

OIE Collaborating Centres Reports Activities

Activities in 2020

This report has been submitted : 2021-01-15 07:27:21

Title of collaborating centre:	Emerging and Re-Emerging Zoonotic Diseases
Address of Collaborating Centre:	One Health Office Centers for Disease Control and Prevention 1600 Clifton Road, MS D-76 Atlanta, Georgia 30333 UNITED STATES OF AMERICA
Tel.:	+1-404 639.03.67
Fax:	+1-404 639.70.90
E-mail address:	cbartonbehavesh@cdc.gov
Website:	www.cdc.gov/ncezid/
Name of Director of Institute (Responsible Official):	Rima Khabbaz, MD Director, National Center for Emerging and Zoonotic Infectious Diseases, Centers for Disease Control and Prevention (CDC)
Name (including Title and Position) of Head of the Collaborating Centre (formally OIE Contact Point):	Casey Barton Behravesh MS, DVM, DrPH, DAVCPM Director, CDC One Health Office
Name of writer:	Grace Goryoka, MPH Public Health Advisor, CDC One Health Office

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
Provided expertise to OIE through expert consultation on the OIE ad hoc Group on COVID-19 at the animal-human-ecosystem interface	CDC's One Health Office participated fully in the OIE ad hoc Group on COVID-19 at the animal-human interface as an OIE Collaborating Centre (CC) for Emerging and Re-Emerging Zoonotic Diseases. The head of the CC was invited as a consultant to this group (Expert groups and guidance: OIE - World Organisation for Animal Health) and participates in monthly meetings with global experts. The CC provided regular updates on the status of SARS-CoV-2 animal testing, transmission reports, and research in the U.S. In addition, the CDC One Health Office provided input on guidance developed and shared CDC COVID-19 guidance and other resources.
Provided expertise to OIE through expert consultation on the OIE ad hoc Group on COVID-19 at the animal-human-ecosystem interface	The OIE Collaborating Centre (CC) for Emerging and Re-Emerging Zoonotic Diseases contributed heavily to OIE's Considerations for Sampling, Testing and Reporting for SARS-CoV-2 in animals (Sampling_Testing_and_Reporting_of_SARS-CoV-2_in_animals_final_7May_2020.pdf (oie.int)); CDC contributed to the OIE Website on COVID-19 and animals which is used by 184 member countries and others globally (Questions and Answers on the COVID-19: OIE - World Organisation for Animal Health) and the COVID-19 Technical Fact Sheet (A_Factsheet_SARS-CoV-2_1_.pdf (oie.int)). CDC chaired the subgroup for the development of the Guidance on working with farmed animals of species susceptible to infection with SARS-CoV-2 (Draft_OIE_Guidance_farmed_animals_cleanMS05.11.pdf).
Provided expertise to FAO on COVID-19 and One Health and contributed to risk assessment	CDC's One Health Office provided expert consultation on "Exposure of humans or animals to SARS-CoV-2 from wild, livestock, companion and aquatic animals: Qualitative exposure assessment," which provides 88 pages of detailed information for a variety of animal species and SARS-CoV-2 and is being used by >190 countries globally (http://www.fao.org/3/ca9959en/ca9959en.pdf). This document covers the following objectives: I. assessment of the risk of human or animal exposure to SARS-CoV-2 through contact with, handling or consumption of wild, domestic and aquatic animal species or their products; II. identification of current knowledge gaps regarding the zoonotic origin or animal-human spillover of SARS-CoV-2 and recommendations for priority studies; III. summary of available evidence for SARS-CoV-2 susceptibility of different animal species; IV. evidence-based recommendations on how to prioritize animal species for targeted field investigations or research studies; V. recommendations for targeted One Health investigations and epidemiological, laboratory, anthropological or seasonality studies to fill critical knowledge gaps evidenced by this exposure assessment.
Provided expertise to WHO on COVID-19 and One Health	Participated in WHO hosted meetings to address animal and environmental research on the virus origin, and management measures at the human-animal interface on COVID-19 including: <ul style="list-style-type: none"> -R&D Blueprint Meeting held in Feb 2020 (https://www.who.int/teams/blueprint/covid-19) and -Virtual Global Research and Innovation Forum on COVID-19 in July 2020 (Publication title (who.int)) -Hosted meeting for WHO staff to discuss US Efforts to Enhance Animal Surveillance for SARS-CoV-2.

