

# OIE Collaborating Centres Reports Activities

## *Activities in 2017*

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**ToR: To provide services to the OIE, in particular within the region, in the designated specialty, in support of the implementation of OIE policies and, where required, seek for collaboration with OIE Reference Laboratories**

**ToR: To identify and maintain existing expertise, in particular within its region**

**1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by the OIE**

Disease control	
Title of activity	Scope
Healthy Pets Healthy People	CDC's One Health Office manages the Healthy Pets Healthy People website. This website provides up to date information on zoonoses in pets and other animals including outbreaks. This website has been used in over 50 countries. <a href="https://www.cdc.gov/healthypets/index.html">https://www.cdc.gov/healthypets/index.html</a>
Rabies prevention and control globally	<p>CDC led World Health Organization (WHO) technical working groups on Surveillance, Human Rabies Prevention, and Oral Rabies Vaccination, as well as participated in revision of the WHO Rabies Technical Report Series.</p> <p>Tool developed for the feasibility assessment and planning of dog vaccination campaigns in countries and regions for effective elimination of dog mediated human rabies. A description of the tool was published in 2017, and an excel-version of the tool was developed and shared with multiple countries, WHO, and OIE.</p>
Rabies prevention and control in Africa	<p>Ethiopia: CDC continues to provide support to national authorities to improve the quality of animal rabies vaccine production. 4 Ethiopian Public Health Institute (EPHI) rabies epidemiologists trained in geographic information systems (GIS). 3 labs outfitted with rabies DFA equipment.</p> <p>Namibia: Participated in a rabies elimination workshop in Namibia and conducted an economic and feasibility assessment for canine rabies elimination in the county.</p> <p>Kenya: In 2017, CDC conducted a regional rabies control meeting for east African countries (Ethiopia, Kenya, Tanzania, Rwanda, and Uganda). A regional rabies control group, under the Pan-African Rabies Control Network was created among these countries to continue developing a regional roadmap towards canine rabies elimination in east Africa and to improve cross-boundary collaboration. The Pan-American Health Organization (PAHO) participated in the meeting to provide perspective on similar regional control groups developed in Latin America. Participants in the East African Rabies Network continued to meet during 2017 informally and are developing a concept note to outline regional initiatives.</p>

Rabies prevention and control in Asia	<p>China: Provided consultation and tools to conduct an economic assessment of the national canine rabies elimination program. Provided consultation on the investigation and diagnostic confirmation of an American citizen who died of rabies in China.</p> <p>India: Provided technical assistance on a rabies contact investigation after a US citizen died of rabies due to a bite from a rabid dog in India.</p> <p>Malaysia: Provided technical support to 50 Malaysian Ministry of Health (MOH) and Ministry of Agriculture and Agro-based Industry (MOA) leadership on rabies surveillance, diagnostics, and prevention measures during outbreak in Sarawak that killed at least 5 people. Provided feedback and field assistance on contact tracing (over 60,000 household interviews) and animal vaccination (over 28,000 cats and dogs vaccinated) programs.</p> <p>Bangladesh: conducted a formal evaluation of the rabies control program using the Stepwise Approach Towards Rabies Elimination tool (SARE). The workshop was attended by 40 government staff from multiple ministries. CDC advised a Field Epidemiology Training Program (FETP) resident on an evaluation of the rabies surveillance system.</p>
Rabies prevention and control in the Caribbean	Caribbean Community: facilitated a multi-country workshop with PAHO and CaribVet focused on evaluating laboratory and surveillance capacity in the Caribbean Community. Members developed criteria for the declaration of rabies freedom and established protocols to sample bats and mongoose to support rabies-free claims.
Rabies prevention and control in Georgia and Kazakhstan	<p>Georgia: conducted a formal evaluation of the rabies control program using the SARE tool. The workshop was attended by 30 government staff from multiple ministries.</p> <p>Kazakhstan: Rabies branch provided standard operating procedures (SOPs) and technical guidance for collection and storage of human brain sample and human saliva for rabies diagnostics. Brain samples and saliva were collected from four patients who met the rabies case definition, where the rabies case definition was suggested by the rabies branch, and stored at -80 C. Additional conversation with the rabies branch is ongoing to determine in what capacity rabies branch can support future diagnostic activities.</p>
Nipah Virus in Bangladesh	Provided technical support and operational research on interventions to reduce Nipah virus exposure in community and healthcare facility settings in Bangladesh.
Identification of multiple viral hemorrhagic fever outbreaks in Uganda	In conjunction with the Uganda Virus Research Institute, assisted in the testing and identification of Marburg virus, Crimean-Congo hemorrhagic fever and Rift Valley Fever in various parts of Uganda
Establishment of real-time syndromic surveillance for animal diseases in Kenya	<p>Establishment of real-time syndromic surveillance for animal diseases using the Enhanced Passive Surveillance (EPS) electronic platform and data management and analysis system developed initially for the US by the Texas Center for Applied Technology (TCAT) and the Institute for Infectious Animal Diseases (IIAD) at Texas A&amp;M University.</p> <p>This data system and tool combines near real time notification of disease or disease syndrome events with visualization and analytics packages that can be programmed to interrogate multiple data points received from the field and other sources. This platform has been adapted for Kenya Ministry of Agriculture, Livestock, and Fisheries and further refinement to integrate analysis of animal and public health data using algorithms defined by epidemiologists from Ministry of Agriculture, Livestock, and Fisheries and Ministry of Health is planned to enhance the utility of the system to detect zoonotic diseases when they occur before they spill over to human populations.</p>
Identification of viral hemorrhagic fever outbreaks in Uganda	In conjunction with the Uganda Virus Research Institute, assisted in the testing and identification Ebola hemorrhagic fever infection, Marburg virus infection, Crimean-Congo hemorrhagic fever, and Rift Valley Fever
Outbreak Investigation of Seoul Virus associated with Pet Norway Rats	Investigated multistate outbreak of Seoul virus in the U.S. associated with infected pet Norway Rats in collaboration with human and animal health partners. Developed recommendations for control and testing. Collaborated with Canada, which also had affected rodents.
Integrated Foodborne Outbreak Response and Management (InFORM), One Health Session - 2017	The InFORM conference hosted a One Health session highlighting cross-sector partnerships and included presentations from CDC, USDA-APHIS, and representatives from several animal industries. Presenters discussed using a multi-tiered approach to prevent human enteric zoonotic illnesses, and emphasized the importance of investigations on farms. This session allowed for discussions among stakeholders who seek innovative improvements to multijurisdictional response to enteric zoonotic outbreaks.

<p>Response to colistin-resistant mcr-1, mcr-2 and mcr-3 genes detected in humans and animals</p>	<p>In response to discovery of colistin-resistant mcr genes, using bacterial samples from human, retail meat, and food animal sources, the CDC, U.S. Food and Drug Administration (FDA), and U.S. Department of Agriculture (USDA) retrospectively screened more than 100,000 bacterial isolates through the National Antimicrobial Resistance Monitoring System (NARMS) and collections of healthcare associated bacteria.</p>
<p>Operationalizing One Health in the Arctic</p>	<p>Arctic Investigations Program (AIP) in Anchorage, Alaska has led and participated in One Health activities related to the health of Arctic populations, zoonotic diseases and developing relationships with stakeholders in Alaska and internationally.</p> <p>AIP Director has a co-lead role in the Arctic Council's One Health initiative. Begun under the US Chairmanship in 2015, "Operationalizing One Health in the Arctic" was a joint effort of the US Department of State and CDC. Main accomplishments were a survey of OH practitioners in Arctic nations, information sharing activities at scientific conferences, an international Table Top exercise with partners from US, Canada, Greenland and Finland. Activities are ongoing through the Arctic Council, under Finland's chairmanship (2017-19). A summary report can be found here: <a href="http://www.sdwg.org/wp-content/uploads/2017/04/One-Health-Report-for-May-2017_final-SAO-edit.pdf">http://www.sdwg.org/wp-content/uploads/2017/04/One-Health-Report-for-May-2017_final-SAO-edit.pdf</a></p>
<p>Interagency Arctic Research Policy Committee</p>	<p>Arctic Investigation Program's Director represents CDC on the Interagency Arctic Research Policy Committee, an US government committee charged with coordinating and carrying out the US Arctic Research Plan. The most recent plan features a specific One Health objective (1.1) and performance elements (1.1.1 - 1.1.5); all require interagency collaboration and most engage CDC subject matter experts related to zoonotic diseases or Alaska Native health concerns. The 2017 -2021 US Arctic Research Plan and implementation progress can be found here: <a href="https://www.iarppcollaborations.org/plan/index.html">https://www.iarppcollaborations.org/plan/index.html</a></p>
<p>Zoonotic Influenza Disease Control Activities</p>	<p>The CDC Influenza Division's International Program activities include helping to establish, expand, and maintain influenza surveillance and laboratory capacity, helping develop global and local pandemic plans and influenza prevention policies, conducting targeted research to address critical gaps in knowledge, and building the evidence for influenza vaccine introduction ongoing an evidence base for influenza control and prevention globally, communicating influenza-associated risks, and decreasing the global impact of influenza caused by seasonal, novel and pandemic influenza viruses. In 2017, the Influenza Division collaborated with more than 100 countries on surveillance and/or research and vaccine policy activities. Examples of projects assessing the value of zoonotic influenza control include the following.</p> <ul style="list-style-type: none"> <li>• Pilot to assess the acceptability of a poultry slaughter intervention to reduce risk of human exposure to airborne highly pathogenic avian influenza (HPAI) virus in rural communities and live bird markets in Bangladesh.</li> <li>• Enhanced human and environmental surveillance for avian influenza A(H7N9) virus in Guangxi, China.</li> <li>• Evaluating live bird market closure and risk of avian influenza A(H7N9) virus transmission in China.</li> </ul> <p>Exploring the association between live poultry market closure and geographical range expansion of Asian lineage avian influenza A(H7N9) viruses in China.</p>
<p>Elephant Tuberculosis in the United States</p>	<p>Division of Tuberculosis Elimination provided on-site technical assistance May 30-June 2, 2017 for National Institute for Occupational Safety and Health's Health Hazard Evaluation following diagnosis of tuberculosis in an elephant at the Oregon Zoo and participated July 25-26, 2017 in "Elephant TB Summit" organized by the Multnomah County (Oregon) Department of Health.</p>
<p>WHO/OIE/FAO/IUATLD Global Roadmap for Zoonotic Tuberculosis</p>	<p>Division of Tuberculosis Elimination staff contributed to review of the Joint WHO/OIE/FAO/International Union to Avoid Tuberculosis and Lung Disease (IUATLD) Global Roadmap for Zoonotic Tuberculosis, which was published October 2017. <a href="http://www.who.int/tb/publications/2017/zoonotic_TB/en/">http://www.who.int/tb/publications/2017/zoonotic_TB/en/</a></p>
<p>Hurricane Irma and Maria Response</p>	<p>CDC coordinated with Emergency Support Function (ESF) - 11 desk officer at the Federal Emergency Management Agency National Response Coordination Center (FEMA NRCC) to receive and forward information about requests to evacuate people and their animals from hurricane-affected islands in the Caribbean so that requests could be addressed expeditiously. This was an interagency collaboration between CDC; United States Department of Agriculture Animal Plant Health Inspection Service (USDA APHIS), Veterinary Services and Animal Care; and multiple states as well as multi-sectoral partnerships with non-government organizations (NGOs) and conveyance operators. The collaboration began on September 7, 2017 and ran through the end of November 2017. Conference calls were held with state public health and animal health officials as well as NGOs supporting the evacuation of animals, to ensure that evacuations occurred in a safe and efficient manner and the human/animal interface did not pose a threat to public health or animal health, including zoonoses transmission. Information about incoming shipments of evacuated animals from ESF-11 desk was shared with state and local jurisdictions.</p>
<p><b>Epidemiology, surveillance, risk assessment, modelling</b></p>	
<p><b>Title of activity</b></p>	<p><b>Scope</b></p>
<p>Anthrax prevention and control globally</p>	<p>Enhanced efforts from subject matter experts at CDC headquarters and from our international in-country staff to improve anthrax surveillance through continued in-country consultations, diagnostic support, training, and health education to ministries of agriculture and health representatives (Ethiopia, India, Bangladesh, Cameroon, Namibia, and Brazil).</p>

