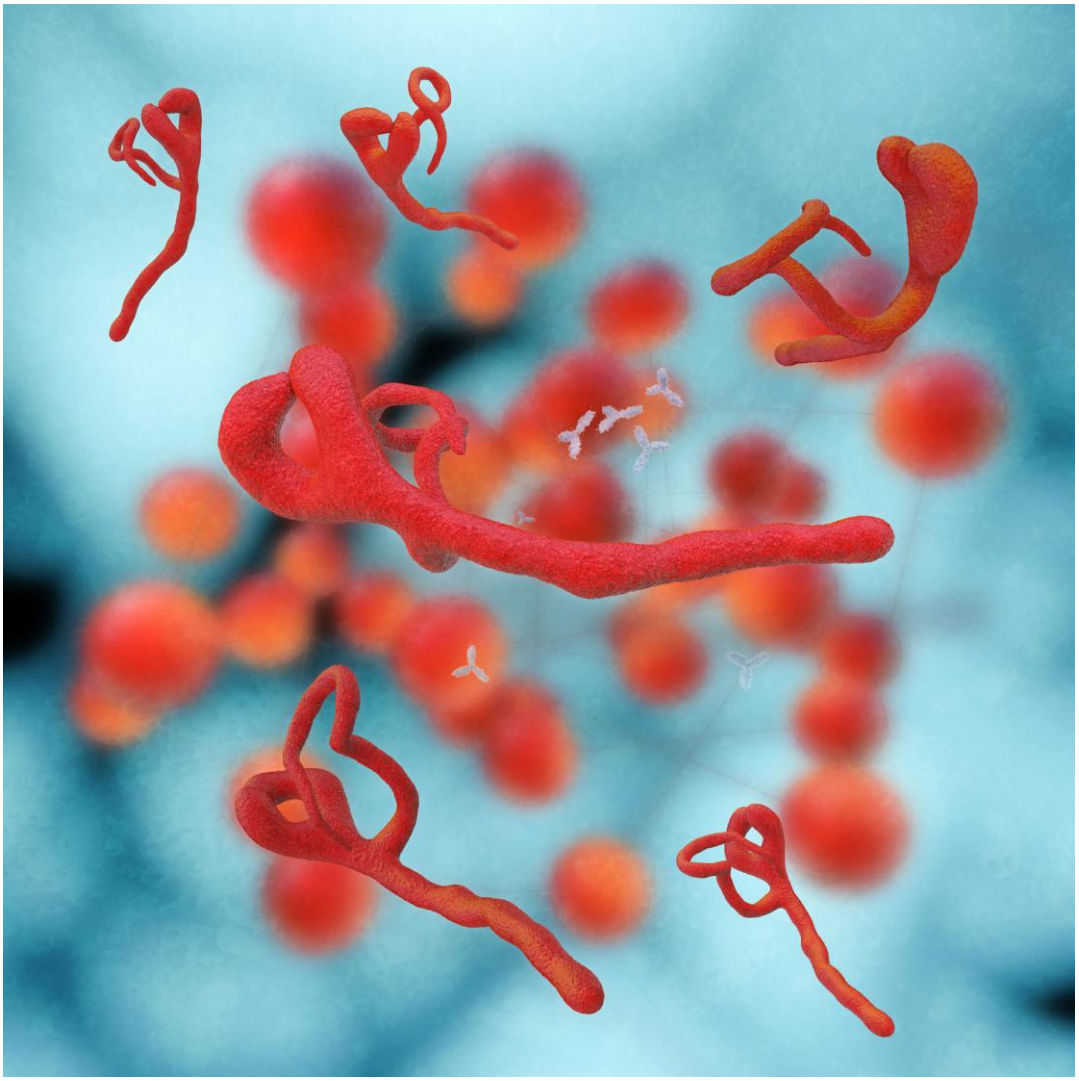

EBOLA, MERS & CO.

On the Trail of Infectious Diseases

Press Information
October 31, 2014

http://imed.isid.org

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Welcome to the Press Conference

EBOLA, MERS & CO. –
On the Trail of Infectious Diseases

On the occasion of the
International Meeting on Emerging Diseases and Surveillance (IMED 2014)
from October 31 to November 3, 2014 in Vienna

On the Podium:

- **William KARESH**, DVM (USA) – EcoHealth Alliance, Executive Vice President for Health and Policy:
  "The OneHealth concept in the context of Ebola and MERS: How the health of humans is connected to the health of animals and the environment"

- **Lawrence MADOFF**, MD (USA) – Editor, ProMED-mail:
  "Stalking Ebola: Where will it strike next?"

- **Jack WOODALL**, MD (Brazil) – Associate Editor ProMED-mail: "How can we stop outbreaks?"

- **Oyewale TOMORI**, DVM, PhD (Nigeria) – President of the Nigerian Academy of Science:
  "Nigeria's response as an example of how to stop Ebola"

- **Hilde DE CLERCK**, MD (Belgium) – Médecins Sans Frontières:
  "From the frontline of the Ebola outbreak"

- **Pamela RENDI-WAGNER**, PhD (Austria), Director General for Public Health, Austrian Federal Ministry of Health

Available for questions:
Norbert NOWOTNY, PhD (Austria) – Institute for Virology, University of Veterinary Medicine, Vienna

Britta Lassmann, MD (USA) – Program Director, International Society for Infectious Diseases (ISID)

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www.isid.org
www.promedmail.org

2. International Meeting on Emerging Diseases and Surveillance (IMED 2014)

Global Conference to Examine Transmission, Prevention, and Reporting of Infectious Diseases

International Meeting on Emerging Diseases and Surveillance (IMED 2014)
October 31 – November 3, 2014

Infectious diseases cross all national and regional boundaries. To explore and develop effective long term solutions that require global scientific exchange and cooperation, the International Society for Infectious Diseases (ISID) and its Program for Monitoring Emerging Diseases (ProMED) will convene the world's most renowned scientists, researchers, and thought leaders in emerging infectious diseases to present new data and discuss potential responses to emerging disease threats at the International Meeting on Emerging Diseases and Surveillance (IMED) 2014 in Vienna, Austria. More than 1000 participants are expected.

Highlighted topics of IMED 2014 will include:

- New studies and updates on MERS, Ebola, Chikungunya, Avian Influenza, Anthrax, West Nile Virus, Hantavirus and others.
- How can we prevent the spread of Ebola?
- Is there a tool or system that can predict flu outbreaks?
- What are the effects of transmitting infectious agents from animals to humans?
- What are the important ethical issues in using "big data" for the surveillance of emerging infectious diseases?
- After examining innovative models of disease surveillance, detection, and reporting, which systems work best?
- The OneHealth Model: Addressing the connections between human health, animal health, and the environment

More information, including a list of speakers and topics: http://imed.isid.org

3. FAQs about emerging infectious diseases & Co.

What are emerging infectious diseases?
An emerging infectious disease is an infectious disease that has newly appeared in a population or that has been known for some time but is rapidly increasing in incidence or spreading to new geographic areas. If the disease had been present at the location in the past and was considered eradicated or controlled, the disease is considered to be re-emerging.

Examples of recently emerged pathogens:
- MERS-CoV
- Avian Influenza virus
- West Nile virus
- Dengue virus
- Chikungunya virus
- Ebola virus

Examples of re-emerging infections:
- Infections related to antimicrobial resistance such as MRSA, gram-negative infections, multidrug resistant tuberculosis and syphilis
- Cholera in Haiti

Factors that contribute to disease emergence include population growth and migration, changes in land use, deforestation, climate change, international travel and trade, and weak and under-funded public health systems.
Not every newly identified infectious disease outbreak has major public health implications, but a few have resulted in significant morbidity and mortality as well as significant economic losses and interruptions in trade and travel (Avian influenza, Ebola).
The majority of emerging infectious diseases in humans are zoonotic infections caused by viruses.

What are zoonotic infections?
Zoonotic infections are diseases that pass from animals to humans.
Zoonotic infections can be of the following types:
1. Infections transmitted directly from animals to humans such as rabies
2. Vector-borne infections in which an animal or human is infected by the vector, for example a mosquito such as West Nile or
3. Infections in which animals act as a reservoir for disease transmission, including having the potential for contaminating human food and water sources such as Salmonella.

Examples for zoonotic infections include:
- Rabies
- Ebola
- Salmonella
- Avian Influenza

When it comes to carrying viruses that can jump from one species to another, bats stand out. Bats are the natural host species for Ebola and a variety of viruses, many of which can be fatal when transmitted to humans.

