Earthquake that hit Japan on March 11, 2011, induced massive tsunami and subsequent explosion accidents at the Fukushima Daiichi Nuclear Power Plant of Tokyo Electric Power Company. The area within 20-km radius of the plant was designated as the restricted zone, and the area within 30-km either became the deliberate evacuation zone or emergency evacuation-ready zone. It was a catastrophe of unprecedented scale, forcing many residents to evacuate. Those who evacuated experienced drastic changes in their living environment and developed health concerns including stress. Although local physicians and medical institutions had also suffered damage, they willingly engaged themselves in the care of the disaster victims at shelters and other places. Disaster management cannot be completed without the efforts of these local physicians and medical institutions. The Japan Medical Association Team (JMAT) is a disaster medicine program of the Japan Medical Association. Including the JMAT II teams that were sent to prevent further disaster-related deaths and deterioration, about 2,500 teams consisting of 11,000 members were dispatched. Medical activities in the event of a disaster require crisis management to deal with unexpected situations, which is far different from risk management. So, one must promptly make a decision and implement it on sites while gathering as much information as possible. JMAT activities are comprehensive medical activities, and its foundation lies in the origin of medicine that transcends fragmented domains of modern medicine. As long as this origin is shared, and when times and places are properly coordinated at disaster sites for community medicine, those involved would realize that all of their expertise and activity styles that vary among team members were actually needed. Therefore, our efforts to further participate in the national disaster management planning collaborate with agencies and organizations involved, and establish solid information sharing methods amount to sound disaster preparedness. Such efforts are also needed to effectively demonstrate the total ability in managing a potential large-scale disaster. That is all the more reason that we believe it is essential to realize the need for physician-veterinarian collaboration and the importance of how we should approach it. In order for the evacuation zones that resulted from the Fukushima nuclear accident to recover, the communities require health support for local residents as well as the reconstruction of environment in which healthy biodiversity can be sustained. Other efforts such as environmental monitoring for local residents for both evacuation zones and the adjacent areas and securing food safety including rumours and misinformation control are also vital. For these efforts to succeed, it is important for medical associations and veterinary medical associations to reinforce our collaboration as the fellow health-related professions.
The Recovery from the Great East Japan Earthquake: The Role of Veterinary Professionals and Future Prospects

Caused by a huge earthquake (magnitude of 9.0/maximum seismic intensity of 7) that struck off the Sanriku Coast on March 11, 2011, and the subsequent tsunami, the Great East Japan Earthquake disaster left some 20,000 people either dead or missing. Moreover, the tsunami also caused a terrible accident at the TEPCO Fukushima Daiichi Power Plant. Today, four years after the disaster, recovery in the disaster zone is proceeding steadily, but there are still some 230,000 people living as evacuees. Many household animals and livestock also perished or went missing in the disaster. In the disaster’s aftermath, the Japan Veterinary Medical Association (JVMA) has provided cooperation in rescuing and sheltering animal disaster survivors, treating injured and sick animals, providing advice to animal owners living in evacuation centers or temporary housing on how to care for their animals, providing support for veterinarians undertaking animal rescue activities, and operating animal rescue shelters. In particular, the “Headquarters for the Relief of Animals in Emergencies”—operated by the JVMA in cooperation with related animal welfare organizations—fulfilled a major function. Aimed at ensuring the lifestyle infrastructure required by the general public and improving people’s lifestyles, the JVMA’s activities include providing guidance regarding the treatment of animals and prevention of animal diseases, monitoring food and environmental sanitation and safety, and preventing zoonotic diseases. In addition, the JVMA promotes general countermeasures for major earthquakes—which may occur again in the future—and with the conclusion of a memorandum of cooperation between the World Medical Association (WMA) and World Veterinary Association (WVA) in 2012, the JVMA concluded an academic agreement with the Japan Medical Association (JMA) on November 20, 2013, aimed at realizing the principle of “One World, One Health”. Furthermore, the 22 local veterinary medical associations under the umbrella of the JVMA have similarly concluded academic agreements with local medical associations. In this way, the JVMA is collaborating with the JMA and dedicating all its efforts to achieving recovery from the Great East Japan Earthquake disaster and building a safe and secure society.