<p>Anthrax prevention and control in Asia</p>	<p>India: Conducted a sample collection and laboratory diagnostic training for animal and human health representatives from one endemic district to improve diagnostic capacity for anthrax at the district level. Provided technical assistance to Manipal University to enhance anthrax diagnostic abilities.</p> <p>Bangladesh: Facilitated a One Health in Action: Anthrax Stakeholders meeting with representation from the Ministry of Health and Family Welfare and Ministry of Fisheries and Livestock. Provided technical assistance to both ministries in developing enhanced surveillance platforms in the same endemic regions. Conducted a joint molecular diagnostic training to improve anthrax confirmation rates at the national laboratories and provided confirmatory testing of human sample at CDC HQ.</p>
<p>Anthrax prevention and control in Brazil</p>	<p>Brazil: Brazilian researcher attended a one-week training course at CDC on molecular diagnostic of anthrax as well as molecular typing methods of B. anthracis strains, microbiological identification, phage assay and staining technique.</p>
<p>Brucellosis prevention and control in multiple countries</p>	<p>Prevalence study in livestock (Ethiopia, Bangladesh).</p> <p>Bangladesh: Provided technical assistance and data analysis for a linked animal and human brucellosis prevalence study conducted by International Centre for Diarrhoeal Disease Research, Bangladesh in a high-dairy producing area of Bangladesh. Data and specimen collection completed February 2016, laboratory testing completed in 2017 and manuscript development is underway.</p> <p>Ethiopia: Data and sample collection for a linked livestock household sero-surveillance study in three representative agriculture systems was completed in 2017 and laboratory testing is in progress. Laboratory staff were trained in serology and molecular diagnostic methods and supplies were provided with a goal of determining circulating Brucella species in humans and animals. Brucella species characterization will aid in the development of future livestock vaccination efforts in high Brucella sero-prevalence areas.</p> <p>Kenya: Economic analyses assessing economic cost of brucellosis in animals and humans as a follow-up to the brucellosis seroprevalence study.</p> <p>Georgia: Seroprevalence survey in humans living in rural areas of Georgia (brucellosis survey being done in conjunction with poxvirus surveillance).</p> <p>India: Testing human samples (antibodies, culture and molecular methods) collected as part of an Acute Febrile Illness (AFI) surveillance in humans.</p> <p>Jordan: Incidence study in humans and additional follow up at household level.</p>
<p>Enhancement and integration of animal bite surveillance system for Rabies in multiple countries</p>	<p>CDC participated in the OIE ad hoc meeting to update rabies surveillance standards and criteria for declaration of freedom from canine-mediated rabies.</p> <p>CDC partnered with Mission Rabies to co-develop a mobile-phone application to help standardize rabies investigation practices and formal linkages to diagnostic testing results. The app is slated for pilot implementation in Haiti and India in 2018.</p> <p>Haiti: Continue to support surveillance, diagnostic, and educational activities in Haiti. In 2017 CDC-supported projects which investigated over 2,000 rabies suspected animals using standardized protocols for assessment, observation, and testing. The Haitian rabies laboratory was supplied with reagents and other materials necessary for testing and training was conducted with core diagnostic staff. Rabies surveillance officers educated more than 90,000 people about the risks of rabies, bite prevention, and post-exposure prophylaxis.</p> <p>Georgia: Advised an FETP resident on an evaluation of the rabies surveillance system and phylogenetic analysis of 60 rabies samples.</p>

<p>Enhancement and integration of animal bite surveillance system for Rabies in Asia</p>	<p>Cambodia: Trained 25 staff on rabies surveillance and integration of veterinary and human health sectors for rabies investigations. Rabies surveillance started in Kandal province November 2017.</p> <p>Thailand: Provided technical support to an FETP resident in the evaluation of the national electronic bite reporting system.</p> <p>Vietnam: In 2017, CDC provided technical support to the government to establish rabies surveillance as a component of event-based surveillance. Provided technical assistance in a historical review of human rabies deaths, which resulted in the identification of several sub-populations at increased risk of rabies deaths.</p>
<p>Poxvirus prevention in multiple countries</p>	<p>Enhanced surveillance for monkeypox and support of laboratory diagnostic capacity as well as ecological and epidemiological studies to understand determinants and risk factors of disease (Democratic Republic of Congo, Cameroon, Republic of Congo).</p> <p>Monkeypox outbreak response assistance to Nigeria, including laboratory diagnostic tech transfer, diagnostic support at CDC, DNA sequence analysis, and epidemiological assistance.</p> <p>Provided diagnostic testing on specimens from Liberia (suspected Monkeypox) and Benin (suspected Poxvirus). Provided diagnostic tests for the detection of Orthopoxviruses and Monkeypox virus to Centre Pasteur in Cote d'Ivoire.</p> <p>Georgia - As a collaborator of DTRA funded "Enhancing capacity for case detection and diagnosis of febrile zoonotic-related cutaneous lesions in Georgia" program, CDC provided laboratory trainings, laboratory reagents for diagnostics and research, conducted One Health ecology field studies and human risk factor serosurvey with participation of professionals from Ministry of Health, Labour and Social Affairs and Ministry of Agriculture of Georgia.</p>
<p>Viral hemorrhagic fever surveillance in multiple countries</p>	<p>Uganda: Enabled the rapid diagnosis of Marburg virus disease (MVD) in Uganda by expanding surveillance in-country for viral hemorrhagic fever (VHF)—a group of diseases that include Ebola and Marburg hemorrhagic fevers among others. The expanded program included providing training for case recognition and management for health professionals, providing reagents and training for diagnostic testing, and completing renovation of the VHF diagnostic laboratory at UVRI.</p> <p>Provided VHF outbreak response when requested to countries (Uganda, Niger).</p>
<p>Hantavirus surveillance in United States</p>	<p>Maintain surveillance of all cases of hantavirus infections in the US. Provide consultation to State Health Departments, physicians, and the general public. Coordinate sample shipments, diagnostics, and result dissemination.</p>
<p>Kyasansur Forest Disease in India</p>	<p>C supported acute febrile illness surveillance allowed for expansion of the geographic distribution of Kyasansur Forest Disease.</p>