What is the One Health concept?
The One Health concept recognizes that the health of people is closely linked to the health of animals and the environment. Plant diseases affect food security and the economy with consequences for animal and human health; animal diseases affect human health indirectly through food security and directly through zoonotic diseases and the economy; and human diseases affect animals directly through reverse zoonosis and indirectly through neglect. The One Health approach encourages the collaborative efforts of the human health, veterinary health, and environmental health communities working

locally, nationally, and globally, to achieve optimal health for people, animals, and our environment.
The One Health concept has become more important in recent years because many factors such as population growth, globalization of commerce, finance, production, and services, environmental changes such as climate change and deforestation, ever-increasing movement of people, animals, plants, food, and feed have altered the interactions among humans, animals, and the environment. These changes have caused the emergence and reemergence of many diseases.

The World Health Organization (WHO), the Food Agriculture Organization of the United Nations (FAO), the World Organization for Animal Health (OIE), the Centers for Disease Control (CDC), and the European Union all support the adoption of the One Health approach to respond to emerging infectious diseases and outbreaks. Without a One Health approach to understanding all the inter-related factors affecting transmission and spread of emerging infectious diseases, prevention, management and elimination will remain beyond our reach.
The Program on Monitoring Emerging Infectious Diseases (ProMED) and the International Meeting on Emerging Diseases (IMED) strongly support the One Health concept. ProMED-mail covers emerging and re-emerging infectious diseases and toxic exposures of interest to the plant, animal, and human health sectors. IMED brings together experts of multiple disciplines - infectious diseases physicians, veterinarians, public health officials, plant biologists, virologists, environmental scientists and microbiologists - to come up with solutions to address the challenges and threats posed by emerging infectious diseases.
Example: MERS is a recently emerged zoonotic infection with a high fatality rate in humans. There remain significant gaps in understanding the linkages of MERS-CoV infections in bats, camels, and humans. An integrated 'One Health' framework to address these gaps and develop interventions to prevent current and future spillover of MERS-CoV is needed.

What is disease surveillance?
Disease surveillance is the ongoing collection, validation, analysis, and interpretation of health and disease data that are needed to develop plans and implement strategies relevant to the prevention and control of diseases and disease outbreaks.

Why is disease detection important?
The detection of disease - whether it is termed "emerging" or not - is critical for monitoring public health and informing decision makers as they respond to outbreaks. Surveillance systems are necessary for forecasting future events, outbreaks, disease incidence, morbidity, and mortality, and are essential for evaluating the efficacy and cost-effectiveness of response and containment strategies. Although these actions are often viewed in terms of human public health, they also apply to plant and animal health. Early warnings of outbreaks allow rapid institution of measures to contain and control the outbreak, reducing morbidity and mortality.

What are traditional methods for disease surveillance?
Disease surveillance traditionally begins with health care providers such as physicians, veterinarians, infection control practitioners, laboratorians, and medical examiners. These professionals are required by local and state health codes to report cases of certain specified infectious disease, referred to as "notifiable" diseases. Health department officials verify the disease reports they receive, track disease incidence, monitor trends to identify possible outbreaks, disseminate information, and, when necessary, issue alerts. The revised International Health Regulations (IHR[2005]) highlight the need for countries to reinforce surveillance and response systems that aim to rapidly detect and respond to public health events.

What are the limitations of traditional disease surveillance?
While traditional surveillance remains the backbone of public health surveillance for communicable diseases, it has proven to be less effective in ensuring prompt recognition of emerging problems.
Burgeoning globalization of commerce, finance, production, and services has fostered ever-increasing movement of people, animals, plants, food, and feed. With the freedom of passage of people and goods comes the widespread dispersion of the microbes that cause infectious diseases. Outbreaks that begin in the most remote parts of the world now spread swiftly to urban centers in countries far away. Rapid recognition and response to potential pandemics and emerging diseases have become essential global health priorities, but public health efforts to expand and improve the collection of data and speed the sharing of information have lagged behind, hindered by the failure of the economic and trade sectors to embrace the urgency of supporting a parallel globalization of public health. In addition, delays in the reporting of data through official channels can negatively impact the timely communication of vital information.
This is where non-traditional forms of disease surveillance become important.

What are non-traditional forms of disease surveillance?
Internet based surveillance systems offer novel means of monitoring the emergence of infectious diseases and detect outbreaks early. Critical components of internet based surveillance systems include broad sources of information, including those outside the traditional health and public health sectors. This requires personnel trained in field epidemiology and digital disease detection, and regional and interdisciplinary networks of infectious disease stakeholders to foster communication and coordinated response.
Participatory surveillance systems utilize data obtained directly from the general population and therefore can be the earliest indications of outbreaks. "Flu near you" is an example, where people directly report flu-like symptoms to a central database, allowing early indications of influenza activity.
Examples of systems for non-traditional disease surveillance include:

- ProMED (ISID)
- HealthMap (Children's Hospital, Harvard Med School)
- Global Public Health Intelligence Network (GPHIN- Public Health Agency of Canada)
- Medisys (European Union)

How can we stop outbreaks?
Barring the complete elimination of specific microbes from the environment (such as the successful effort to eradicate smallpox), we probably cannot prevent outbreaks of infectious disease. However, we can contain the spread of disease even in a profoundly interconnected world. To do so requires that we make plans for appropriate and efficient responses when outbreaks do occur, prepare health workers through training and practice, and earmark financial reserves to support active vigilance for signs of outbreak, speedy recognition of its presence, rapid diagnosis of its microbial cause, and coordinated global implementation of strategies and resources.

About ProMED-mail and ISID

ProMED-mail
ProMED-mail is an internet-based reporting system dedicated to rapid global dissemination of information on outbreaks of infectious diseases. ProMED-mail is open to all sources and is free of political constraints. Sources of information include media reports, official reports, online summaries, local observers, and others. A team of expert human, plant, and animal disease moderators screen, review, and investigate reports before posting to the network. Reports are distributed by email to direct subscribers and posted immediately on the ProMED-mail web site, Facebook, and Twitter seven days a week. Subscription is free of cost. ProMED-mail reaches more than 70 000 subscribers in at least 185 countries. Subscribers include infectious diseases practitioners, government

agencies, public health workers, microbiologists, veterinarians, journalists, and individuals interested in infectious diseases. By providing up-to-date and reliable news about threats to human, animal, and plant health around the world, public health precautions at all levels can be taken in a timely manner to prevent epidemic transmission and to save lives.
In addition to its global English-language service, ProMED has also built regional networks in the Middle East and North Africa, East and West Africa, and South Asia, and offers local language coverage of emerging infectious diseases in the Portuguese- and Spanish-speaking countries of Latin America, in Francophone West Africa, and in the Russian-speaking independent states of the former Soviet Union.
www.promedmail.org

The International Society for Infectious Diseases (ISID)
ISID is a global membership organization committed to improving the care of patients with infectious diseases, the training of clinicians and researchers in infectious diseases and microbiology, and the control of infectious diseases around the world. The Society recognizes that infectious diseases cross all national and regional boundaries and that effective solutions require international collaboration and exchange. ISID has a membership of over 81,000 from 201 countries.
ISID's activities include:

- Academic conferences in the area of infectious diseases. The next International Meeting on Infectious Diseases (ICID) will take place in Hyderabd, India, in March 2016. It will have a focus on international infectious disease prevention and management with particular attention paid to the major challenges of infectious diseases in India including HIV, malaria, tuberculosis, pneumonia, neglected tropical diseases, enteric infections and antimicrobial resistance.
- Research grants and fellowship programs to support research projects in the area of infectious diseases in under-resourced countries.
- The International Journal of Infectious Diseases, an open-access journal that aims to provide a source of information relevant to professionals involved in the epidemiology, clinical diagnosis, treatment and control of infectious diseases with particular emphasis placed on those diseases which are most common in under-resourced countries.

www.isid.org

4. Fact sheets

Facts on Ebola

Information is current as of October 26, 2014.

What is Ebola?
Ebola Virus Disease is caused by an infection with *Ebolavirus*, a virus belonging to the family *Filoviridae*. There are five identified *Ebolavirus* species, four of which have caused disease in humans. The current outbreak in West Africa is caused by *Zaire ebolavirus*. *Ebolavirus* causes severe disease in humans and non-human primates (apes and monkeys).

The first documented outbreak of Ebola Virus Disease was in 1976 near the Ebola River in the Democratic Republic of Congo, at the time known as Zaire. Since then, there have been sporadic outbreaks in remote regions of central Africa. The current outbreak in West Africa is the biggest in history and case numbers continue to increase.

Where does Ebola come from?
Available evidence suggests that fruit bats are a "natural reservoir" for the Ebola virus, meaning that fruit bats can carry the virus without getting sick. Human infections have been linked to direct contact with fruit bats or infected non-human primates such as apes and monkeys that can also develop symptomatic Ebola Virus Disease after contact with fruit bats.