<p>Advancing One Health approach to address an emerging zoonoses, COVID-19, in the US</p>	<p>1. Guiding domestic strategy and priorities on the One Health aspects of COVID-19; Investigating zoonotic transmission of SARS-CoV-2 between people and animals to understand inter-species transmission dynamics and identify the role of animals as hosts and potential reservoirs of SARS-CoV-2 through collaborations with One Health partners; Supporting subnational, national, and global public health, animal health, and other partners in preventing and managing SARS-CoV-2 transmission events between people and animals (and maintaining 24/7 call consultation); Disseminating timely, evidence-based guidance to best protect human and animal health and welfare by maintaining 14 CDC websites (>8.4 million web views globally in 2020; Tracking global and domestic animal cases of SARS-CoV-2 reported to OIE and USDA/CDC respectively to maintain updated numbers of reported SARS-CoV-2 cases in various animal species.</p>
<p>Created and maintains a federal level One Health Coordination Mechanism for COVID-19, the One Health Federal Interagency COVID-19 Coordination Group (OH-FICC) and OH-FICC Subgroups</p>	<p>CDC chairs the One Health Federal Interagency COVID-19 Coordination (OH-FICC) Group to bring together representatives from 20 key federal agencies representing multiple Departments across the US government in regular meetings to exchange information, updates, and to collaborate to address One Health aspects of COVID-19 in the United States relevant to human health, animal health, and the environment. The OH-FICC has 5 subgroups relevant to human-animal-environment interactions with a focus on (Companion Animals, Livestock, Animal Diagnostics and Testing, Wildlife and Zoo Animals, and Environment). CDC chairs the OH-FICC Companion Animal Subgroup and provides expertise to all 5 subgroups.</p>
<p>Provided One Health Coordination between the OH-FICC and a variety of One Health partners on COVID-19</p>	<p>CDC coordinated a weekly One Health State Federal COVID-19 Update Call to bring together state, local, territorial, and federal partners on the One Health aspects of COVID-19 to share updates, disseminate information, and address concerns. Invitees included state, local, and territorial public health officials, animal health officials, and wildlife officials and OH-FICC members. Multiple federal agencies and departments including CDC, Food and Drug Administration, U.S. Department of Agriculture, Department of the Interior, and others are also represented. We also coordinated a Monthly One Health Partners COVID-19 Webinar to coordinate and present news and key updates on the One Health aspects of COVID-19, as well as guidance and resources for a variety of partners including public health officials, animal health officials, veterinarians, pet owners, academic, industry, and non-governmental partners.</p>
<p>COVID-19 One Health Scientific Publication tracker</p>	<p>The CDC One Health Office maintains a continuously updated database of pre-print and peer-reviewed publications related to COVID-19 at the human-animal-environment interface. The tracker, which contains over 500 articles, has been distributed to federal officials, state, local, and territorial government representatives, individuals from academia and research institutes, and officials from various private and non-governmental sectors. Contact onehealth@cdc.gov to subscribe for updates.</p>
<p>Taking a Multisectoral, One Health Approach: A Tripartite Guide to Addressing Zoonotic Diseases in Countries (TZG)</p>	<p>CDC provided multiple experts, including CDC Loaned Experts to OIE and FAO, to support the technical aspects of the TZG. The CDC One Health Office also provided financial and in-kind support in the development of all aspects of the TZG and supported US government coordination efforts toward the development of the TZG. CDC experts provided technical expertise toward the vision and content development of the TZG and promoted dissemination to our network of >70,000 partners and organizations.</p>