<p>Leptospirosis surveillance, prevention and control in multiple countries</p>	<p>Bangladesh and India: Continued to support leptospirosis surveillance in 10 health centers in Bangladesh and 15 sites in India. Participated in a Leptospirosis Stakeholders meeting and laboratory diagnostic training in India, which resulted in agreement for both human and animal health sectors to focus on the same six endemic areas for leptospirosis surveillance and outlined a proposed testing algorithm for leptospirosis in India. Indonesia – Assisted the ministry of health in designing and establishing active leptospirosis surveillance in 10 primary health clinics in Jakarta. Also working with the Eijkman Institute to add leptospirosis testing to two existing acute febrile illness sites in Makassar and Bali.</p> <p>Colombia: Conducted active leptospirosis surveillance at multiple hospitals in Bogota. Also conducting a leptospirosis rapid diagnostic test validation and comparison study using national leptospirosis surveillance samples from the past 3-4 years.</p> <p>Brazil: Advised the Curitiba department of health in compiling and analyzing historical leptospirosis surveillance data in order to identify risk factors for infection, and in creating incidence maps of leptospirosis cases.</p>
<p>Rocky Mountain spotted fever prevention and control in Mexico</p>	<p>Enhanced efforts from subject matter experts at CDC to improve surveillance and understanding of epidemiology of ongoing Rocky Mountain spotted fever (RMSF) outbreak in the two northern states most impacted by the disease, Baja California and Sonora. Engagement includes Memorandums of Understanding with the Medical, Veterinary, and State Health Departments, in-country consultation, technical assistance in development and execution of research, clinical education and health promotion campaigns, and diagnostic support.</p>
<p>Surveillance for waterborne disease outbreaks, including first reports of drinking water outbreaks associated with harmful algal blooms — United States</p>	<p>The U.S. has one of the safest drinking water supplies in the world, but outbreaks of disease associated with drinking water and other types of water still occur. CDC released two new reports that describe 69 waterborne disease outbreaks reported from 2013 and 2014. The outbreaks were associated with drinking water, environmental exposures to water (such as water from cooling towers, decorative fountains, or back-country streams), and undetermined exposures to water (where an exposure to a single type of water could not be identified). 61% of the outbreaks were associated with drinking water, which refers to water that comes out of our tap. This water may be used for multiple reasons, like drinking, cooking, cleaning, or bathing. This is the first time CDC has reported drinking water outbreaks associated with harmful algal blooms. The information in these reports helps identify threats to safe water and ways to address them. For more information:</p> <p>Surveillance for Waterborne Disease Outbreaks Associated with Drinking Water — United States, 2013–2014:  <a href="https://www.cdc.gov/mmwr/volumes/66/wr/mm6644a3.htm?s_cid=mm6644a3_w">https://www.cdc.gov/mmwr/volumes/66/wr/mm6644a3.htm?s_cid=mm6644a3_w</a>  Waterborne Disease Outbreaks Associated With Environmental and Undetermined Exposures to Water — United States, 2013–2014:  <a href="https://www.cdc.gov/mmwr/volumes/66/wr/mm6644a4.htm?s_cid=mm6644a4_w">https://www.cdc.gov/mmwr/volumes/66/wr/mm6644a4.htm?s_cid=mm6644a4_w</a>  CDC Drinking Water: <a href="https://www.cdc.gov/healthywater/drinking/index.html">https://www.cdc.gov/healthywater/drinking/index.html</a>  CDC Harmful Algal Blooms: <a href="https://www.cdc.gov/habs/">https://www.cdc.gov/habs/</a></p>
<p>Zoonotic Influenza Activity in the United States</p>	<p>CDC Influenza Division collects, compiles and analyzes information on influenza activity year round in the United States. The U.S. influenza surveillance system is a collaborative effort between the Influenza Division and its many partners in state, local, and territorial health departments, public health and clinical laboratories, vital statistics offices, health care providers, clinics, and emergency departments. The Influenza Division receives and characterizes thousands of influenza viruses to understand influenza disease, inform influenza vaccine strain selection in collaborating with partners, guide public health and clinical recommendations, and conduct risk assessments on animal influenza A viruses to understand their zoonotic/pandemic potential. Key 2017 zoonotic influenza activities included the following</p> <ul style="list-style-type: none"> <li>-Continued to provide information to the public and technical support to states, for an A(H7N2) outbreak in cats in a New York City animal shelter in December 2016</li> <li>-Provided information to the public and technical support to states, for an outbreak of HPAI A(H7N9) virus of North American wild bird origin, detected in commercial chicken breeder flocks in Tennessee in March 2017</li> <li>-Provide information to the public and technical support to states for human infections of variant influenza viruses in 2017</li> <li>-Worked with the Council of State and Territorial Epidemiologists and select states on the Influenza Education among Youth in Agriculture Pilot Project</li> </ul>

<p>Zoonotic Influenza Activity in Multiple Countries</p>	<p>CDC Influenza Division's International Program supports international partners through cooperative agreements to build capacity to respond to pandemic influenza and to prevent and control seasonal influenza. Core activities include supporting influenza surveillance and laboratory capacity, helping develop pandemic plans and influenza prevention policies, supporting targeted research projects, and building the evidence for use of influenza vaccines. In 2017, CDC collaborated with more than 80 countries on surveillance, research and vaccine policy activities. Examples of zoonotic influenza projects</p> <ul style="list-style-type: none"> <li>-Carried out an Influenza Risk Assessment Tool (IRAT) assessment of the newly emerged Yangtze River Delta lineage low pathogenic avian influenza (LPAI) Asian lineage A(H7N9) virus, which scored as having the highest potential pandemic risk of viruses similarly evaluated</li> <li>-Surveillance for human infections with avian influenza A viruses among live bird market workers and their household members in Bangladesh</li> <li>-Enhanced human and environmental surveillance for avian influenza A(H7N9) virus in Guangxi, China</li> <li>-Animal/human interface of influenza transmission in tropical ecosystems in Guatemala</li> <li>-Expanded respiratory disease surveillance to detect and respond to respiratory threats in Kenya</li> <li>-Investigating the contribution of swine and/or avian influenza A viruses to influenza-like illness and pneumonia in South Africa</li> <li>-Assess the emergence of novel avian influenza viruses in Vietnam</li> </ul>
<p>Global Disease Detection Operations Center</p>	<p>Prominent United States Government (USG) Source for Epidemic Intelligence: the Global Disease Detection Operations Center (GDDOC) monitors outbreaks across the globe and assesses their potential risk to the global one health community.</p> <ul style="list-style-type: none"> <li>• The GDDOC was established in 2007 to address weaknesses or gaps in global public health surveillance and response capacity. The GDDOC monitors outbreaks from infectious and non-infectious causes, including public health events attributable to disasters, intoxications, and chemical, radiological, or nuclear events. Of note, zoonotic diseases are also monitored to assess whether emerging or re-emerging disease outbreaks among humans are occurring.</li> <li>• The GDDOC conducts event-based surveillance, which includes scanning numerous sources of information about disease events and other health threats -- searching the internet and other media for key words in over 50 languages.</li> <li>• By conducting event-based surveillance, the GDDOC is able to better position CDC to respond to public health threats earlier. Through rapid information gathering, prompt verification, and timely dissemination of information, the GDDOC ensures that CDC is always prepared to respond to an outbreak among humans or animals.</li> </ul>
<p>Global Disease Detection Operations Center Responses</p>	<p>With the collaboration of multiple CDC centers, including NCEZID, the Global Disease Detection Operations Center supported multiple responses during 2017 including:</p> <ul style="list-style-type: none"> <li>• Yellow Fever, Brazil</li> <li>• Monkeypox, Republic of Congo</li> <li>• Hepatitis A, Marshall Islands</li> <li>• Ebola, the Democratic Republic of the Congo</li> <li>• Plague, Madagascar</li> <li>• Anthrax, Namibia [animal only]</li> <li>• Monkeypox, Nigeria</li> <li>• Dengue, Burkina Faso</li> </ul>

<p>Global Disease Detection centers' surveillance activities in multiple countries</p>	<p>CDC's Global Disease Detection Program (GDD) works alongside partners to keep people safe and protect against the spread of disease to the U.S. and other countries. The ten GDD Centers form a worldwide network to strengthen laboratories, respond to outbreaks, train the workforce, and create strong ties in countries to extend the possibilities of global health. Since the start of the program in 2004, GDD has extended its support to over 100 countries through the 10 GDD centers in Bangladesh, China, Egypt, Georgia and the South Caucasus, Guatemala and Central America, India, Kazakhstan and Central Asia, Kenya, South Africa, and Thailand.</p> <p>CDC's Global Disease Detection centers supported multiple surveillance systems (event, facility, and population-based, non-human animal, syndromic, and sentinel surveillance) including, but not limited to acute febrile illness, acute respiratory illness, neurological disease, diarrheal disease, Zika virus, and viral hemorrhagic fevers, in the 10 GDD centers.</p>
<p>Zoonotic Influenza: Avian Influenza Surveillance in Thailand</p>	<p>- Support for monthly avian influenza surveillance in live bird markets in 9 districts of Bangkok. No highly pathogenic avian influenza virus was found. Low pathogenic avian influenza viruses (H3N8, H4N6 and H8N4) were found in ducks and chickens in 2017.</p> <p>- Support for protocol development for avian influenza surveillance in both humans and animals in four Thai-Laos border provinces. Animal-Human Interface Program and Influenza Division are coordinating so that event-based surveillance in humans and routine monthly surveillance in animals are in line. CDC Thailand also assisted in submitting the protocol for approval from ethical review board in U.S. CDC Headquarters.</p>
<p>Zoonotic Disease Event-Based Surveillance</p>	<p>-Supported pilot use of an event-based surveillance tool (mobile application) for animal and human diseases. In 2017, the tool led to investigations of Streptococcus suis infection and Japanese encephalitis.</p> <p>-Supported planning of project expansion to other 3 districts in Thailand in 2018.</p>
<p><b>Training, capacity building</b></p>	
<p><b>Title of activity</b></p>	<p><b>Scope</b></p>
<p>One Health Zoonotic Disease Prioritization Workshops in multiple countries</p>	<p>CDC's One Health Office works with countries and other partners to conduct One Health Zoonotic Disease Prioritizations (OHZDP). The OHZDP process uses a multisectoral approach to prioritize endemic and emerging zoonotic diseases of major public health concern that should be jointly addressed by national-level human, animal, and environmental health sectors in a country.</p> <p>The OHZDP Workshop is a voluntary and collaborative process that allows countries to identify their most urgent zoonotic disease threats; more efficiently build lab capacity, conduct disease surveillance, plan outbreak response and preparedness activities, and create disease prevention strategies to reduce illness and death in people and animals; make plans to use a One Health approach to better prevent, detect, and respond to the newly prioritized diseases; engage with current and prospective partners to target resources effectively to address the priority zoonotic diseases; and develop and strengthen One Health coordination mechanisms at the national level.</p> <p>In 2017, eleven OHZDP workshops were conducted in Cote d'Ivoire, Uganda, Tanzania, Rwanda, Senegal, Bangladesh, Burkina Faso, Pakistan, Mali, Sierra Leone, and the United States. Zoonotic diseases commonly prioritized include viral hemorrhagic fevers such as Ebola virus and Rift Valley fever, zoonotic influenza viruses, rabies, and anthrax.</p>