How does Ebola spread?
Ebola is spread from person to person through direct contact through broken skin or mucous membranes with:

- Blood or body fluids (including but not limited to urine, saliva, sweat, feces, vomit, breast milk, and semen) of a person who is sick with Ebola or who has died from Ebola
- Objects (like needles and syringes) that have been contaminated with the virus

Once someone recovers from Ebola, they can no longer spread the virus. However, Ebola virus has been found in semen for up to 3 months. Although sex has never emerged as a major risk factor for spreading the disease in earlier outbreaks, it is recommended to abstain from sex (including oral sex) for at least 3 months. If abstinence is not possible, condoms may help prevent the spread of disease. There is not enough evidence to provide guidance on when it is safe to resume breastfeeding after a mother's recovery, unless her breast milk can be shown to be free of Ebola virus through laboratory testing

What are the symptoms?
Most people infected with the virus develop symptoms eight to ten days after exposure to the virus, but some develop symptoms as late as 21 days after exposure. Symptoms may include headache, flu-like symptoms, muscle aches, joint pains, skin rash, inflamed throat, weakness, and fever followed by nausea, diarrhea, and vomiting. Patients can then develop bleeding from the nose, gums, and skin, and bloody vomiting and stools. Blood vessels may begin to leak fluid causing blood pressure to plummet so low that the heart, kidneys, liver, and other organs begin to fail.

Why is this outbreak different from outbreaks in the past?
The current epidemic in West Africa is unprecedented. The outbreak, which started in

Guinea near the border with Sierra Leone with a single transmission event from an unknown animal reservoir into the human population, has become the deadliest Ebola outbreak in history. Never seen before by health care workers in this part of Africa, it was not until late March that the disease was identified as Ebola. Initial symptoms of Ebola can mimic other infectious diseases common in the area such as malaria and typhoid fever making a timely diagnosis even more challenging. Previous outbreaks of Ebola Virus Disease in Central Africa were always in remote areas. This time, the spread of the disease to urban areas, complicating contact tracing and timely isolation of patients, and the scarcity of medical resources and trained health care workers in the affected areas contributed to the outbreak spiraling out of control.

Who is at risk of getting Ebola?

Because of the way Ebola spreads – through direct contact with blood or body fluids of a person who is sick with Ebola or who has died from Ebola - healthcare providers caring for Ebola patients, people who handle the bodies of the deceased, and the family members and friends in close contact with Ebola patients are at the highest risk of contracting the disease.

How many health care workers have contracted Ebola?

Dedicated doctors, nurses, and other health workers throughout Guinea, Liberia, and Sierra Leone have worked ceaselessly to contain the epidemic in the face of the great obstacles placed by underdeveloped and underfunded health systems. A high proportion of these committed professionals have been infected. The World Health Organization reports that 450 health care workers have developed the disease to date and more than 230 have died. Ebola has taken the lives of some of the most prominent doctors in Sierra Leone and Liberia, depriving these countries even more of experienced medical care. Ebola has also infected doctors who have volunteered to travel to the affected areas to treat the sick and try to stem the spread of the disease. The World Health Organization has attributed the high rates of infection among medical workers in part to shortages or improper use of protective equipment, but even more devastating is the insufficient numbers of trained medical personnel.

Who can spread Ebola?
Infected people can spread the virus once they are symptomatic.

Based on available evidence, researchers do not believe that Ebola virus is transmitted through the air. It is highly unlikely that someone would contract Ebola just by coming into casual contact with someone already sick, such as sitting next to that person.

Is there a vaccine to prevent Ebola?
There is no approved vaccine currently, but research is ongoing.

Ebola vaccine trials are to start in West Africa in December, a month earlier than planned, the World Health Organisation says. Safety trials are currently taking place in the UK, US and Mali and will start in Switzerland, Germany, Gabon and Kenya. Safety trials will enable scientists to work out the correct dose of vaccine needed, ensure there are no serious side-effects and see whether antibodies to fight the virus are generated in the blood. The first vaccination trials of health care workers and others at high risk, including burial teams, are likely to take place in Liberia, with Sierra Leone not far behind.

Vaccine is not the magic bullet," Dr. Marie-Paule Kieny of the World Health Organization said at a news conference in Geneva. "But when ready, they may be a good part of the effort to turn the tide of this epidemic." A decision to start mass vaccinations later in 2015 would depend on whether one or more vaccines proved safe and effective, whether there would be enough vaccine available and whether that strategy would be necessary.

Are there drugs to treat Ebola?
Currently, there are no drugs (e.g. anti-virals) approved to treat Ebola virus disease. Treatments are under development, but they have not yet been fully tested for safety or effectiveness. Experimental therapies include the anti-viral compounds favipiravir and brincidofovir, ZMapp – a mixture of three synthetic monoclonal antibodies, and TKM-Ebola - a combination of small interfering RNAs targeting three of the seven proteins in the Ebola virus.

There are no drugs approved for Ebola virus disease, so how are patients treated?
Symptoms of Ebola are treated as they appear. Early supportive treatment significantly improves the chances of survival and include:

- intravenous fluids to compensate for fluid losses
- balancing electrolytes (body salts)
- maintaining blood pressure
- maintaining oxygenation
- treating other infections that occur

How can we stop the outbreak?
The most important thing we can do is to provide all possible assistance toward ending the outbreak where it began, in West Africa. Breaking the chain of transmission will stop the outbreak. Suspected and confirmed patients must be isolated and treated. To do so safely, more Ebola Treatment Units and more trained healthcare workers are urgently needed. Proper isolation protocols and personal protective equipment need to be in place to keep health care workers safe. People who have had close contact to infected patients need to be traced to identify possible infection early. Those who develop symptoms must be isolated and tested; in cases that test positive for Ebola virus disease, their contacts need to be traced. Fear and rumors must be addressed by communicating evidence-based information about the disease and what can be done.

How many cases have there been to date in the current outbreak?
The WHO reported that as of October 25, 2014, there were 10,141 Ebola Virus Disease cases in eight affected countries with 4,922 deaths. Ebola Virus Disease transmission remains persistent and widespread in Guinea (1,553 cases, 926 deaths), Liberia (4,665 cases, 2,705 deaths), and Sierra Leone (3,896 cases, 1,281 deaths).

Countries that have or had an initial case or cases, or with localized transmission are Mali, Nigeria, Senegal, Spain, and the United States of America.
The widely cited case fatality rate (CFR) for the 2014 Ebola outbreak in West Africa of around 50% is likely to be a substantial underestimate of the true value. It is likely to be the result of a failure to account for delays between disease onset and final outcome. As the numbers of new cases jump up, the observed fatality rate drops. Therefore the CFR could rise over the course of the outbreak. With data on individual onsets and outcomes, more precise estimates of CFR could be obtained, and how it varies with setting and availability of treatment could be assessed (Kucharski AJ, Edmunds WJ. Case fatality rate for Ebola virus disease in west Africa. Lancet. 2014 Oct 4)

How many people will get infected?
The WHO reported on October 14, 2014 that the number of new Ebola cases in Guinea, Liberia and Sierra Leone could reach 10,000 per week by December 2014.

A widespread Ebola virus disease outbreak is unlikely to occur in countries with functioning health systems and adequate infection control measures.

Where can I get more information?
European Centers for Disease Control (ECDC) http://www.ecdc.europa.eu
World Health Organization (WHO) http://www.who.int
U.S. Centers for Disease Control (CDC) http://www.cdc.gov/vhf/ebola/
Doctors without Borders http://www.doctorswithoutborders.org

Facts on MERS

Middle East Respiratory Syndrome (MERS) is viral respiratory illness first reported in Saudi Arabia in 2012. It is caused by a coronavirus called MERS-CoV. We don't know for certain where the virus came from. However, it likely came from an animal source. In addition to humans, MERS-CoV has been found in camels in Qatar, Oman, Egypt and Saudi Arabia, and a bat in Saudi Arabia.

Symptoms & Complications
Most people confirmed to have MERS-CoV infection have had severe acute respiratory illness with symptoms of fever, cough and shortness of breath. Some people also had gastrointestinal symptoms including diarrhea and nausea/vomiting. For many people with MERS, more severe complications followed, such as pneumonia and kidney failure. About 30% of people with MERS died. Most of the people who died had an underlying medical condition.

Transmission
This virus has spread from ill people to others through close contact, such as caring for or living with an infected person. However, there is no evidence of sustained spread in community settings. MERS can affect anyone. MERS patients have ranged in age from younger than 1 to 94 years old. Based on information we have to date, the incubation period for MERS (time between when a person is exposed to MERS-CoV and when they start to have symptoms) is 2-14 days. Based on what researchers know so far, people with pre-existing medical conditions (also called comorbidities), may be more likely to become infected with MERS.

Prevention
Currently, there is no vaccine to prevent MERS-CoV infection. Special health measures may prevent the risk of infection, e.g. washing hands.

Diagnosis
Lab-Tests: PCR, Serology (ELISA, Immunofluorescent Assay (IFA), neutralizing antibody assay)

Treatment
There is no specific antiviral treatment recommended for MERS-CoV infection.