<p>Support development of Operational Tools (OTs) to support implementation of the guide, "Taking a Multisectoral, One Health Approach: A Tripartite Guide to Addressing Zoonotic Diseases in Countries (TZG)" including tools for Joint Risk Assessment, Multisectoral, One Health Coordinating Mechanisms, and Surveillance and Information Sharing</p>	<p>The CC provided technical and financial support in the development of TZG Operational Tools (OT). The CC provided multiple CDC subject matter experts and CDC Loaned Experts to OIE and FAO to serve as members of technical working groups for OT development including Joint Risk Assessment (JRA), Multisectoral, One Health Coordinating Mechanisms (MCM), and Surveillance and Information Sharing (SIS). CDC made significant contributions by providing technical expertise to the development of the TZG OTs and associated materials including designing an electronic tool platform for SIS OT. The CDC Loaned Expert to the OIE served as a member of three OT working groups as an OIE representative. The CDC Loaned Expert to FAO included membership of the MCM OT workgroup, supported publication of the JRA OT and development of online training, served as the FAO lead for the development of the TZG SIS OT, including the development of the OT and online training and planning of country pilot workshops. The Loaned Experts have been fully involved in review and finalization of OT piloting materials and served as facilitators/leads/subject matter experts during OT development workshops and regional and country pilots and train the trainers sessions.</p>
<p>Brucellosis One Health Guidance and Tools</p>	<p>CDC's One Health Office, in partnership with CDC's Bacterial Special Pathogens Branch and FAO, developed a toolkit called the Brucellosis One Health Guidance and Tools (BOHGAT). The BOHGAT includes a guidance document that builds upon FAO's existing stepwise approach model for disease control, and a spreadsheet-based self-assessment tool, the Staged Tool for the Elimination of Brucellosis (STEB), that countries can use to assess their capacity to prevent, control, and eliminate brucellosis. In 2020, the STEB was piloted in Croatia. The STEB has undergone piloting in nine countries and is being prepared for finalization and publication in 2021.</p>

Healthy Pets, Healthy People	CDC's One Health Office manages the Healthy Pets, Healthy People website. This website provides up-to-date information on zoonotic diseases related to people and interactions with pets, livestock, and wildlife, including U.S. outbreaks linked to animals and animal products. The website also provides resources for public health and animal health officials, as well as veterinarians and physicians; educational materials on staying healthy around animals; guidelines for preventing zoonoses in high risk people, and in public settings such as petting zoos; and resources for pet owners on how to prepare pets for disasters. This website is used globally by >50 countries annually and is among the top 100 most popular CDC websites. www.cdc.gov/healthypets
Influenza and Zoonoses Education for Youth in Agriculture in the United States	The U.S. Centers for Disease Control and Prevention has worked with the Council of State and Territorial Epidemiologists (CSTE) to promote a One Health collaboration between federal, state, and local public health and animal health authorities and state youth agriculture groups through a program called Influenza and Zoonoses Education Among Youth in Agriculture. This innovative program educates youth about zoonotic diseases shared between animals and people, delivers disease prevention messages, and strengthens One Health networks among state human and animal health departments and agricultural communities across rural America. For more information and to access globally available prevention resources, please visit www.cdc.gov/onehealth/pdfs/youth-in-ag-508.pdf and www.cdc.gov/onehealth/domestic-activities/index.html
Disease Control and surveillance for hantavirus disease in Navajo Nation	Evaluated and determined if the 5-point hantavirus clinical screen can be used as a rapid screening tool to differentiate between hantavirus infection and COVID-19 infection in Navajo Nation; Healthy Homes project to prevent rodent invasion of homes underway in Navajo Nation.
Multiple country Viral Hemorrhagic Fever (VHF) outbreak response support	CDC experts deployed for VHF outbreak response support in multiple countries including deployment of mobile laboratories when requested by countries. CDC aided response to Lassa in Liberia, RVF and CCHF in Uganda, preparation for Ebola in Rwanda and South Sudan, and Chapare virus in Bolivia, and Ebola in Democratic Republic of the Congo in 2020.