One Health Zoonotic Disease Prioritization Tool Trainings in multiple countries	CDC's One Health Office conducted 12 trainings on the One Health Zoonotic Disease Prioritization tool for representatives from 17 countries. During these trainings, CDC facilitator trainers trained 62 facilitators from Cote d'Ivoire, Uganda, Tanzania, Rwanda, Senegal, Bangladesh, Burkina Faso, Pakistan, Mali, Sierra Leone, and the United States. CDC trained 25 Food and Agriculture Organization regional staff from 14 African countries on the use of CDC's One Health Zoonotic Disease Prioritization Tool. This training expanded our network of trained volunteers to include animal health experts, which allowed CDC's One Health Office to have stronger One Health partnerships, reach into additional countries, and expand our language pool for trained facilitators.
Anthrax diagnostic training in multiple countries	<p>Conducted training, in May 2017 at Institute of Epidemiology Disease Control &amp; Research (IEDCR) in Bangladesh on molecular diagnostics for the identification of Anthrax in people and animals. This training included laboratorians from human and animal labs in Bangladesh. Training included sample processing and RT-PCR techniques for proper identification of B. anthracis.</p> <p>Ghana: Validation of rapid diagnostic assay in Ghana – Trained regional vet staff using a train-the-trainer model to collect samples from suspect animal anthrax cases, and test a rapid diagnostic assay on these samples. Provided laboratory training to enable Ghana to conduct confirmatory testing for anthrax. All samples are being tested by RDT and PCR to assist in validation of the RDT.</p>
Leptospirosis diagnostic training in multiple countries	India: Conducted training, September 2017 at National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI) on lateral flow antigen detection tests and molecular identification (RT-PCR) for the detection of leptospirosis among people and animals.
Poxvirus diagnostic training in multiple countries	<p>Enhancement of laboratory diagnostic capacity and training of personnel in field collection of small mammals (Republic of Congo and Cameroon) and in conducting molecular diagnostics and serology assays for poxviruses (Georgia, Cameroon, Nigeria).</p> <p>Azerbaijan: Training for PCR detection, sequencing and data interpretation for orthopox and parapoxvirus was provided to Azerbaijani laboratory specialists.</p>
Capacity building in laboratory detection of poxviruses in animals and humans in Georgia	Collaborating on technology transfer of poxvirus diagnostics to agencies of the Ministries of Health and Agriculture of Georgia.
Hantavirus diagnostic training in Colombia	Technical training on diagnostic tests provided to support surveillance for hantavirus cases in Colombia.
Diagnostic testing for various pathogens in multiple countries	<p>Burkina Faso: Assessment of facilities and technical recommendations provided to support future efforts in diagnosis and surveillance of Rift Valley Fever.</p> <p>Bhutan: Assessment of facilitates and technical recommendations provided to support future efforts in diagnosis and surveillance of CCHF and Nipah.</p>
Development of Laboratory Capacity in India	Assessment of facilitates and technical recommendations provided to support future efforts in diagnosis and surveillance of CCHF, Nipah virus, and Kyasanur Forest Disease in India.
Ebola & Marburg Outbreak Rapid Response Teams in multiple countries	Technical and coordination support and training provided for multidisciplinary disease outbreak rapid response teams (Uganda, Democratic Republic of the Congo).
Development of Seoul virus educational materials	In partnership with affiliated groups, developed educational materials for Seoul virus awareness and prevention in pet rodents.

Rocky Mountain Spotted Fever epidemiology and diagnostic training in Mexico	Conducted surveillance, epidemiologic and laboratory training for Rocky Mountain spotted fever ( <i>Rickettsia</i> spp. and <i>R. rickettsii</i> ). June 6-16th and July 10-14th, hosted and trained 7 veterinary and medical researchers at CDC on molecular diagnostics and cell culture for the identification of <i>Rickettsia</i> spp. and <i>R. rickettsii</i> . Organized and presented at First Binational Conference on RMSF, July 26, in El Centro, California, along with Imperial Country Public Health Department. Conducted animal handling and blood collection training in the field, August 26-27th.
Alaska One Health Workgroup	Arctic Investigations Program co-leads a quarterly Alaska One Health Workgroup meeting and webinar with the Alaska Native Tribal Health Consortium since 2013. Participants include federal, state, tribal, university and local stakeholders. Meetings focus on situational awareness using reports from Local Environmental Observer network and agency updates. Scientific presentations and hot topics are covered. Ongoing themes include unusual mortality events in wildlife, zoonotic disease emergence, environmental toxin accumulation and food security. The archive of webinars can be found here: <a href="http://www.leonetwork.org/en/leo/hubpage/ALASKA?show=one-health-group">http://www.leonetwork.org/en/leo/hubpage/ALASKA?show=one-health-group</a>
One Health Workshop in Alaska	Arctic Investigations Program's Director participated in a 2 day One Health Workshop in May 2017 at the University of Alaska, Fairbanks (UAF) sponsored by the new Veterinary Medical Program. The purpose of the workshop was to provide UAF with input in developing a One Health strategic plan, which includes increasing veterinary medical capacity in rural Alaska communities (a chronic shortage of providers has led to an ongoing stray dog problem), youth education opportunities, pathways for local community engagement in One Health and resource management, research on environmental change, community sustainability, and food security. Further engagement with CDC has followed, including meetings with the CDC Rabies Branch about the potential for evaluating their rabies/contraception vaccine in dogs at UAF.
Influenza Global Systems Development in Multiple Countries	CDC Influenza Division's international capacity-building efforts have led to substantial improvements in foreign countries' ability to conduct influenza surveillance and detect emerging virologic threats. Progress was made in the quality of influenza testing and the extent to which countries report data to WHO FluNet and contribute to vaccine strain selection. Key 2017 zoonotic influenza training and capacity building activities include the following. -Pune, India - Data Management Training, to review and discuss data management and quality issues. -Sarajevo, Bosnia and Herzegovina - Surveillance System Evaluation Training, to provide tools, information, and technical assistance to conduct a surveillance review. -Dakar, Senegal - Virus Isolation Training, to assist countries with virus isolation to obtain National Influenza Center status or to improve current practices. -Accra, Ghana - Rapid Response Refresher Training (multi-country), to review influenza sample collection and shipment, protocols for influenza virus detection, and global platforms for influenza data sharing. -Bangkok, Thailand - Detection and Response to Novel Influenza Viruses workshop (multi-country), to strengthen detection and response to novel influenza viruses. -PAHO and EURO - Biosafety Training (multi-country), to present best practices in the development of biosafety programs and to help laboratories achieve, maintain, and improve global influenza surveillance systems.
Global Disease Detection centers' trainings in multiple countries	CDC's Global Disease Detection (GDD) helps build capacity and improve the quality of epidemiology and laboratory science through applied trainings. The 10 GDD centers (Bangladesh, China, Egypt, Georgia and the South Caucasus, Guatemala and Central America, India, Kazakhstan and Central Asia, Kenya, South Africa, and Thailand) support on-going training activities in collaboration and coordination with other CDC headquarter based groups regarding epidemiology, surveillance, laboratory, informatics, One Health, and workforce development including, but not limited to, anthrax, hemorrhagic fevers, influenza, rabies, and other outbreak-prone diseases.
Novel Influenza Viruses: Best Practices Training Development	CDC Thailand in partnership with Thailand Ministry of Public Health, WHO, FAO, and the World Organization for Animal Health organized a conference titled "Detection and Response to Novel Influenza Viruses: Best Practices Training Development" during November 14-17, 2017 in Bangkok. The event was participated by more than 150 participants from both human health and animal health sectors from Thailand, Bangladesh, Bhutan, Cambodia, China, India, Lao People's Democratic Republic, Mongolia, Myanmar, Nepal, and Vietnam. The objective of the conference is to develop training materials for countries to strengthen detection and response to novel influenza viruses and emerging respiratory pathogens.