Countries with Lab-confirmed MERS cases

- Countries in or near the Arabian Peninsula with Cases: Saudi Arabia, United Arab Emirates (UAE), Qatar, Oman, Jordan, Kuwait, Yemen, Lebanon, Iran
- Countries with Travel-associated Cases: United Kingdom (UK), France, Tunisia, Italy, Malaysia, Philippines, Greece, Egypt, United States of America (USA), Netherlands, Algeria, Austria

Facts on Avian Influenza

Avian influenza refers to the disease caused by infection with avian (bird) influenza (flu) Type A viruses. These viruses occur naturally among wild aquatic birds worldwide and can infect domestic poultry and other bird and animal species. Avian flu viruses do not normally infect humans. However, sporadic human infections with avian flu viruses have occurred.
Between November 2003 and January 2014, more than 600 sporadic cases of human infection with highly pathogenic avian influenza (HPAI) A (H5N1) virus with high mortality have been reported, primarily by 15 countries in Asia, Africa, the Pacific, Europe and the Near East.

Symptoms
Symptoms may depend on which avian influenza A virus caused the infection. The reported signs and symptoms of low pathogenic avian influenza A virus infections in humans have ranged from conjunctivitis to influenza-like illness (e.g., fever, cough, sore throat, muscle aches) to lower respiratory disease (pneumonia) requiring hospitalization. Highly pathogenic avian influenza A virus infections of humans have been associated with a wide range of illness. Illness has ranged from conjunctivitis only, to influenza-like illness, to severe respiratory illness (e.g. shortness of breath, difficulty breathing, pneumonia, acute respiratory distress, viral pneumonia, respiratory failure) with multi-organ disease, sometimes accompanied by nausea, abdominal pain, diarrhea, vomiting and sometimes neurologic changes.

Transmission
Most human infections with avian influenza A viruses have occurred following direct or close contact with infected poultry.

Prevention
The best way to prevent infection with avian influenza A viruses is to avoid sources of exposure, mainly direct or close contact with infected poultry.
Seasonal influenza vaccination will not prevent infection with avian influenza A viruses, but can reduce the risk of co-infection with human and avian influenza A viruses.
Because rare episodes of limited, non-sustained human-to-human transmission of HPAI H5N1 virus has been reported, persons should avoid sick patients who have suspected or confirmed HPAI H5N1 virus infection. Health care personnel caring for patients with suspected or confirmed HPAI H5N1 virus infection should wear recommended personal protective equipment and follow recommended infection control measures.

Diagnosis
Lab-Tests: e.g. swab from the nose or throat, testing of lower respiratory tract specimens, detection of specific antibodies.

Treatment
CDC and WHO currently recommend antiviral medications, eg. oseltamivir or zanamivir.

Facts on West Nile Fever

West Nile virus (WNV) is most commonly transmitted to humans by mosquitoes.

Symptoms

- No symptoms in most people (70-80%).
- Febrile illness in some people. About 1 in 5 people will develop a fever with other symptoms such as headache, body aches, joint pains, vomiting, diarrhea, or rash. Most people with this type of West Nile virus disease recover completely, but fatigue and weakness can last for weeks or months.
- Severe symptoms in a few people. Less than 1% of people who are infected will develop a serious neurologic illness such as encephalitis or meningitis (inflammation of the brain or surrounding tissues). The symptoms of neurologic illness can include headache, high fever, neck stiffness, disorientation, coma, tremors, seizures, or paralysis. People with certain medical conditions, such as cancer, diabetes, hypertension and kidney disease are also at greater risk for serious illness. Recovery from severe disease may take several weeks or months. Some of the neurologic effects may be permanent. About 10 percent of people who develop neurologic infection due to West Nile virus will die.

Transmission

West Nile virus is most commonly transmitted to humans by mosquitoes. Additional routes of human infection have also been documented. These methods of transmission represent a very small proportion of cases:

- Blood transfusions
- Organ transplants
- Exposure in a laboratory setting
- From mother to baby during pregnancy, delivery, or breastfeeding

Prevention & Control

The most effective way to avoid West Nile virus disease is to prevent mosquito bites.

- Use insect repellents when you go outdoors.
- When weather permits, wear long sleeves, long pants, and socks when outdoors.
- Take extra care during peak mosquito biting hours.
- Mosquito-Proof Your Home: Install or repair screens on windows and doors to keep mosquitoes outside. Use your air conditioning, if you have it. Help reduce the number of mosquitoes around your home by emptying standing water from flowerpots, gutters, buckets, pool covers, pet water dishes, discarded tires, and birdbaths on a regular basis.
-

Treatment

No vaccine or specific antiviral treatments for West Nile virus infection are available. Over-the-counter pain relievers can be used to reduce fever and relieve some symptoms. In severe cases, patients often need to be hospitalized to receive supportive treatment, such as intravenous fluids, pain medication, and nursing care.

Facts on Dengue Fever

With more than one-third of the world's population living in areas at risk for infection, dengue virus is a leading cause of illness and death in the tropics and subtropics. As many as 400 million people are infected yearly. Dengue-viruses are transmitted by mosquitoes. Dengue has emerged as a worldwide problem only since the 1950s. It is endemic in Puerto Rico and in many popular tourist destinations in Latin America, Southeast Asia and the Pacific islands.

Symptoms
The principal symptoms of dengue are high fever and at least two of the following:

- Severe headache
- Severe eye pain (behind eyes)
- Joint pain
- Muscle and/or bone pain
- Rash
- Mild bleeding manifestation (e.g., nose or gum bleed, petechiae, or easy bruising)
- Low white cell count

As temperature declines 3 to 7 days after symptoms began, the following warning signs may appear. In these cases a doctor should be immediately consulted:

- Severe abdominal pain or persistent vomiting
- Red spots or patches on the skin
- Bleeding from nose or gums
- Vomiting blood
- Black, tarry stools (feces, excrement)
- Drowsiness or irritability
- Pale, cold, or clammy skin
- Difficulty breathing

Dengue hemorrhagic fever (DHF) is characterized by a fever that lasts from 2 to 7 days, with general signs and symptoms consistent with dengue fever. When the fever declines, warning signs may develop. This marks the beginning of a 24 to 48 hour period when the smallest blood vessels (capillaries) become excessively permeable ("leaky"), allowing the fluid component to escape from the blood vessels into the peritoneum (causing ascites) and pleural cavity (leading to pleural effusions). This may lead to failure of the circulatory system and shock, and possibly death without prompt, appropriate treatment. In addition, the patient with DHF has a low platelet count and hemorrhagic manifestations, tendency to bruise easily or have other types of skin hemorrhages, bleeding nose or gums, and possibly internal bleeding.

Prevention
There is no vaccine available against dengue, and there are no specific medications to treat a dengue infection. This makes prevention the most important step, and prevention means avoiding mosquito bites if a person lives in or travels to an endemic area.

- Use insect repellents when you go outdoors.
- When weather permits, wear long sleeves, long pants, and socks when outdoors.
- Take extra care during peak mosquito biting hours.
- Sleep under a mosquito-bed net.
- Mosquito-Proof Your Home: Install or repair screens on windows and doors to keep mosquitoes outside. Use your air conditioning, if you have it. Help reduce the number of mosquitoes around your home by emptying standing water from flowerpots, gutters, buckets, pool covers, pet water dishes, discarded tires, and birdbaths on a regular basis.

Treatment
There is no specific medication for treatment of a dengue infection. Persons who think

they have dengue should use analgesics (pain relievers) with acetaminophen and avoid those containing ibuprofen, Naproxen, aspirin or aspirin containing drugs. They should also rest, drink plenty of fluids to prevent dehydration, avoid mosquito bites while febrile and consult a physician.

Hennrich.PR – *PR relations agency for health and communications*
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www.hennrich-pr.at

Facts on Chikungunya Virus

Chikungunya virus is transmitted to people by mosquitoes. Outbreaks have occurred in countries in Africa, Asia, Europe, and the Indian and Pacific Oceans.

Symptoms
Most infected people will develop some symptoms. They usually begin 3–7 days after being bitten by an infected mosquito. The most common symptoms are fever and joint pain. Other symptoms may include headache, muscle pain, joint swelling, or rash. Chikungunya disease does not often result in death, but the symptoms can be severe and disabling. Most patients feel better within a week. In some people, the joint pain may persist for months. People at risk for more severe disease include newborns infected around the time of birth, older adults (≥65 years), and people with medical conditions such as high blood pressure, diabetes, or heart disease. Once a person has been infected, he or she is likely to be protected from future infections.

Transmission
Chikungunya virus is transmitted to people through mosquito bites. Mosquitoes become infected when they feed on a person already infected with the virus. Infected mosquitoes can then spread the virus to other people through bites. Chikungunya virus is most often spread to people by *Aedes aegypti* and *Aedes albopictus* mosquitoes. Chikungunya virus is transmitted rarely from mother to newborn around the time of birth.