Isao Kurauchi, DVM PhD
Born on December 7, 1953 in Chikugo City, Fukuoka Prefecture. Graduated from the Department of Veterinary Medicine, Faculty of Agriculture and Veterinary Medicine, Nihon University in 1979. After working as a clinical veterinarian, elected for the first time to the Fukuoka Prefectural Assembly in 1987. Subsequently elected for seven consecutive terms (28 years) and still in office at present. In 2001, appointed Chairman of Fukuoka Prefectural Assembly. During the period, graduated from the Graduate School of Agriculture, Kyushu University and received a doctoral degree. Served as President of the Fukuoka Prefecture Veterinary Medical Association as well as a Director and Vice President of the Japan Veterinary Medical Association (JVMA) from 1993 to 2013. Appointed President of JVMA in June 2013.
Gregorio Torres’ profile
Gregorio Torres obtained his veterinary degree in Cordoba University (Spain) and continued his postgraduate education in Glasgow University and London University where he specialised in veterinary epidemiology. After some years working as a large animal practitioner in the UK, he joined the Spanish Veterinary Services where he worked for the Epidemiology Department being involved in the design and management of official disease control programmes with regular participation in technical working groups and field missions at national and international level.
Currently, Gregorio is working for the World Organisation of Animal Health (OIE), based in Paris. He is responsible for the secretariat of the Scientific Commission for Animal Diseases being also actively involved in a range of activities to address emerging diseases. He serves as the OIE focal point for scientific aspects of rabies control under the OIE/WHO/FAO Tripartite Secretariat sharing responsibilities and coordinating global activities to address health risks at the human–animal–ecosystem interface under the auspices of the One Health concept.
Juan José Zárate-Ramos, Dr. MSc, BVetMed

Dr. Juan José Zárate-Ramos obtained his Veterinary Medicine Degree in 1988 after studying for 5 years in the Faculty of Veterinary Medicine at University of Nuevo Leon, Mexico. He holds a Master degree in microbiology that obtained in 1997 and also holds a Doctorate Degree from the University of Zaragoza, Spain (2002). In 2002, Dr. Zarate returned to the Faculty of Veterinary Medicine at the University of Nuevo Leon as a professor and has been teaching Veterinary Parasitology for more than 25 years. He is a certified parasitologist by the National Certification Board of Veterinary Medicine and Animal Science in his home country. He is also Board Member of the National Council of Education of Veterinary Medicine, Member of several Academic and Institutional Committees for the Evaluation of Higher Education, Member of the National System of Researchers (Level I) and has been distinguished for having a Desirable Profile as Professor (PROMEP) by the Secretary of Education. He has supervised more than 60 undergraduate thesis and 20 graduate thesis, has published more than 50 scientific papers on indexed or arbitrated international journals, and more than 26 articles in popular science magazines in Mexico. He has also co-authored two books and has been recipient of a prestigious technological award in Mexico entitled TECNOS for his design of splints to correct metacarpal fractures in cats. He is currently Dean of the Faculty of Veterinary Medicine at the University of Nuevo Leon, the third largest public university in Mexico. Under his direction, the Faculty of Veterinary Medicine at UANL has been regarded as one of the 16 only accredited Veterinary Schools in Mexico. For his achievements, he is also serving as Secretary of the College of Veterinarians in his state, and as president of the Mexican Association of Veterinary Medicine Schools and Colleges.

Introduction of the “One Health” concept in the Veterinary Medicine curriculum

Our world system is facing evident and unavoidable consequences of policies that have led to unsustainable development. Climate change and the reduction of biodiversity are clear examples of how the anthropogenic activity, now inserted into globalization, has generated substantial impacts in the planet. This has consistently led to a condition of global health problems. Training and conventional practice of veterinary medicine and animal science share some responsibility for this situation. Course work focused on learning the importance of environment-animal-human interactions, especially highlighting zoonoses, is been already considered in the veterinary curricula. Activities to develop research and collaborations among professionals in other medical areas have also been commonly supported at some extent. However, along with the longstanding clinical focus for companion animal medicine resulting from increasing urbanization, there is also a trend towards increasing fragmentation and specialization in animal medicine, wildlife, ecology, public health and other diagnostic and therapeutic areas. This gap is even more remarkable between human and veterinary medicine. So far, there are not common courses taught in neither one of these disciplines that cover the impacts of climate change over ecosystems and reduction of biodiversity, effects on emissions and waste management or environmental health that includes the central concept of "One Health". It is then imperative to promote a cultural and attitudinal change that promotes collaborative work between different branches of the universal medicine. This change must include both faculty and students in pre-clinical and clinical stages of any medical and environmental schools. This change also requires the establishment of suitable spaces for interactions and exchange of ideas that allow generating and applying the necessary knowledge to address the challenges faced in animal and human health today. The paradigm of "One Health" requires more than understanding its concept but to strengthen leadership skills, interdisciplinary work, communication and recognition of the importance of breaking down barriers of prejudice that contribute to ensure a holistic environment-animal-human health in a global changing climate.
Considerations for the future of One Health Concept