Field Epidemiology Training Program	CDC provides support to Field Epidemiology Training Programs in 76 countries. These trained epidemiologists have responded to over 3,300 outbreaks between 2005 and 2016, including zoonotic disease outbreaks. Of 40 programs currently active this year, 30 train veterinary or para-veterinary professionals and 23 provide one health training as part of their curriculum.
<b>Diagnosis, biotechnology and laboratory</b>	
<b>Title of activity</b>	<b>Scope</b>
Anthrax outbreak preparedness and response in multiple countries	Support training, specimen collection, and diagnostic support for outbreak rapid response teams to rapidly diagnose suspected anthrax disease in animal and human populations (India, Bangladesh, Cameroon, Namibia), and in animal populations (Ghana). Currently working to expand efforts in other African countries.
Brucellosis diagnostic testing capacity in multiple countries	Support training human and animal health care providers to recognize human signs of brucellosis and improve laboratory diagnostic capacity for brucellosis in Ethiopia.  Iraq and Jordan: Support laboratory diagnostic capacity and sample collection among public health labs.
Leptospirosis diagnostic capacity in multiple countries	Support SOP development, diagnostic support for outbreak response, and specimen collection for leptospirosis among public health and veterinary labs in India and Bangladesh.  Colombia: Facilitated and sponsored the Colombia NIH's leptospirosis microbiologist to train with CDC's leptospirosis microbiologist in Atlanta for one week.
Development, validation, and standardization of rapid laboratory diagnostic tools and reagents for rabies in Bangladesh	CDC rabies SMEs visited Bangladesh to establish defined core functions and capabilities for the national veterinary laboratory which will help establish best laboratory practices for rabies diagnostics. A meeting with the Department of Livestock in Dhaka Bangladesh (DLS) was held in September to discuss future rabies diagnostic plans at the Central disease investigation laboratory (CDIL) which was followed up with a rabies diagnostic testing needs assessment performed at CDIL in Dhaka.  The national veterinary laboratories' functionality and capabilities as a rabies diagnostic testing facility is the underlying foundation that supports the planning, delivery, and evaluation of rabies public health diagnostic testing and reporting in Bangladesh. Facilities must be capable of sample collection, necropsy, sample preparation, sample testing and sample reporting. In Bangladesh, no laboratories currently perform diagnostic testing for rabies virus. Evaluation of infrastructure, biosafety, equipment maintenance, and sample processing of the site specific laboratory was needed for future rabies diagnostic work. These objectives and activities focus on enhancing epidemiologic and laboratory capacity at the national level. Establishment of a comprehensive laboratory to address this preventable public health risk is necessary and a full assessment was performed and recommendations were given in order to help move ahead future rabies diagnostic testing in country.

<p>Development, validation, and standardization of rapid laboratory diagnostic tools and reagents for rabies in the Americas and the Caribbean</p>	<p>Canada: Introduced the LN34 real-time RT-PCR assay to the Animal Health Centre in British Columbia by technology transfer, where they have used the LN34 assay to test formalin-fixed and archived rabies suspect samples.</p> <p>Chile: Introduced the LN34 pan-lyssavirus real-time RT-PCR assay through technology transfer to the Instituto de Salud Pública de Chile. The laboratory has tested over 70 samples by real-time PCR and compared to in-house FAT and mouse inoculation test results.</p> <p>Colombia: CDC has recently sent the LN34 assay to the INSTITUTO NACIONAL DE SALUD in Colombia to be used to test rabies suspect samples in parallel with Fluorescent Antibody Testing (FAT). Testing is expecting to begin in 2018.</p> <p>Haiti: 10 Ministry of Agriculture employees trained on sample collection, DFA testing, and appropriate sample labeling and storage inventory system. An electronic sample tracking system was implemented.</p> <p>Trinidad: Entered into an agreement to share the LN34 assay with the University of the West Indies, where it will be used to test rabies suspect samples in parallel with FAT testing. Testing is expected to begin in 2018.</p>
<p>Development, validation, and standardization of rapid laboratory diagnostic tools and reagents for rabies in Germany</p>	<p>Sent the LN34 assay to the US Army Public Health Command Europe, where they have tested over 50 rabies suspect samples and compared results with the FAT and between different RNA extraction methods.</p>
<p>Development, validation, and standardization of rapid laboratory diagnostic tools and reagents for rabies in the Philippines</p>	<p>Introduced the LN34 real-time polymerase chain reaction (RT-PCR) assay to the Research Institute for Tropical Medicine (RITM) through technology transfer. Over 2017, RITM tested over 280 samples by real-time PCR and compared results to in-house FAT results.</p>
<p>Development, validation, and standardization of rapid laboratory diagnostic tools and reagents for rabies in Ethiopia</p>	<p>In April 2017 rabies SMEs traveled to Ethiopia to reassess the areas designated for rabies diagnostic testing at the National Rabies Laboratory, Ethiopia Public Health Institute in Addis Ababa, and regional Public Health Institutes in Mekele and Bahir Dar, Ethiopia. A Zeiss contracted engineer was brought in to travel with us to assemble and set up the fluorescence microscope in the above 3 labs. We observed the status of equipment and supply orders in storage at EPHI and made recommendations to improve current lab testing based on what was observed at EPHI National Rabies Laboratory.</p>

<p>Development, validation, and standardization of rapid laboratory diagnostic tools and reagents for rabies in India</p>	<p>India: CDC is collaborating with UK Animal and Plant Health Agency (APHA) on a laboratory twinning project in Bangalore, India. In 2017 a 1-week training workshop was held in which 8 diagnosticians were trained in DFA and PCR diagnostics.</p> <p>Transferred the LN34 pan-lyssavirus real-time RT-PCR assay to the Karnataka Veterinary College (KVAFSU) rabies laboratory through technology transfer. The laboratory has begun testing rabies suspect samples using the LN34 assay and comparing to in-house FAT results. So far, 40 samples have been tested.</p>
<p>Rabies laboratory assessment in Ethiopia</p>	<p>A comprehensive laboratory assessment was completed which has guided improvement of laboratory testing capacity at the national and regional levels in both the animal and human health sectors. Improving protocols and providing fluorescent microscope capabilities, along with supplying regional and national public health laboratories with all the necessary equipment and supplies necessary for rabies diagnostic testing, will allow for more accurate and safe rabies surveillance and response.</p>
<p>Development, validation and standardization of rapid laboratory diagnostic tools for poxviruses</p>	<p>Field validation of a multiplex orthopoxvirus-monkeypox GeneXpert PCR assay.</p>
<p>Development and validation of species specific antibodies against orthopoxviruses</p>	<p>To develop new diagnostic tests to determine species specific antibodies against orthopoxviruses by various platforms, for example, peptide-based, lateral flow and protein microarray based assays.</p>
<p>Development and evaluation of therapeutics for monkeypox</p>	<p>Development of animal models and the evaluation of the efficacy of multiple therapeutics against monkeypox.</p>
<p>Evaluation of Vektor Best kit for detecting CCHF IgG antibodies in livestock</p>	<p>Adapted the human-specific IgG Vektor Best kit to recognize CCHF antibodies in cattle, sheep and goats</p>
<p>Seroprevalence of antibodies to 11 important zoonotic pathogens in Alaska</p>	<p>Arctic Investigation Program, with support from 5 other CDC labs, has recently completed a zoonotic disease study among nearly 900 Alaska Native subsistence hunters and their families, sports hunters, and wildlife biologist to determine the seroprevalence of antibodies to 11 important zoonotic pathogens. This study provides a needed baseline for exposure to these pathogens at a time of rapid environmental change in Alaska. Exposure was most prevalent for <i>Cryptosporidium parvum</i> (29%), California serogroup bunyaviruses (27%) and <i>Giardia intestinalis</i> (19%). Results were reported to the Alaska Native Tribal Health Research Conference in October and a manuscript is being prepared for publication.</p>

<p>Zoonotic Influenza Laboratory Activities</p>	<p>CDC Influenza Division provides diagnostic and laboratory support to domestic and international partners related to zoonotic influenza virus detection and characterization.</p> <p>Activities include the following</p> <ul style="list-style-type: none"> <li>-Strengthening global influenza laboratory surveillance through improved diagnostic capacity through provision of reagents and support of training <ul style="list-style-type: none"> <li>oThe International Reagent Resource (IRR) website at <a href="http://www.influenzareagentresource.org">www.influenzareagentresource.org</a> serves as the program's online hub for managing the ~1400 annual requests for influenza reagents</li> <li>oLaboratories can view the IRR's catalog of 700+ influenza reagents and submit their requests electronically, as well as download product information sheets and certificate of analyses.</li> </ul> </li> <li>oThe IRR distributed nearly 14,000 reagents for surveillance and research activities to 304 international laboratories in 154 countries.</li> <li>-Strengthening global coordination of and communication with GISRS by supporting periodic National Influenza Center (NIC) surveys</li> <li>-Supporting NICs to attend the WHO vaccine composition consultations in September and February</li> <li>-Creating a laboratory network for enhancing diagnostic capabilities for surveillance, outbreaks, and epidemic investigations of a high-risk group of viral pathogens causing respiratory infections in India</li> <li>-Enhancing Thailand's laboratory capacity to prepare and respond for pandemic influenza and viral emerging diseases through a quality assurance and education of health personnel</li> </ul>
<p>Laboratory Support</p>	<p>CDC's Global Disease Detection program supported laboratory activities in collaboration and coordination with other CDC headquarter based groups relating to laboratory support, including laboratory accreditation, facility design, facility assessments, information and management systems, standard operating procedure development, new diagnostic tool evaluation, reagents and supply procurement, upgraded diagnostic equipment. These laboratory activities in the 10 GDD centers (Bangladesh, China, Egypt, Georgia and the South Caucasus, Guatemala and Central America, India, Kazakhstan and Central Asia, Kenya, South Africa, and Thailand) covered a number of diseases and pathogens, but not limited to, rabies, viral hemorrhagic fevers, dengue, Zika, and other arboviruses and emerging infectious diseases.</p>