Prevention
No vaccine exists to prevent chikungunya virus infection or disease. **The best prevention is** avoiding mosquito bites. The mosquitoes that spread the chikungunya virus bite mostly during the daytime.

- Use air conditioning or window/door screens to keep mosquitoes outside. If you are not able to protect yourself from mosquitoes inside your home or hotel, sleep under a mosquito bed net.
- Help reduce the number of mosquitoes outside your home or hotel room by emptying standing water from containers such as flowerpots or buckets.
- When weather permits, wear long-sleeved shirts and long pants.
- Use insect repellents for your skin and your clothing.
-

Diagnosis
See your doctor if you develop the symptoms described above, espechially if you have recently traveled. Sometimes blood tests are required.

Treatment
There is no medicine to treat chikungunya virus infection or disease. To decrease the symptoms, persons should get plenty of rest, drink fluids to prevent dehydration and take medicines, such as ibuprofen, naproxen, acetaminophen, or paracetamol, to relieve fever and pain.

Reference: CDC, Centers for Disease Control and Prevention, Atlanta, USA, www-cdc.gov

5. IMED 2014 – Highlights

Lawrence Madoff, MD (USA) - Editor, ProMED-mail

IMED 2014:
The Fifth International Meeting on Emerging Diseases and Surveillance, IMED 2014 is being held in Vienna, Austria from October 31 to November 3, 2014.

Since its inception, IMED has been a summit that unifies our approach to pathogens in the broadest ecological context. Embracing the "One Health" model of emerging diseases that recognizes the commonality of human and animal health, IMED 2014 will once again bring leading human and veterinary health clinicians, scientists, and policy makers to Vienna to present new knowledge and breakthroughs and discuss how to discover, detect, understand, prevent and respond to outbreaks of emerging pathogens.

The IMED 2014 is organized by the International Society for Infectious Diseases (ISID) and its Program for Monitoring Emerging Diseases (ProMED-mail). Emerging infectious diseases are at the center of the world's attention. The threats posed by Ebola, MERS, and pandemic influenza and the realization that new infectious diseases may be recognized at any time, in any place, has dramatically increased our awareness of infectious diseases and underscored our need to understand emerging pathogens. Important questions have been raised by the current Ebola epidemic in West Africa. What are the most important emerging disease threats? What biological, ecological, social, and other factors lead to their emergence? How can we quickly detect their occurrences in order to respond in timely and appropriate ways? IMED 2014 will present new research and novel approaches that contribute to answering these questions.

IMED Highlights:

IMED opens with plenary talks on the challenges, advances, and developments concerning the ongoing MERS and Ebola outbreaks.
MERS is a recently emerged zoonotic infection. There remain significant gaps in understanding the linkages of MERS-CoV infections in bats, camels, and humans. An integrated 'One Health' framework to address these gaps and develop interventions to prevent current and future spillover of MERS-CoV is needed. Newest developments, challenges in diagnosis, and advances in understanding the origins of MERS-CoV will be discussed during the opening plenary and opening session.
Ebola Virus Disease is caused by an infection with *Ebolavirus*, a virus belonging to the family *Filoviridae*. The first documented outbreak of Ebola Virus Disease was in 1976 near the Ebola River in the Democratic Republic of Congo, at the time known as Zaire. Since then, there have been sporadic outbreaks in remote regions of Africa. The current outbreak in West Africa is the biggest in history and case numbers continue to increase. The viral hemorrhagic fevers of Africa provide an ideal illustration of the interconnected nature of man, microbe, and the environment. Adriano Duse's plenary talk will focus on the complexity of the current 2014 West African Ebola outbreak in which there has been multi-country involvement (Guinea, Liberia, and Sierra Leone) and which is deemed to be the largest Ebola outbreak ever described. Challenges and controversies related to viral hemorrhagic fever outbreak responses, infection prevention control decisions, and social mobilization will be discussed.

Hilde de Clerck, the Mobile Implementation Officer (technical referent on the field) for Viral Hemorrhagic Fevers from Doctors Without Borders will talk about the challenges faced when working at the frontline of the Ebola outbreak.

Essential steps in laboratory preparedness using the ongoing Ebola and MERS outbreaks as examples will be addressed during Marion Koopman's talk "Laboratory Preparedness for Ebola and MERS-CoV."

Additional talks throughout the conference will cover topics related to Ebola Virus Disease and the outbreak now occurring in West Africa. These include:

Ebola, SARS, MERS Oh My, Can We Limit Outbreaks? William Karesh (USA) Saturday, November 1, 2014, 14.30-16:00hrs

Ebola and its Spread in West Africa Oyewale Tomori (Nigeria) Sunday, November 2, 2014, 14.30-16.00hrs

Disease Surveillance in the Era of Big Data Effy Vayena (Switzerland) Saturday, November 1, 2014, 14.30-16:00hrs

Ending Pandemics in Our Lifetime M. Smolinski (USA) Saturday, November 1, 2014, 16.30-18:00hrs

Innovations in Disease Detection J. Brownstein (USA) Saturday, November 1, 2014, 16.30-18:00hrs

Oral abstract presentations addressing advances in understanding transmission, control, and prevention of Ebola include abstract number:
18.008
18.004
18.005
18.001
22.095
22.169

Other highlights include sessions and talk on the following topics:

Pathogen and Host Diversity—Are There Clues that Can Help Us Prevent Emerging Infectious Diseases?
Saturday, November 1, 2014 Room: 14:30–16:00

In this symposium, we will hear about advances in surveillance, viral ecology, and host-virus evolution that begin to point to a predictive approach to pandemics. They involve ways to better track trends in disease emergence, analyze their underlying drivers, and use ecological approaches to predict where or from what species the next pandemic threat most likely will originate.

Global spread of antibiotic resistance
Plenary talk
Saturday, November 1, 2014 11:00 – 11:45

After many years as a side issue, antimicrobial resistance is moving to center stage, a move driven in large measure by the increasing global prevalence of bacterial infections that are essentially untreatable. As with highly mobile infectious diseases, antimicrobial resistance is a shared global challenge affecting both the wealthiest and the poorest of

countries. In the high-income world, the consequences of resistance are largely in the form of greater treatment costs while in the low- and middle-income world, the consequences are in terms of greater morbidity and mortality. Here we review the most recent evidence of global emergence and spread of resistance, the economic and health consequences of the loss of antibiotic effectiveness, the benefits of increasing access to effective antibiotics, and the appropriate balance between investments in the conservation of existing antibiotics and discovery of new antibiotics

ProMED 20th Anniversary Symposium: Innovations in Outbreak Detection
Saturday, November 1, 2014, 16.30-18:00hrs

This symposium will describe advances in disease surveillance and outbreak detection and how innovative outbreak surveillance systems contribute to the control of emerging infectious disease outbreaks.

Ethics and Disease Surveillance
Saturday, November 1, 2014, 14.30-16:00hrs

Disease surveillance, often referred to as "the eyes of public health," is one of the most fundamental activities of public health. Surveillance can raise multiple ethical and human rights issues, such as access to benefits, confidentiality, informed consent, and concerns regarding stigma and discrimination. These and other challenges posed by the ever-expanding amounts of available data from social networks and the use of mobile applications will be discussed.

Food and Agriculture Organization of the UN (FAO): Tools for animal health
Sunday, November 2, 2014, 08.30-10.30hrs

Animal diseases impact livestock production and farming systems, people and livelihoods. Recent outbreaks due to diseases such as foot-and-mouth disease, H7N9, and contagious bovine pleuro-pneumonia globally have had unprecedented impact and consequences. The impact of FMD in endemic regions on four continents has been estimated at USD$6.5 to 21 billion. The costs related to the emergence of the H7N9 strain of avian influenza in China has been estimated to be USD$ 6.5 billion (Chinese Agriculture Ministry, 2013). Global animal disease surveillance systems and reporting systems are weak in under-resourced countries. FAO has been leading the development of innovative forms of disease surveillance such as the use of mobile devices in low-resource areas and has been involved in supporting national capacity building in surveillance through field veterinary epidemiology training in Asia and Africa. At a global level, FAO, OIE, and WHO are coordinating efforts to confidentially verify and track relevant events and to provide a framework with global reach to enable the convening and pooling of expertise, data, functional networks, operational systems and stakeholders with the goal to detect, prevent, and control threats to health through multi-disciplinary partnership. (Julio Pinto's abstract)

Launching of the New OIE Global Wildlife Disease Reporting System: WAHIS-Wild
Plenary talk
Sunday, November 2, 2014, 11.00-11.45hrs

This plenary talk will introduce OIE's World Animal Health Information System and discuss how it can be used to provide early warning signs to protect animal and public health and better understand the epidemiology of various pathogens.