Prevention and Control of Rabies in Vietnam and Ethiopia	<p>Vietnam - USG supported the establishment of a coordinated surveillance system for rabies surveillance using the Integrated Bite Case Management model that involved both animal health and the public health sector. The training for responsible staff was conducted in the newly established site in Tra Vinh province (in the south) and continued supporting the operation of this surveillance system in Phu Tho, Nghe An, and Lang Son (in the north).</p> <p>Ethiopia - Ethiopia Public Health Institute received technical assistance from Global Alliance for Rabies Control (GARC) to develop and implement a web-based surveillance database that can be integrated into a rabies epidemiology bulletin. The database and bulletin can be customized with maps and graphs to better inform public health, animal health, government leaders, and WHO on the status of rabies infection in Ethiopia.</p>
National Action Plan for Combating Antibiotic-Resistant Bacteria, 2020-2025	<p>The US government released the National Action Plan for Combating Antibiotic-Resistant Bacteria, 2020-2025, presenting coordinated, strategic actions to change the course of antibiotic resistance (AR) and improve the health of Americans. CDC continues to lead the AR public health response across One Health with activities in healthcare, food and farms, communities, and the environment at home and abroad. Goals include a global lab network, vaccine data platform, and doubling CDC's AR investments in health departments.</p> <p>The plan addresses threats outlined in CDC's 2019 AR Threats Report and builds off the first National Action Plan released in 2015. The Antibiotic Resistance Coordination and Strategy Unit (ARX) in DHQP coordinated CDC's input in the plan's development across three centers and six divisions. This input informed the Combatting Antibiotic-Resistant Bacteria (CARB) Task Force, a collaborative group that includes the Office of the Assistant Secretary for Planning and Evaluation, Department of Defense, HHS, CDC, FDA, and USDA.</p>
Rocky Mountain spotted fever in Arizona tribal communities	Certain Tribal communities in Arizona continue to experience high rates of the life-threatening tickborne disease Rocky Mountain spotted fever (RMSF). Evidence-based prevention practices targeting tick activity on homes and dogs have been proven to reduce cases of disease; however, tribal communities often lack the resources and infrastructure to implement such practices. Since 2018, CDC has dramatically increased its efforts to support capacity building for tribal communities impacted by RMSF through extramural and programmatic opportunities. Extramural funds have been used to purchase equipment and train staff in vector control and animal control as well as grow and adapt RMSF prevention activities based on local needs and resources. In 2020, CDC further expanded partnerships with CDC Foundation and PetSmart Charities to provide health communications support to tribal communities. These communication resources will help develop locally-minded materials to warn communities about the dangers of RMSF and how to protect themselves. CDC is working to ensure that impacted tribes have the tools and resources to build strong, sustainable RMSF prevention programs.
Epidemiology, surveillance, risk assessment, modelling	
Title of activity	Scope

<p>CDC conducting farm investigations for SARS-CoV-2 in people and multiple animal species on affected Mink Farms in the United States in collaboration with partners</p>	<p>CDC One Health experts are working closely with 4 states to conduct ongoing outbreak investigations of people and multiple animal species on mink farms with SARS-CoV-2. Activities include deployment of 5 CDC field teams to 3 states to investigate cross-species transmission potential, determination of RT-PCR positivity at multiple time-points post initial mortality, and continued public health and workers' health investigations. CDC is collaborating with USDA's National Veterinary Services Laboratory (NVSL) to conduct sequence analysis to compare mink sequences from SARS-CoV-2 positive mink, SARS-CoV-2 positive domestic and feral cats and dogs associated with affected farms, COVID-19 confirmed positive humans with epidemiological links to these farms, and sequences from the surrounding communities in order to evaluate the overall picture of SARS-CoV-2 strains and mutations present in people, mink, and other animals on affected mink farms in the US. Investigations were ongoing at the time of this report.</p>
<p>Pilot Project for Surveillance and Investigation of SARS-CoV-2 in Animals in the United States</p>	<p>CDC is working with the Council of State and Territorial Epidemiologists to support a pilot program for coordinated and systematic surveillance for SARS-CoV-2 infections in animals. Five county and state-level sites in the United States were selected to participate in this pilot program.</p>