New Laboratory Diagnostics Introduced	<p>CDC's Global Disease Detection Centers had 7 new laboratory diagnostics introduced in collaboration and coordination with other CDC headquarter based groups</p> <ol style="list-style-type: none"> <li>1. Molecular sequencing of rabies virus</li> <li>2. Molecular detection of MERS CoV</li> <li>3. Polymerase chain reaction for Orientia tsutsugamushi</li> <li>4. Polymerase chain reaction for Burkholderia pseudomallei</li> <li>5. Polymerase chain reaction for DENV-1-4 serotype multiplex</li> <li>6. Polymerase chain reaction for Leptospira</li> <li>7. Polymerase chain reaction for Rickettsia in Georgia and Thailand</li> </ol>
P. brasilianum genome sequencing	<p>P. brasilianum is a antropozoonosis species (circulating freely between monkeys and humans) but became specialized on infecting New World monkeys and became the dominant simian malaria parasite of Latin America. This parasite is morphologically and genetically very similar to human malaria parasite P. malariae. To understand the genetic differences between these two species, the P. brasilianum genome, was sequenced, for the first time, at the CDC in 2017. Current efforts are under way to exploit this new data for understanding genetic differences between the two species and in developing more sensitive molecular diagnostic assays for differentiating these two species, if possible.</p>
Guinea worm testing methodology	<p>In 2017, CDC (Division of Parasitic Diseases and Malaria in collaboration Division of Foodborne, Waterborne, and Environmental Diseases/National Center for Emerging and Zoonotic Infectious Diseases), began development on a new testing methodology for the identification of Guinea worm (Dracunculus medinensis) infection by detection of parasite-specific IgG antibodies in blood, plasma, or serum of dogs. Preliminary efforts are also underway to develop a similar test for baboons. These assays, if they can be developed and validated, could be used to evaluate transmission patterns among animal species known to be infected in specific areas of Chad and Ethiopia and help evaluate the extent of environmental contamination, both of which would help with Guinea Worm Eradication Program decisions and planning.</p>
<b>Vaccines</b>	
<b>Title of activity</b>	<b>Scope</b>

<p>Development and evaluation of rabies vaccines for humans and dogs in Ethiopia</p>	<p>Development and evaluation of novel rabies vaccines (immunocontraceptive vaccine for dogs, thermostable dual rabies vectored Ebola vaccine), monoclonal antibodies and antivirals.</p> <p>As a part of GHS activities in Ethiopia, CDC is working closely with Ethiopian Public Health Institute (EPHI) on development of human rabies vaccine (to replace currently used nerve tissue vaccine) and with the National Veterinary Institute (NVI) on development and evaluation of rabies vaccines for dogs. Development and facilitation of sustainable local rabies vaccine production capacity in developing countries for both humans and animals is critical for successful path towards WHO/OIE/FAO goal of elimination of dog mediated human rabies by 2030.</p>
<p>Training in effective management of mass dog vaccination campaigns for rabies in Guatemala</p>	<p>Led a dog-vaccination workshop at CDC with 15 people responsible for rabies vaccination programs in Haiti and Guatemala. The workshop identified a significant funding gap in Haiti's vaccination program, and identified alternative vaccination strategies that both countries should consider implementing into the national campaign.</p> <ol style="list-style-type: none"> <li>1. Dog vaccination campaigns were evaluated in 15 locations, 3 urban, 3 semi urban, and 4 rural. Data shared with MOH and used to calculate the vaccination target of dogs for the 2017 national vaccination campaign. The MOH are using the evaluation to get a new strategy for the next campaigns.</li> <li>2. CDC and University of the Valley (Guatemala) provides training to 25 environmental techs from MOH to conduct post-dog vaccination surveys.</li> <li>3. Barriers to vaccination were identified, including finding that 40% of dog owners do not take the dogs to the campaign mainly because the dogs are too young according with the policies of the MOH; we use this data to support the strategy of vaccinate dogs of any age, and that strategy was implemented in this campaign with the help of PAHO.</li> <li>4. Our data show the dog population is likely 60% higher than currently estimated. We discussed this information with the MOH and with the national rabies task group, and the calculation will be changed for the next year.</li> </ol>
<p>Training in effective management of mass dog vaccination campaigns for rabies in Haiti</p>	<p>Led a dog-vaccination workshop at CDC with 15 people responsible for rabies vaccination programs in Haiti and Guatemala. The workshop identified a significant funding gap in Haiti's vaccination program, and identified alternative vaccination strategies that both countries should consider implementing into the national campaign.</p> <p>In 2017, collaborated with PAHO to support a mass dog vaccination program. Conducted trainings on data collection using a mobile phone data collector app and designed a new vaccination strategy to overcome Haiti's logistical and awareness barriers. A pilot campaign vaccinated 12,000 dogs and documented 78% vaccination coverage in 2 cities. As of December 2017 CDC has assisted Haiti in the vaccination of 250,000 dogs, with an average evaluation vaccination coverage rate of 76%.</p>

<p>Training in effective management of mass dog vaccination campaigns for rabies in multiple countries</p>	<p>Bangladesh: Procured 165,000 doses of canine rabies vaccine and began developing a protocol for a vaccination evaluation project in 2018.</p> <p>India: A review of the dog rabies vaccination program in Goa, India was conducted, and recommendations for improved efficiency were developed.</p> <p>Ethiopia: Over 7,000 dogs vaccinated in May 2017.</p>
<p>Evaluation of livestock anthrax vaccine in Bangladesh</p>	<p>In preparation to assist the Division of Livestock Services (DLS) with an evaluation the anthrax vaccine produced in country for use in livestock. Safety and efficacy testing will be done in accordance to OIE guidelines. Planning meetings with members from CDC and DLS were held in January and May. Source for new seed stock was identified in December in case needed.</p>
<p>Buffer zone cattle rabies vaccination in Georgia</p>	<p>National Food Agency (NFA), and the CDC South Caucasus Office are committed to reduce the devastating burden of rabies among cattle in Guria. CDC will provide confirmation of primary route of transmission and provide insight into control interventions (i.e. domestic versus wildlife). In the meantime, rabies can be controlled through thorough and effective vaccination. In this regard, CDC South Caucasus Office procured 20,000 universal rabies vaccines, syringes, and disposable equipment for cattle, dogs, and small ruminants for Guria in order to conduct a mass vaccination among animals to create a "buffer zone" between wildlife and livestock. NFA and CDC are currently working on implementing this phased vaccine campaign.</p>
<p>Zoonotic Influenza Vaccine Activities</p>	<p>The CDC Influenza Division, with domestic and integrational partners, contributes to the assessment and development of Candidate Vaccine Viruses (CVV) of influenza A viruses with zoonotic or pandemic potential. Key 2017 activities include the assessment of the antigenic properties of fifth epidemic novel Asian lineage avian influenza A(H7N9) virus isolates. Influenza Division analyses of hemagglutinin gene sequences demonstrated two distinct Asian A(H7N9) virus lineages isolated from humans during the fifth epidemic: the Pearl River Delta lineage and Yangtze River Delta lineage. Hemagglutination inhibition (HI) testing of fifth-epidemic Yangtze River Delta lineage viruses demonstrated significant antigenic differences compared with 2013 CVVs produced from 2013 Asian A(H7N9) viruses. Ferret antisera raised against the 2013 CVVs poorly inhibited hemagglutination of fifth-epidemic Yangtze River Delta lineage viruses compared with inhibition of viruses tested from previous epidemics. In 2017, WHO recommended the development of new CVVs to match the antigenically distinguishable Yangtze River Delta viruses. Influenza Division generated a new CVV derived from a Yangtze River Delta lineage LPAI Asian A(H7N9) virus, A/Hong Kong/125/2017. These CVVs, as well as others being developed by other WHO Collaborating Centers for Influenza, can be used for vaccine production, clinical trials, stockpiling and other pandemic preparedness purposes based on ongoing public health risk assessment.</p>
<b>Other (Name the category)</b>	
<b>Title of activity</b>	<b>Scope</b>
<p>Anthrax prevention and control in Cameroon</p>	<p>Assisted with an anthrax outbreak investigation and conducted site visit to assess laboratory and epidemiological surveillance capacity, and identify partners for activities on enhancing anthrax surveillance and outbreak response. Training course on sample collection, transportation and storage, as well as donning and doffing personal protective equipment (PPE).</p>

Anthrax prevention and control in Ethiopia	Together with the Ethiopian Public Health Institute and the Ministry of Livestock and Fisheries, organized a National Workshop to discuss the current status of anthrax surveillance, outbreak response and laboratory capacity, and to determine high priority areas needing technical assistance to strengthen anthrax activities. Assessed available reports and data from anthrax surveillance in animals and humans. Attended a series of technical meetings on the development of strategic documents, including the National Anthrax Prevention and Control Strategic Plan. Additionally, conducted training on GIS and risk map modeling.
Anthrax prevention and control in Namibia	Responded to request for assistance with an ongoing anthrax epizootic in wildlife in Bwabwata National Park. Assisted the Namibian Ministry of Agriculture, Water, and Forestry, Ministry of Environment and Tourism, and Ministry of Health and Social Services with the ongoing investigation and response. Activities included training on donning and doffing PPE, safe sample collection and storage for animal carcasses, consulting on carcass disposal and investigation of human exposures, and performance of a lateral flow rapid diagnostic test for anthrax. Recommended improvement of surveillance and reporting of anthrax-associated deaths in wildlife and the importance of timely communication and collaboration between all stakeholders.
Rift Valley Fever (RVF) in Kenya	Outbreaks of RVF disease in Eastern Africa and Kenya specifically are characterized by huge public health and socio-economic impact in the country. While preparedness and response protocols have been prepared since the 2006-2007 outbreak, application of interventions including enhanced surveillance to detect early cases in animals before spill over to human populations is a key component of mitigating impact of outbreaks. In response to FAO Emergency Prevention System for Animal Health alerts, WHO/OIE/FAO advised countries at risk to (among other risk mitigation strategies) to enhance active surveillance and immediate notification of RVF cases to limit human morbidity and mortality. RVF syndromic surveillance system was established in 22 counties (out of 47 counties in Kenya) and involving over 1000 farmers to enhance detection of RVF in animals. Between November 16, 2015 and February 29, 2016, climatic conditions such as localized flooding, increase in mosquito populations and animal syndromes associated with RVF in animals including abortions, deaths in livestock and bleeding were reported weekly by 55 veterinarians through a toll free number provided by CDC. In addition, illness in humans in households where animal disease were reported. Through GHSA, syndromic reporting system is being optimized for real-time livestock disease reporting system that will capture outbreaks of emerging zoonotic pathogens for investigation before spillover into human populations.
Rift Valley Fever in Africa	Uganda: The CDC supported Viral Hemorrhagic Fever (VHF) lab at the Uganda Virus Research Institute diagnosed RVF activity in three areas in Uganda in 2017.  Niger: Provided risk communication and health education materials (in French) for supporting local capacities in the RVF outbreak response.
Ebola Outbreak in West Africa	Between 2014-2016, West Africa experienced the largest outbreak of Ebola in history, with multiple countries affected. In response to the outbreak, CDC activated its Emergency Operations Center to coordinate technical assistance and control activities with other U.S. government agencies, the World Health Organization, and other domestic and international partners. CDC also deployed teams of public health experts to West Africa. Widespread transmission of Ebola in West Africa has been controlled, although additional cases may continue to occur sporadically. However, because of ongoing surveillance and strengthened response capacities, the affected countries now have the experience and tools to rapidly identify any additional cases and to limit transmission. More information on CDC's response to Ebola is available:  <a href="http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/index.html">http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/index.html</a>