West Nile Fever in the European Union: Challenges for Integrated Surveillance and Control
Saturday, November 1, 2014, 08.30-09.30

This symposium discusses how the human and animal health sectors work together to strengthen West Nile virus surveillance in the European Union. The epidemiology of West Nile virus is influenced by multiple ecological factors and, therefore, integrated and comprehensive surveillance systems are needed for early detection of the infection and to activate control measures.

Healthcare Associated Emerging Infections
Sunday, November 2, 2014, 08.30-10.30hrs

During this session on healthcare associated infections, experts will talk about emerging infections in transfusion and transplantation and those associated with the use of new immunosuppressive agents. Examples of how the healthcare delivery process has contributed to the spread of emerging infections around the world will be given.

Emerging Viral Threats
Sunday, November 2, 2014, 14.30-16.00hrs

Oyewale Tomori will identify and discuss important lessons from the 2014 West African Ebola outbreak that should be useful in controlling future epidemics of infectious diseases.

Using influenza viruses as an example, Marion Koopmans will describe in detail how to develop novel approaches to enhance infectious disease surveillance at the animal-human interface. Influenza viruses remain among the top emerging infectious disease threats given their widespread presence in wild birds and their proven capability of crossing the species barrier. The list of avian influenza viruses that may infect humans is growing, with the notable 2013 emergence of H7N9 influenza viruses in China as the most prominent recent example.

Antoine Flahault will talk about Chikungunya's entry into the Americas and explore how this virus seems to follow the traces of Dengue virus, both of which are transmitted by the same Aedes aegypti and Aedes albopictus vectors. He will also make predictions on where this viral disease will spread next.

Things are Heating Up: Emerging Infectious Diseases and Climate Change
Sunday, November 2, 2014, 14.30-16.00hrs

The environment in which we live is changing at a rate that is unprecedented and profound changes are occurring in the global climate. In this session, we will hear about the interaction between conflicts, human migration, climate change, and disease emergence. We will hear about the use of epidemiological climate modeling techniques to predict disease dynamics under climate warming scenarios to identify the best strategies for allocating appropriate resources to surveillance and disease prevention activities.

Pastoralism, Rural Communities and the Human Animal Health Interface in East Africa
Sunday, November 2, 2014, 16.30-18.00hrs

Pastoralism is the branch of agriculture concerned with the raising of livestock. Mobility allows pastoralists to adapt to the environment, which opens up the possibility for both fertile and infertile regions to support human existence. New approaches and ways to prevent emerging infectious diseases such as Q fever, Rift Valley fever, and trypanosomiasis in pastoralists and their livestock in the drylands of East Africa will be discussed.

Changing disease landscapes
Plenary talk
Monday, Nov 3, 2014 11:00 – 11:45

Threats of animal origin are increasing as a result of ongoing societal developments that alter and shape global disease landscapes. Population growth escalates, the globe becomes more interconnected through traffic of people, goods and animals or their products, fluctuations in climate become more common and in the face of continuous proliferation of poverty, accesses to goods and medical services (human or veterinary) is often weak. Over 70 percent of human diseases originate in animals, and our expanding human population inhabits more wildernesses while becoming ever more reliant on animals for food. With regard to the pressures and the state of livestock and global health, diseases must be addressed at its source, particularly in animals. Approaches that capture and apply the One Health mind set are of utmost importance to effectively manage disease risks emanating from the complex interactions between humans, animals and their environment.

About
Lawrence (Larry) Madoff, MD

Dr. Madoff is an academic infectious disease physician specializing in the epidemiology of emerging pathogens, bacterial pathogenesis, and international health. He is a Professor of Medicine at the University of Massachusetts Medical School and Lecturer on Medicine at Harvard Medical School. Dr. Madoff serves as Director of Epidemiology and Immunization and Deputy State Epidemiologist for the Massachusetts Department of Public Health. Dr. Madoff has directed ProMED, the Program for Monitoring Emerging Diseases, since 2002. He is a member of the American Society for Microbiology, the International Society for Infectious Diseases, past President of the U.S. Lancefield Streptococcal Research Society, a Fellow of the Infectious Diseases Society of America and a Fellow of the American College of Physicians. A graduate of Yale College and Tufts Medical School, he performed his Internal Medicine Residency at New York Hospital-Cornell Medical Center and his Infectious Disease Fellowship at the Harvard Medical School-Longwood program. He is the author of over 100 scientific and medical publications on topics involving infectious diseases and microbiology.
www.promedmail.org

6. The One-Health-concept in the context of Ebola and MERS: The linkages of human, animal, and environmental health

William Karesh, EcoHealth Alliance, Executive Vice President for Health and Policy, New York, NY, USA

The One-Health-concept in the context of Ebola and MERS: The linkages of human, animal, and environmental health
Nowhere in the world are the health impacts from both emerging and endemic zoonotic diseases more important than in less developed countries, where daily work and livelihoods are highly dependent on natural resources. Most endemic diseases began as EID's at some point in time and these diseases are now estimated to cause over one billion cases of human disease annually. Some countries have little to no capacity for diagnosis or detection of disease emergence and early spread. With globalization and international travel, disease movement is now rapid and the natural barriers to disease spread from points of origin are becoming meaningless. Ebola virus disease, SARS, and MERS illustrate the urgent need for improving early detection and implementing strategies to reduce emergence in the first place.

While the linkages of human, animal, and environmental health is at the heart of the One Health approach, an increasingly important prism through which governments, NGOs, and practitioners view public health, we still have three critically important challenges facing us:

1) We need a broader and deeper knowledge of what underlies disease emergence and spread.
2) We need to better target our surveillance efforts to maximize available resources.
3) We need to greatly expand implementation of EID prevention strategies based on our state of knowledge.

About
William Karesh

Dr. William Karesh is the Executive Vice President for Health and Policy for EcoHealth Alliance. He is also the President of the World Organization for Animal Health (OIE) Working Group on Wildlife and chairs the International Union for the Conservation of Nature (IUCN) Species Survival Commission's Wildlife Health Specialist Group, a network of hundreds of wildlife and health experts around the world. Since 2009, he has served as the Technical Director for the USAID Emerging Pandemic Threats PREDICT program. Dr. Karesh has pioneered initiatives focusing attention and resources on solving problems created by the interactions among wildlife, people, and their animals. He coined the term "One Health" to describe the interdependence of healthy ecosystems, animals and people and the term has been adopted by many organizations, including the United Nations, in local and global health efforts. Dr. Karesh has created dozens of initiatives to encourage linkages among public health, agriculture and environmental health agencies and organizations around the world. He has personally lead programs and projects in over 60 countries, covering terrain from Argentina to Zambia. In addition to his work in the private non-profit sector, Dr. Karesh has also worked for the USDA, DOD, DOI and the Food and Agriculture Organization of the U.N. Dr. Karesh is internationally recognized as an authority on the subject of animal and human health linkages and wildlife. He has published over one hundred and sixty scientific papers and numerous book chapters, and written for broader audience publications such as *Foreign Affairs* and *The Huffington Post.*
www.ecohealthalliance.org/about/experts/35-karesh

7. How can we stop outbreaks?

Jack Woodall

The most important thing we can do is to provide all possible assistance toward ending the outbreak where it began, in West Africa. Breaking the chain of transmission will stop the outbreak. Suspected and confirmed patients must be isolated and treated. To do so safely, more Ebola Treatment Units and more trained healthcare workers are urgently needed. Proper isolation protocols and personal protective equipment need to be in place to keep health care workers safe. People who have had close contact to infected patients need to be traced to identify possible infection early. Those who develop symptoms must be isolated and tested; in cases that test positive for Ebola virus disease, their contacts need to be traced. Fear and rumors must be addressed by communicating evidence-based information about the disease and what can be done.

Please find more information in the Ebola fact sheet.

About
John (Jack) Woodall, MA (Cantab.), PhD (Lond.)

Dr. John (Jack) Woodall is an arbovirus epidemiologist -- arboviruses are viruses transmitted by arthropods, namely biting insects like mosquitoes, also ticks, fleas, sandflies, midges and mites; the discipline also includes viruses transmitted by rodents, bats and other animals.

Dr. Woodall earned his BA in 1956 & MA from Clare College, Cambridge University, UK, and a PhD in 1958 in virology & entomology at the London School of Hygiene & Tropical Medicine, UK. He was subsequently Senior Scientist in Her Majesty's Overseas Research Service, East African Virus Research Institute, Entebbe, Uganda 1959-65; a staff member of The Rockefeller Foundation, New York, NY (USA) 1965-72; Director, Belem Virus Laboratory, Belem, Brazil 1965-71; Research Fellow, Yale Arbovirus Research Unit, Yale University, New Haven CT (USA) 1971-72; Head, Arbovirus Laboratory, New York State Health Dept., Albany NY, 1972-75; Staff member, US Public Health Service, Centers for Disease Control and Prevention (CDC) 1975-1992 (on secondment to WHO 1981-88); Director, CDC's San Juan Laboratories, San Juan, Puerto Rico 1975-1980; Scientist (epidemiologist) with the World Health Organization, Geneva, Switzerland 1981-1994; and again, Director, Arbovirus Laboratory, New York State Health Dept., Albany, NY, (USA) 1994-98, before moving to the Federal University of Rio de Janeiro in Brazil in 1998, from which he retired in 2007. Since then he has been a consultant with GLG, Maven and WHO, and travels frequently by invitation to promote the online reporting of emerging disease outbreaks and One Health.