<p>Development of a One Health data collection instrument for linked human-animal epidemiological investigations in the United States</p>	<p>CDC has developed a data collection and investigation tool, called the One Health Case Investigation Form for Animals with SARS-CoV-2, to assist state, local, tribal and territorial partners that are conducting epidemiological investigations of animals with suspected or confirmed SARS-CoV-2. This tool is currently available upon request as a PDF-fillable form, but is also being developed and piloted on the US government's national surveillance infrastructure, HHSProtect.</p>
<p>State-level reporting system for animals with SARS-CoV-2 in the United States</p>	<p>Since June, the One Health Working Group has been collecting information from state, local, tribal and territorial One Health partners on animals that have been consulted upon and tested for SARS-CoV-2. Collecting data on not only positive animals, but also animals that have not been recommended for testing or that tested negative has helped to inform the clinical picture of SARS-CoV-2 in animals and refine guidelines and recommendations for animal infections.</p>
<p>Texas A and M study on SARS-CoV-2 in companion animals in the United States</p>	<p>CDC's One Health Working Group is collaborating with researchers at Texas A&M University to conduct a study of pets living in households with people that have recently had COVID-19. The study seeks to determine the prevalence of animals with SARS-CoV-2 infection in an area of the United States experiencing high human transmission rates, and gather detailed clinical and epidemiological information on SARS-CoV-2 in companion animals. A website for this research can be found at https://vetmed.tamu.edu/hamer-lab/covid-19-pets-research/</p>
<p>One Health Household Transmission Investigation for SARS-CoV-2 in the United States</p>	<p>A One Health household transmission investigation was conducted to assess SARS-CoV-2 infections in pets living with people with laboratory-confirmed COVID-19. Results from this investigation can be found at https://www.cdc.gov/onehealth/zohu/2020/december.html</p>
<p>Technical assistance and financial support for rabies surveillance</p>	<p>Provided technical expertise and financial support for canine and human rabies surveillance in Bangladesh, Ethiopia, Haiti, Vietnam, and Zambia.</p>
<p>Modelling the impact of COVID-19 on rabies control in Haiti</p>	<p>Performed modelling to estimate the number of human rabies deaths that could be prevented by restarting dog vaccination in Haiti in 2021 versus 2022.</p>
<p>Country risk assessment for travelers and dog importation regulations</p>	<p>Published a global risk determination that inform the United States international travel recommendations and dog importation guidelines.</p>
<p>Monkeypox outbreak response & surveillance capacity</p>	<p>CDC is working with partners in Cameroon and DRC to assist with the response to human monkeypox in the country. Assistance includes epidemiology, data collection, funding and logistical support.</p>
<p>Expanding VHF surveillance and detection in Uganda</p>	<p>Maintained and expanded surveillance in-country for viral hemorrhagic fevers. Expansion included training for case recognition and management for health professionals. UVRI is continuing to perform enhanced surveillance/assessment for Rift Valley Fever and CCHF in human and livestock populations across the country to help target surveillance and health education and interventions.</p> <p>Modeling of data to identify risk factors for RVF and CCHF infection among livestock and humans being conducted.</p>
<p>Impact and cost-effectiveness of anthrax vaccination in livestock in Uganda</p>	<p>Developing a model to assess the public health impact and cost-effectiveness, from a government perspective, of a campaign to vaccinate livestock against B. anthracis in Uganda.</p>
<p>Assessing the distribution of anthrax risk in Uganda using ecological niche modelling</p>	<p>Supported a research project investigating the association between past anthrax occurrences across Uganda and climatic and environmental variables, mapping the national geographical risk of the disease using ecological niche modelling.</p>
<p>Leptospirosis in Indonesia</p>	<p>CDC is finishing a project to build surveillance capacity in Jakarta, including diagnostic capacity and active surveillance at selected health facilities to aid in detection of cases. The success of the project in Jakarta led the MOH to expand surveillance using this protocol to Probolinggo Health District in East Java. CDC continues to provide virtual technical assistance.</p>
<p>Brucellosis surveillance using a One Health Approach in Jordan</p>	<p>Brucellosis surveillance using a One Health Approach continues in East Amman, Al-Mafraq and Karak directorates with the Jordan University of Science and Technology (JUST). Samples have been received at CDC for confirmatory testing and whole genome sequencing.</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 several outbreaks of human Salmonella infections to contact with chicks, ducklings, and other live poultry from multiple hatcheries. In 2020, over 1,700 illnesses, the largest number ever reported in a single year, were reported from every state in the United States. CDC is actively working with industry partners to develop new strategies to address this significant public health concern.</p> <p>Outbreak details: https://www.cdc.gov/salmonella/backyardpoultry-05-20/index.html</p> <p>Partnerships: https://www.cdc.gov/ncezid/what-we-do/partnership-in-action/prevent-salmonella-flocks.html</p>