<p>Research related to Ebola Outbreak in West Africa</p>	<p>Persistence of Ebola virus in semen in Liberia</p> <ul style="list-style-type: none"> <li>Coordinated management and oversight with Liberia's Ministry of Health and the World Health Organization in the Liberia's Men's Health Screening Program. This national program was created to provide testing of semen to male survivors of Ebola virus disease. Results and counselling are provided to participants.</li> </ul> <p>Ebola Virus Persistence study in Sierra Leone</p> <ul style="list-style-type: none"> <li>Technical support for research on the persistence of Ebola virus in multiple body fluids of survivors of Ebola virus disease.</li> </ul> <p>Bat trapping and testing in Sierra Leone</p> <p>Capture wild bat species in Eastern Sierra Leone to test for evidence of going or previous infection with Ebola virus. Trainings with local partners in proper field and laboratory diagnostic techniques are ongoing.</p>
<p>Continued Increase in Human Salmonella Infections Linked to Contact with Live Poultry and Partnerships for Prevention</p>	<p>Epidemiologic, laboratory, and traceback findings linked ten outbreaks of human Salmonella infections to contact with chicks, ducklings, and other live poultry from multiple hatcheries. In 2017, over 1,100 illnesses were reported from nearly every state in the United States, more illnesses than ever recorded by CDC. CDC's Outbreak Response and Prevention Branch is actively working with industry and federal partners to develop new strategies to address this significant public health concern.</p>
<p>Multidrug-resistant Salmonella Heidelberg Infections Linked to Contact with Cattle</p>	<p>An outbreak of multidrug-resistant Salmonella Heidelberg infections linked to contact with cattle highlighted the need to proactively communicate with people who work with livestock to prevent illnesses. Fifty-four people from fifteen states in the U.S. were infected since the outbreak began and illnesses are ongoing. The majority of ill people reported contact with dairy calves or other cattle in the week before their illness started. Some people noted their infection began after their dairy calves were sick or died.</p>
<p>Multidrug-resistant Campylobacter Infections Linked to Contact with Pet Store Puppies</p>	<p>As of the end of 2017, 97 people from seventeen states have been infected with the same strains of multidrug-resistant Campylobacter. Nearly every patient reported contact with a puppy in the week before their illness started. This is the first multistate Campylobacter outbreak documented in the United States linked to puppies, and the outbreak serves as an important reminder that companion animals can carry enteric pathogens, like Campylobacter. This outbreak also revealed widespread antibiotic use along the distribution chain from breeders to brokers and pet stores, which highlights the contribution a One Health approach to antibiotic stewardship could make to the pet dog industry.</p>

<p>Responding to Zika Virus in multiple countries</p>	<p>CDC's Global Disease Detection is currently working with ministries of health and agriculture, universities, U.S. government agencies, and other research partners to:</p> <ul style="list-style-type: none"> <li>• Determine incidence of infection and monitor pregnancy and birth outcomes</li> <li>• Determine risk factors for severe Zika-related disease outcomes (i.e. Guillain-Barre syndrome, other neurological disorders)</li> <li>• Describe the ecology between Zika-carrying animals, mosquitoes, and humans at the animal-human interface</li> <li>• Describe the geographic distribution and transmission dynamics of Zika             <ul style="list-style-type: none"> <li>• Evaluate new ways to diagnose Zika infection</li> </ul> </li> </ul> <p>Zika research activities are ongoing in multiple GDD Regional Centers (Bangladesh, China, Egypt, Georgia, Guatemala, India, Kenya, South Africa, and Thailand) and the CDC-Haiti Office. We are also partnering with the Department of Defense's Naval Medical Research Unit-Six in Peru and CDC colleagues from the Division of Vector Borne Disease in Ft. Collins, Colorado, to conduct ecology studies in Peru, Colombia, and Brazil.</p> <p>For additional information on CDC's response to Zika, please visit <a href="https://www.cdc.gov/zika/">https://www.cdc.gov/zika/</a></p>
<p>Guinea worm in Chad</p>	<p>In July 2017, DPDM/CGH conducted Epi-Aid 2017-028 to investigate the ongoing outbreak of Guinea worm disease (GWD) in humans and dogs in Chad. This Epi-Aid was performed in partnership with the Chad Ministry of Public Health, the World Health Organization, and The Carter Center. In light of the threat presented to the national and global Guinea Worm Eradication Programs (GWEPs) by the persistent number of human infections, the increasing annual number of dog infections, and the unclear mode of transmission in Chad, the Chad Ministry of Public Health requested technical assistance from PDB to investigate GWD transmission to determine the risk factors for infection, particularly those shared between humans and dogs. In addition to a case-control study of humans, a pilot study of dog owners was also conducted in July in preparation for a larger case-control study of dogs in February-March 2018. This subsequent epidemiologic study will be coupled with a serologic study performed at CDC and with a dog behavioral and dietary intake study performed by collaborators at the University of Exeter.</p>

***ToR : To propose or develop methods and procedures that facilitate harmonisation of international standards and guidelines applicable to the designated specialty***

**2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the surveillance and control of animal diseases, food safety or animal welfare**

Proposal title	Scope/Content	Applicable area
<p>Collaborating for the Implementation of the Revised International Health Regulations National Surveillance and Response Capacity</p>	<p>NCEZID works with CDC's Division of Global Health Protection, the Global Disease Detection program, and GDD Regional centers to assure that the IHR process will be accommodated during all investigations, surveillance activities, and research when appropriate. Whenever possible, animal and human components are sharing biologic isolates and epidemiologic data to facilitate the control and containment of disease.</p>	<p><input checked="" type="checkbox"/> Surveillance and control of animal diseases  <input type="checkbox"/> Food safety  <input type="checkbox"/> Animal welfare</p>

***ToR: To establish and maintain a network with other OIE Collaborating Centres designated for the same specialty, and should the need arise, with Collaborating Centres in other disciplines***

***ToR: To carry out and/or coordinate scientific and technical studies in collaboration with other centres, laboratories or organisations***

**3. Did your Collaborating Centre maintain a network with other OIE Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?**

Yes

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
Mutiple OIE CCs/RLs/other organizations	Multiple	<input checked="" type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input checked="" type="checkbox"/> Middle East	CDC is in communication with multiple collaborating centers, reference laboratories and other organizations from multiple countries to maintain a network and share information on One Health activities related to emerging and re-emerging zoonoses.

**4. Did your Collaborating Centre maintain a network with other OIE Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?**

Yes

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
Centers for Disease Control and Prevention; United States Department of Agriculture; National Institutes of Health; Food and Drug Administration; Environment Protection Agency; U.S. Department of the Interior: National Park Service, U.S. Fish and Wildlife Service, U.S. Geological Survey; U.S. Department of Homeland Security; U.S. Department of Defense; Defense Threat Reduction Agency; U.S. Department of Labor, U.S. Agency for International Development, and others	United States	<input checked="" type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input checked="" type="checkbox"/> Middle East	<p>To communicate, coordinate, and collaborate on projects related to One Health; Approaches to prevention and control of emerging and re-emerging zoonotic diseases;</p> <p>To identify and pursue opportunities to improve efficiency outcomes for human, animal, and environmental health across the U.S. government.</p>

**ToR: To place expert consultants at the disposal of the OIE.****5. Did your Collaborating Centre place expert consultants at the disposal of the OIE?**

Yes

Name of expert	Kind of consultancy	Subject
Julie Sinclair, MA, DVM, MPH, DACVPM	CDC Liaison to the World Organization for Animal Health (OIE)	Global health security, emerging and reemerging zoonoses, and antimicrobial resistance
Sean Shadomy, DVM, MPH, DACVPM	CDC Liaison to the Food and Agriculture Organization of the United Nations (FAO)	Global health security, emerging and reemerging zoonoses, and antimicrobial resistance
Casey Barton Behravesh, MS, DVM, DrPH, DACVPM	Technical Assistance, Attendance at OIE Meetings, Editor of Upcoming OIE Science and Technical Review	Global health security, emerging and reemerging zoonoses, antimicrobial resistance, and World Animal Health Information System + Steering Committee
Ryan Wallace, DVM, MPH	Technical Assistance, Ad-hoc Committee Member on Rabies, Head of the OIE Reference Laboratory for Rabies, Author of Chapter on Rabies Surveillance for the OIE Terrestrial Manual	Rabies

**ToR: To provide, within the designated specialty, scientific and technical training to personnel from OIE Member Countries****6. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by the OIE, to personnel from OIE Member Countries?**

Yes

- a) Technical visits: 50
- b) Seminars: 20
- c) Hands-on training courses: 20
- d) Internships (>1 month): 30