He was Visiting Professor and Director, Nucleus for the Investigation of Emerging Infectious Diseases at the Institute of Medical Biochemistry, Center for Health Sciences, Federal University of Rio de Janeiro, Brazil until his retirement in 2007). Dr Woodall is co-founder in 1994 and associate editor of ProMED-mail www.promedmail.org, the outbreak early warning system online of the Program for Monitoring Emerging Diseases of the International Society for Infectious Diseases. In 2009, he became the contents manager/editor of the ProMED-mail section in the One Health Initiative website www.onehealthinitiative.com and an active member of the autonomous pro bono One Health team of Laura H. Kahn, MD, MPH, MPP, Bruce Kaplan, DVM, Thomas P. Monath, MD and Lisa A. Conti, DVM, MPH.

Other posts that Dr. Woodall currently holds include the Biological Weapons Working Group of the Center for Arms Control and Non-Proliferation, Washington DC (USA) since 2004, the Editorial Advisory Boards of The Scientist magazine since 2007, the Journal of Medical Chemical, Biological & Radiological Defense since 2008, and the Infection, Ecology and Epidemiology (IEE) open access journal since 2012. In addition, he was on the Scientific Advisory Board, Sabin Vaccine Institute, Washington DC from 2004–2006. He has served on the American Committee on Arthropod-Borne Viruses of the American Society of Tropical Medicine & Hygiene and as Web Site Editor of the ASTMH from 2002–2008.

Dr. Woodall is a recognized public health authority, educator and One Health leader. He has edited the PAHO Dengue, Yellow Fever & Aedes aegypti Newsletter, an issue of the WHO World Health Statistics Quarterly, and a volume in SIPRI Chemical & Biological Warfare Studies, and published numerous articles and chapters in peer-reviewed journals listed on PubMed, in the Encyclopedia Britannica Medical & Health Annual, and the Encyclopedia of Arthropod-transmitted Infections (CABI). He is a co-author of the Atlas of Human Infectious Diseases (2012).

8. Best-practise-example Nigeria – how we can stop Ebola

Oyewale Tomori, DVM, PhD (Nigeria) – President of the Nigerian Academy of Science

On July 20, 2014, an acutely ill traveler from Liberia arrived at the international airport in Lagos, Nigeria, and was confirmed to have Ebola virus disease after being admitted to a private hospital. This index patient potentially exposed 72 persons at the airport and the hospital. The Federal Ministry of Health, with guidance from the Nigeria Centre for Disease Control (NCDC), declared an Ebola emergency. Lagos, (population 21 million) is a regional hub for economic, industrial, and travel activities and a setting where communicable diseases can be easily spread and transmission sustained. Therefore, implementing a rapid response using all available public health assets was the highest priority. On July 23, the Federal Ministry of Health, with the Lagos State government and international partners, activated an Ebola Incident Management Center as a precursor to the current Emergency Operations Center (EOC) to rapidly respond to this outbreak. The index patient died on July 25; as of September 24, there were 19 laboratory-confirmed Ebola cases and one probable case in two states, with close to 900 contacts identified and followed during the response. Twenty cases were identified, and eight patients had died (seven with confirmed Ebola; one probable). On October 20, 2014 WHO officially declares that Nigeria is free of Ebola virus transmission. This is a spectacular success story that shows that Ebola can be contained. The EOC, established quickly and using an Incident Management System (IMS) to coordinate the response and consolidate decision making, is largely credited with helping contain the Nigeria outbreak early.

Public Health Response
The threat to Nigeria posed by the arrival in Lagos of a patient acutely ill with Ebola was potentially enormous. The implementation of a rapid response that made use of the available public health assets was the highest priority at the onset of the outbreak, as was organizing the response using proven structures for the delivery of public health in Nigeria. The government moved quickly to enforce coordination of the national and state Ebola response efforts using the IMS/EOC structures. There was a stated expectation that all partner organizations, donors, and response teams would work through the EOC structure, reporting to an Incident Manager (IM). In turn, the IM would be responsible to deliver accountable and transparent results to the NCDC and the federal Ministry of Health. Nigeria's decision to use EOC/IMS to respond to Ebola resulted in a rapid, effective, and coordinated outbreak response. The EOC/IMS approach should be a central part of national and subnational preparedness efforts for public health threats. EOC/IMS is a key component of the global health security agenda, along with Integrated Disease Surveillance and Response/International Health Regulations (IHR 2005).
The Nigerian government and staff in the WHO country office are well aware that the country remains vulnerable to another imported case. The surveillance system remains at a level of high alert.

In summary, as reported on ProMED on Oct 18, 2014, there were:
- 899 contacts traced (only 1 lost to follow-up)
- 20 cases, 8 deaths, CFR [case fatality rate] of 40 percent
- 1289 staff in Lagos and Port Harcourt EOC, involved in stopping the outbreak including more than 300 in epi/surveillance, more than 500 in social mobilisation/communication, more than 300 at ports of entry, more than 100 in clinical care/case management, more than 20 lab staff, and more than 20 in the management/coordination team
- no health workers involved with case management were infected.

More detailled informations:
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6339a5.htm?s_cid=mm6339a5_w
http://www.who.int/mediacentre/news/ebola/20-october-2014/en/

About
Oyewale Tomori

Tomori is currently, President, Nigerian Academy of Science. He was pioneer Vice-Chancellor at the Redeemer's University, Nigeria. He is a recipient of the NNOM, Nigeria's highest award for academic and intellectual attainment. At the University of Ibadan, Nigeria, where he was Professor of Virology (1981), he led research into study of viral infections, and elucidated the properties of Orungo virus, registered with the ICVT. In 1981, he received the US Public Health Service Certificate for contribution to Lassa Fever Research. At the WHO Africa Region, where he served as Regional Virologist from 1994-2004, he set up the African Regional Polio Laboratory Network, which provided laboratory diagnostic support for polio eradication. The Network became the forerunner of other regional diagnostic laboratory networks for measles, yellow fever, and other viral hemorrhagic fevers. He was involved in the investigations of outbreaks of Yellow fever, Ebola, Marburg hemorrhagic fever infections in Liberia, DR Congo and Uganda between 1995 and 2004.

Professor Tomori has served and currently serves on several national and international advisory bodies including, Nigeria National Task Force on Epidemic Diseases; Expert Working Group (EWG) for the Development of National Laboratory Services Policy; Nigeria Expert Review Committee (ERC) on Poliomyelitis Eradication and Routine Immunization; Judging Panel Bill Gates Nigeria Governors' Immunization Leadership Challenge and Chairman, Nigeria National Medical Laboratory Strategic Plan Development Committee. At the international level, Dr. Tomori served as a member of the US-IOM Committee on S**ustainable global surveillance of zoonotic diseases; US-IOM Committee on identifying and prioritizing new preventive vaccines for development;** WHO Africa Regional Certification Committee (ARCC) for Poliomyelitis Eradication; WHO Advisory Committee on Variola Virus Research; WHO Strategic Advisory Group of Experts (SAGE); Co-Chairman, African Science Academy Development Initiative (ASADI)/United States National Academy of Science (USNAS)/Network of African Science Academies (NASAC) African Tobacco Control Committee (ATCC); Co-Chairman, African Science Academies' Study Team on Country Ownership of Africa's Development – Post 2015 plan on MDGs. He is a Senior Editor of African Journal of Laboratory Medicine (AJLM).
www.nas.org.ng

9. From the frontline of the Ebola outbreak

About
Hilde De Clerck, MD, Médecins Sans Frontières

Actual position: Mobile Implementation Officer (technical referent on the field) Viral Hemorrhagic Fevers MSF-Belgium

MD (KULeuven), Family Physician, student MScInt.Health (ITM, Antwerp)

Dr. De Clerck started working as MD for MSF in 2006:
• long term missions on the field with MSF: post emergency (primary health, vaccination) Pakistan 2006, Ivory Coast (HIV, TB, internal medicine/pediatrics) 2007, Cambodia (Diabetes, Hypertension, HIV, TB) 2008, Sierra Leone 2014 (Lassa fever, pediatrics)

• emergency missions with MSF from 2007-2014 as MD, Medical Coordinator, Emergency Coordinator; mostly epidemics (cholera, meningitis, measles, Marburg/Ebola)

• Ebola/Marburg outbreaks I intervened in (MD, Medical Coordinator, Emergency Coordinator): 2007: Kampungu, DRC; 2007-2008: Bundibugyo, Uganda; 2009: Kampungu/Kaluamba, DRC; 2012: Kabale (Marburg), Uganda; 2012: Luweero, Uganda (Ebola)

• On the field for the actual Ebola outbreak since March 2014 (Guinea: Guekedou, Macenta, Conakry, Telimele; Sierra Leone: Kailahun, Bo, Kenema) as MD - Medical Coordinator - Emergency Coordinator - technical referent
www.msf.org

10.