Sarah Krones
Sarah Krones is a Doctor of Veterinary Medicine/Masters of Public Health degree candidate in the Class of 2016 at the Virginia/Maryland College of Veterinary Medicine, Virginia Polytechnic Institute and State University, Virginia, USA. Her focus is on public/corporate medicine and public health education. She earned her Bachelors of Science in environmental science and wildlife management in 2005 from the University of Maryland at College Park, MD, USA. She participated in a sustainable development project with Kakute in Arusha, Tanzania; spent two years teaching high school science and as an outdoor environmental educator; and developed and managed a community garden resource network in Baltimore, MD. She has worked on a number of organic farming operations around the country and prior to veterinary school, owned and managed a small market farm. She currently serves as the 2014/2015 Chair of the Standing Committee on One Health for the International Veterinary Students’ Association. Projects have included overseeing the nine-member committee; supporting student projects for the Global One Health Challenge on World Rabies Day as a partner of the Global Alliance for Rabies Control; forming relationships with the International Federation of Medical Students’ Associations and the International Pharmaceutical Students Federation; and developing materials and methods to promote One Health education and collaboration between students in the medical field. Sarah is also a founding member of the Virginia Tech One Health Club, past president of the Integrative Veterinary Medicine Club, and works part-time in the college’s small animal intensive care unit.

One Health Education for the Future of Doctors and Veterinarians
Sarah Krones, IVSA, and Skander Essafi, IFMSA

Experience in multidisciplinary collaboration should start at university training level. When we achieve this, collaboration within the next generation of healthcare workers will be even more successful that it already is. As student organization partners, we recognize that animal, human, and environmental health are inextricably linked. Together we will not only increase the content and reach of education, supplies, and disease prevention and treatment, but build strong bonds between the professions that will last into the future. One method to start this collaboration is to cultivate awareness and opportunities within the medical curricula to engage in both abstract and practical applications of One Health. In addition, encouraging students in diverse medical fields to meet during extra-curricular activities can help form bonds that are the basis of collaboration. Issues of local interest, and international awareness and disease prevention days, present some opportunities for One Health education and collaboration. IVSA is the largest veterinary student association in the world, representing around 30,000 students in more than 40 countries. IFMSA represents more than one million medical students globally. A formal Memorandum of Understanding was signed in 2014 to shape our collaboration. We also work closely with the International Pharmaceutical Students Federation and encourage all of our members to work together on local and national scales.
Considerations for the future of One Health Concept

Skander Essafi
A 5th year medical student in the medical faculty of Sousse, Tunisia. He is currently the Public Health Director of the International Federation of Medical Students Associations (IFMSA) for the term 2014-15. Skander is involved in public health from the first years of his medical studies at different levels. He is now responsible for the development of the Standing Committee on Public Health through activities that are in line with its plan of action, vision and mission. He is also committed about the One Health Initiative as he is trying to get the members more involved and to increase the collaboration with the international Veterinary Students Associations at several occasions.

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Day 2 | Other Aspects of One Health | 17.00 – 19.00

Considerations for the future of One Health Concept

Dr. Margaret Mungherera
A Ugandan psychiatrist trained in Makerere University, Uganda, London School of Tropical Medicine and Hygiene. She has also had clinical forensic psychiatry training in Keel University, U.K. For 19 years she worked in Butabika National Mental Referral Hospital where she headed the Forensic Services. Margaret currently works as Senior Consultant Psychiatrist in Mulago National Referral Hospital. Margaret has chaired boards of several nonprofit organizations including the Uganda Human Rights Network. She is the first and only woman to serve as President of the Uganda Medical Association. She was the first African woman to be elected President of the World Medical Association and is now the Immediate Past President.

WHAT PHYSICIANS AND VETERINARIANS CAN LEARN FROM EACH OTHER?
Margaret Mungherera, Lawrence Mugisha
Senior Consultant Psychiatrist, Mulago National Referral Hospital and Immediate Past President, World Medical Association
Associate Professor, College of Veterinary Medicine, Animal Resources & Biosecurity, General Secretary, Uganda Veterinary Association (UVA)

The effective management of Zoonotic diseases requires collaboration between veterinarians and physicians. Both groups of professionals have specific responsibilities that they can do jointly that include public awareness, advocacy, training, research and diseases surveillance. There is however need for the two groups to regularly exchange information regarding diseases patterns, biological and social determinants of health and existing preventive and management strategies including policies and treatment guidelines. This paper will briefly outline areas that veterinarians and physicians can and should learn from each other.
The WVA/WMA would like to thank very much the A.M.A. insurance company for the great contribution to the organization of the One Health Conference and for the support of the Spanish health professionals.

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