Type of technical training provided (a, b, c or d)	Content	Country of origin of the expert(s) provided with training	No. participants from the corresponding country

b	CDC's One Health Office hosts the Zoonoses and One Health Updates or ZOBU Call, a monthly webinar to provide the latest news and resources on zoonoses and other One Health issues for a USA audience including public health and animal health professionals working in government, non-governmental organizations, industry, and academia.	USA	1250
d	CDC's National Center for Emerging and Zoonotic Infectious Diseases hosted Epidemiology Elective Students and Emory University student interns to provide public health training; students supported work on OIE projects.	USA	34
c	CDC's One Health Office and other trained CDC facilitators conducted a training on the One Health Zoonotic Disease Prioritization tool in Cote d'Ivoire.	Cote d'Ivoire	3
c	CDC's One Health Office and other trained CDC facilitators conducted a training on the One Health Zoonotic Disease Prioritization tool in Uganda.	Uganda, Rwanda	15
c	CDC's One Health Office and other trained CDC facilitators conducted a training on the One Health Zoonotic Disease Prioritization tool in Tanzania.	Tanzania	3
c	CDC's One Health Office and other trained CDC facilitators conducted a training on the One Health Zoonotic Disease Prioritization tool in Senegal.	Senegal	8
c	CDC's One Health Office and other trained CDC facilitators conducted a training on the One Health Zoonotic Disease Prioritization tool in Bangladesh.	Bangladesh	3
c	CDC's One Health Office and other trained CDC facilitators conducted a training on the One Health Zoonotic Disease Prioritization tool in Burkina Faso.	Burkina Faso	8
c	CDC's One Health Office conducted a training on the One Health Zoonotic Disease Prioritization tool and the One Health Systems Mapping and Analysis Resource Toolkit in Pakistan.	Pakistan	11
c	CDC's One Health Office and other trained CDC facilitators conducted a training on the One Health Zoonotic Disease Prioritization tool in Mali.	Mali	7
c	CDC's One Health Office and other trained CDC facilitators conducted a training on the One Health Zoonotic Disease Prioritization tool in Sierra Leone.	Sierra Leone	6
c	CDC's One Health Office and other trained CDC facilitators conducted a training on the One Health Zoonotic Disease Prioritization tool and components of the One Health Systems Mapping and Analysis Resource Toolkit in the United States.	United States	13

c	<p>CDC's One Health Office staff and other CDC trained facilitators trained 25 Food and Agriculture Organization regional staff from 14 African countries on the use of CDC's One Health Zoonotic Disease Prioritization Tool. This training expanded our network of trained volunteers to include animal health experts, which allowed CDC's One Health Office to have stronger One Health partnerships, reach into additional countries, and expand our language pool for trained facilitators.</p>	<p>Kenya, Uganda, Ethiopia, Tanzania, Congo, Burkina Faso, Democratic Republic of Congo, Cote d'Ivoire, Guinea, Mali, Senegal, Liberia, Cameroon, Ghana</p>	25
c	<p>Provided serological and molecular training for ELISA diagnostics for brucellosis for regional public health laboratories and the National Public Health Lab.</p>	Ethiopia	15
a	<p>Participated in a data analysis meeting to assist the Ethiopian Government to interpret the large amount of risk factor data that was collected during the sero-surveillance study.</p>	Ethiopia	10
a	<p>Anthrax: Joint anthrax stakeholders meeting held in March 2017 to determine priority areas for technical assistance and develop a joint plan for anthrax surveillance and outbreak response among human and animal health sectors. The meeting was followed by a minimum of 5 anthrax technical working group meetings.</p>	Ethiopia	25
c	<p>Anthrax: Conducted training on sample collection, storage and transport as well as donning and doffing of PPE for representatives from the human and animal sectors.</p>	Cameroon	15
c	<p>Conducted training, Sept. 2017 at NIVEDI on lateral flow antigen detection tests and molecular identification (RT-PCR) for the detection of leptospirosis among people and animals.</p>	India	20
c	<p>Anthrax: Conducted training in July 2017 at Ranchi University for anthrax sample collection and laboratory diagnostics for human and animal health laboratories, as well as universities in one endemic state.</p>	India	25
a	<p>Anthrax: One Health in Action: Anthrax Stakeholders meeting was held in May 2017 with representation from human and animal health sectors. Consensus was reached to focus enhanced surveillance on 1-3 endemic regions and to conduct joint outbreak response.</p>	Bangladesh	20
c	<p>Anthrax: Conducted molecular diagnostic training for anthrax in May 2017 for human and animal health laboratories. Focused on theory, practical and interpretation of RT-PCR results.</p>	Bangladesh	12
a, c	<p>Anthrax: Conduct a two week training laboratory staff on culture and identification of Bacillus anthracis, including biosafety and biosecurity.</p>	Ghana	17

a, c	15 post-vaccination surveys completed and staff trained on electronic data collection for disease vaccination programs.	Guatemala	15
c	Training of personnel in capture, handling, and sampling of small mammals for monkeypox investigations.	Republic of Congo	5
c	Orthopoxvirus diagnostic capacity.  Real-time PCR diagnostic assays for detection of monkeypox virus and other orthopoxviruses was transferred to diagnostic laboratories in country.	Nigeria	6
c	Orthopoxvirus diagnostic capacity.  Real-time PCR diagnostic assays for detection of  Orthopoxviruses was transferred to diagnostic laboratories in country. Training of personnel in field collection of small mammals.	Cameroon	18
c	Rabies diagnostic capacity  2 trainings on diagnostic assays for antigenic detection (DFA), 1 training on real-time RT - PCR.  Training on dog vaccination methods, data collection, and post-vaccination evaluation.	Haiti	75
c	Rocky Mountain spotted fever: Hosted and trained veterinary and medical researchers on molecular diagnostics and cell culture for the identification of Rickettsia spp. and R. rickettsii.	Mexico	7
b	Organized and presented at First Binational Conference on Rocky Mountain spotted fever, July 26, in El Centro, CA, along with Imperial County Public Health Department.	Mexico	100

***ToR: To organise and participate in scientific meetings and other activities on behalf of the OIE***

**7. Did your Collaborating Centre organise or participate in the organisation of scientific meetings on behalf of the OIE?**

Yes

National/International	Title of event	Co-organiser	Date (mm/yy)	Location	No. Participants
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International	EBO-SURSYS (EU-funded project targeting 10 West and Central African countries)	OIE	01/17,05/17	Paris, France	35
International	CDC Liaison to FAO Seminar Presentation	CDC	04/17	Paris, France	20
International	Influenza data modelling training	USDA and OIE	09/17	Paris, France	10
International	Tripartite Joint Risk Assessment Workshop	WHO and FAO	10/17	Rome, Italy	30
International	World Organization for Animal Health (OIE) ad hoc Group meeting on Rabies	OIE	11/17	Paris, France	12

***ToR: To collect, process, analyse, publish and disseminate data and information relevant to the designated specialty***

#### **8. Publication and dissemination of any information within the remit of the mandate given by the OIE that may be useful to Member Countries of the OIE**

a) Articles published in peer-reviewed journals: 10000

Over 10,000 full text articles can be accessed at CDC Stacks: <http://stacks.cdc.gov/welcome>

CDC Stacks is a free, digital archive of scientific research and literature produced by CDC. This online archive is composed of curated collections tailored for public health research needs. This repository is retained indefinitely and is available for public health professionals, researchers, as well as the general public. CDC Stacks provides access to current CDC research and literature such as the Open Access Collection. In addition, CDC Stacks offers a historical perspective that was previously not available, such as the first 30 volumes of the Morbidity and Mortality Weekly Report. As a fully-featured repository, CDC stacks provides the ability to search the full text of all documents, browse journal articles by public health subjects, and explore the curated collections of documents on relevant topics.

b) International conferences: 100

Each year, CDC NCEZID technical and program staff attend and present at numerous international conferences.

c) National conferences: 100

Each year, CDC NCEZID technical and program staff attend and present at numerous national conferences.

d) Other

(Provide website address or link to appropriate information): 5

Emerging Infectious Diseases (EID) Journal - Published monthly by CDC, EID was established to promote the recognition of new and re-emerging infectious diseases around the world and improve the understanding of factors involved in disease emergence, prevention, and elimination. EID Journal Website:

<http://www.cdc.gov/ncidod/EID>

The National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) website maintains updated information on current outbreaks, recent work, and publications. <http://www.cdc.gov/ncezid/>

CDC's One Health Office maintains two websites (One Health website (<https://www.cdc.gov/onehealth/index.html>) and Healthy Pets Healthy People website (<https://www.cdc.gov/healthypets/index.html>), which provide up-to-date information on One Health activities and zoonoses-related prevention for the general public. The One Health Office led efforts for or participated in numerous One Health-related communication campaigns, including One Health Day, National Pet Week, National Preparedness Month, and US Antibiotic Awareness Week. Promotional activities ranged from social media to blog posts and partner newsletters and these efforts resulted in global awareness. More information can be found at <https://www.cdc.gov/onehealth/>

Additionally, the office continued its monthly Zoonoses and One Health Updates (ZOHU) calls, which reach public health and animal health professionals in federal, state, and local agencies as well and non-governmental organizations, industry, and academia. In 2017, the 10 ZOHU calls held included nearly 3,000 participants. Other efforts included a new One Health fact sheet, two new posters on staying healthy at animal exhibits, and two public health in action stories posted online.

CDC One Health Office provided scientific input to CDC's Zika and Animals page (<https://www.cdc.gov/zika/transmission/qa-animals.html>), Pet Safety in Emergencies page (<https://www.cdc.gov/healthypets/pet-safety-in-emergencies.html>), and Disaster Preparedness for your Pet (<https://www.cdc.gov/features/petsanddisasters/index.html>)