Prof. Dr. Pamela Rendi-Wagner, Director General / CMO
Public Health & Medical Affairs, Austrian Federal Ministry of Health

Media are full of Ebola news every day and besides the real epidemic in West Africa, an epidemic of fear is spreading world-wide. Despite all the efforts national public health authorities are investing in preparedness for highly infectious diseases, we hardly are able to cope with the increasing panic. Hence, our main efforts are to listen to the various fearful arguments and to broadly communicate, early and transparent, in order to create trust, however – sustainable trust remains one of the most challenging fields of actions we are facing these days.

About
Prof. Dr. Pamela Rendi-Wagner

Rendi-Wagner is Director General for Public Health and Chief Medical Officer at the Federal Ministry of Health, Austria. She trained at the Medical University of Vienna, specializing in Specific Prophylaxis and Tropical Medicine and subsequently at the London School of Hygiene and Tropical Medicine, UK. As senior lecturer at the Medical University of Vienna, she has been scientifically active at national and international level in the areas of infectious disease epidemiology and vaccine preventable diseases. She is a visiting professor at Tel Aviv University and at the Medical University of Vienna. In 2011, she was appointed as Director General of Public Health. She is heading the multisectoral process of national Health Targets and head of numerous national committees. Since 2012, she is elected member of the Standing Committee of WHO-Euro (SCRC). Her main fields of interest are Health in All Policies, health literacy, and health equity.
www.bmg.gv.at

11.

About
Prof. Norbert NOWOTNY, PhD (Austria) – Institute for Virology, University of Veterinary Medicine, Vienna

Personal data: Born 31. 03. 1958 in Austria, Austrian citizen, married, two children

Education:

- 1976-1981 Study of Biology, University of Vienna, Vienna, Austria
- 1979-1981 PhD thesis at the Virology Laboratory of the Institute for Cancer Research, University of Vienna Medical School; 1982: Graduation to PhD
- 1997 Habilitation for *Virology* at the University of Veterinary Medicine, Vienna, Austria

Employment (only recent employments are mentioned):

- 1996-1997 Guest Researcher at Stanford University School of Medicine, U.S.
- 1997- Associate Professor of Virology, Institute of Virology, University of Veterinary Medicine, Vienna, Austria
- 2001-2006 (Full) Professor of Virology, Department of Microbiology and Immunology, Faculty of Medicine and Health Sciences, United Arab Emirates University, Al Ain, United Arab Emirates
- 2012- (Full) Professor of Virology, Department of Microbiology and Immunology, College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman
- 2013- Head of the Department of Microbiology and Immunology, College of Medicine and Health Sciences, Sultan Qaboos University, Muscat, Oman

Research Interests:

- All aspects of infectious diseases, especially viral diseases, of humans, farm, pet and zoo animals as well as wildlife
- Medical and veterinary entomology; mosquito- and tick-borne viruses
- Infectious diseases at the environment / animal / human interface
- Emerging infections
- Zoonoses

Scientific Publications:

- 200 Journal Publications, of which currently 170 are listed in PubMed

Currently active grants:

- 2011-2014: European Commission: FP-7 HEALTH: Biology and control of vector-borne infections in Europe (**EDENext**): 333,600 €
- 2011-2013: European Commission: FP-7 HEALTH: European West Nile R & D collaborative initiative (**EuroWestNile**): 334,640 €.

12.

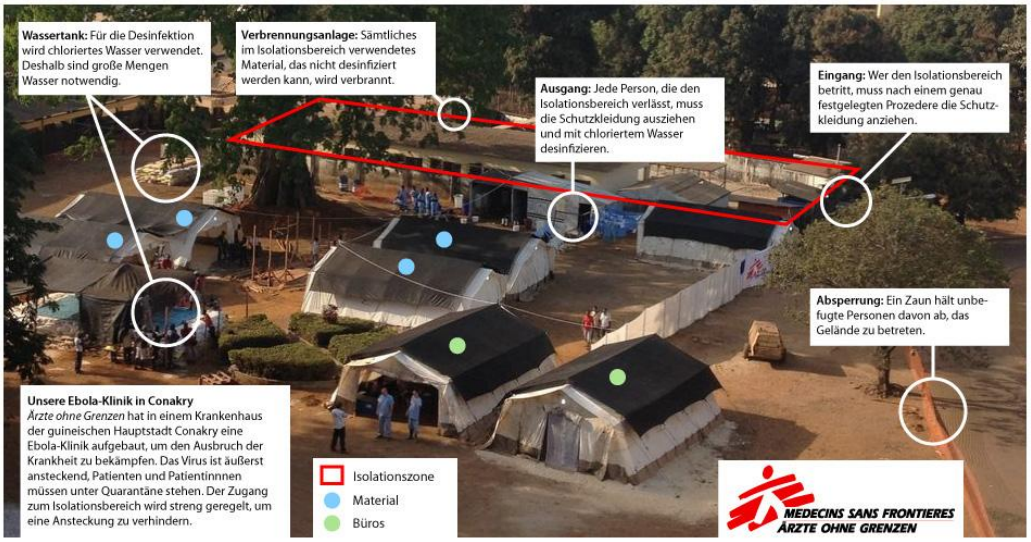
About
Britta Lassmann, MD

Dr. Britta Lassmann is a clinician scientist with a longstanding interest in Infectious Diseases and Global Health. She is a graduate of the University of Vienna Medical School, Austria and completed her Internal Medicine residency at the Mayo Clinic, Rochester, MN and her Infectious Diseases fellowship at Yale University, New Haven, CT. Her international work brought her to the Albert Schweitzer Hospital in Gabon, to Thailand and to Costa Rica. Prior to moving to Boston, she was a faculty member of the Division of Infectious Diseases at the University of California, Los Angeles. Her research expertise is in the area of chronic viral infections and advanced molecular diagnostics. Dr. Lassmann became ISID's new Program Director in January 2014. She is responsible for overseeing the scientific, training, educational, and professional development programs for this non-profit professional organization with more than 70 000 members in over 100 countries. Dr. Lassmann is board certified in Internal Medicine and Infectious Diseases.

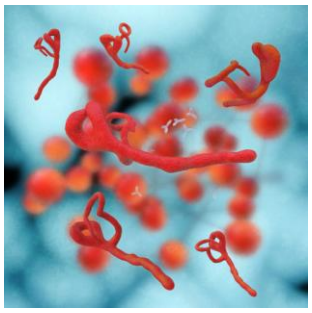
Residency = Facharztausbildung
Fellowship = Additivfach

13. Press pictures

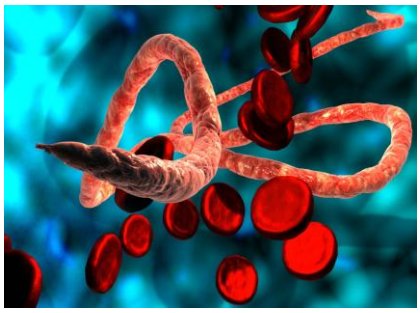
Please find the high resolution pictures on the CD enclosed.



Ebola clinic in Conakry, Guinea
© Médecins Sans Frontières/Ärzte ohne Grenzen



Ebola Virus ©fotoliaxrender-Fotolia.com



Ebola Virus ©ralwel-Fotolia.com

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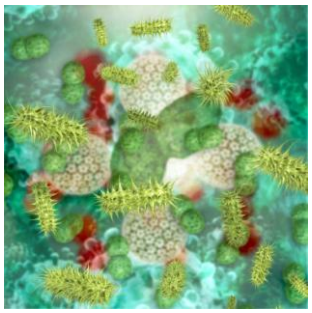
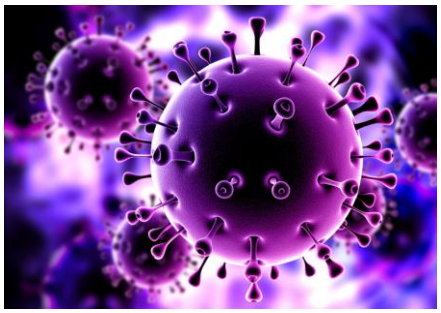


Bacteria © fotoliaxrender-Fotolia.com



SARS Virus ©abhijith3747-Fotolia.com

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