<p>Multistate Salmonella Illness Outbreak Infections Linked to Contact with Pet Bearded Dragons</p>	<p>As of November 20, 2020, 18 people infected with the outbreak strain of Salmonella Muenster were reported from 11 states.</p> <p>11 ill people were hospitalized, and no deaths were reported.</p> <p>6 ill people were children under 5 years of age.</p> <p>Epidemiologic and laboratory evidence showed that contact with pet bearded dragons was the likely source of this outbreak.</p> <p>Details at: https://www.cdc.gov/salmonella/muenster-10-20/index.html</p>
<p>Disease Surveillance in Africa</p>	<p>Kenya - USG supported the GOK (MOH and MoAg) to develop a draft operational guide on data sharing between human and animal health sectors.</p> <p>Liberia - The Ministry of Health(MOH)/One Health Coordination Platform, Ministry of Agriculture, EPA, Forestry Development Authority, NPHI, EcoHealth Alliance and DOD-DTRA initiated a project to identify the threat from high-risk pathogens causing Acute Febrile Illness in Liberia with the goal of enhancing integrated disease surveillance capabilities and response.</p> <p>Mali - A veterinary surveillance network in Mali (EPIVET Mali) was operationalized with monthly coordination meeting of the Central Unit of the EPIVET-Mali and Steering Committee meeting of EPIVET Mali network.</p> <p>Mali - USG in collaboration with FAO ECTAD distributed 300 manuals for the surveillance of priority zoonotic diseases to public and private veterinary field workers in six regions, who were also trained on surveillance reporting. With this training, the reporting rate of priority diseases, including priority zoonotic diseases (PZDs), increased in over 50 percent of all administrative regions of Mali.</p> <p>Senegal - USG supported the strengthening of the National Laboratory for Livestock and Veterinary Research to improve its detection and reporting capacities on zoonotic diseases. Training on surveillance and management of zoonotic diseases was conducted for animal sector professionals.</p>
<p>Disease Reporting in Multiple Countries</p>	<p>Cameroon, Cote d' Ivoire - USG provided technical assistance to the Ministry of Health to develop standardized reporting procedures and templates and processes for multisectoral coordination for reporting to WHO, FAO, and OIE.</p>
<p>Training, capacity building</p>	
<p>Title of activity</p>	<p>Scope</p>
<p>Global Laboratory Leadership Program (GLLP)</p>	<p>CDC is partnering with OIE and other GLLP founding partners (APHL, ECDC, FAO, and WHO) to develop a Global Laboratory Leadership Programme (GLLP). The GLLP aims at fostering and mentoring current and emerging laboratory leaders to build, strengthen and sustain national laboratory systems, under a One Health approach. The program available for virtual or in-person implementation is flexible and may be adapted to meet country-specific workforce needs. In Pakistan, seven participants (four from the human health sector, three from the veterinary health sector) participated in-country validation. Different aspects of the program were assessed. This led to the main recommendations to better balance the formulated learning outcomes with the duration of the training sessions and the training methodologies that were applied, and to develop a stronger mentor training component to ensure competency of GLLP mentors. These recommendations are being used to refine the GLLP learning package for expansion to other countries in 2021.</p>

Steps to Prevent COVID-19 on Mink Farms in the United States	CDC's One Health Working Group hosted a national webinar for mink farmers, state officials, and industry partners across the country to share information on, COVID-19 in humans, SARS-CoV-2 infections in animals, worker safety, and strategies to prevent introduction of SARS-CoV-2 on mink farms.
One Health Zoonotic Disease Prioritization (OHZDP) Workshops	<p>CDC's One Health Office works with partners to conduct OHZDP workshops to bring together human, animal, and environmental health sectors and other relevant partners to prioritize zoonotic diseases of greatest concern for multisectoral, One Health collaboration in a country, region, or other area and develop next steps and action plans to address the priority zoonotic diseases in collaboration with One Health partners.</p> <p>The OHZDP Process uses a transparent, collaborative approach that incorporates equal input from all represented One Health sectors. The OHZDP helps strengthen multisectoral, One Health collaboration, coordination, and communication, supports the creation or strengthening of multisectoral, One Health coordination mechanisms, helps build capacity for identified priorities, and is adaptable to local context. Zoonoses most commonly prioritized globally include rabies, zoonotic influenza, viral hemorrhagic fevers such as Ebola virus and Rift Valley fever, anthrax, and brucellosis.</p> <p>In 2020, one virtual OHZDP sensitization workshop was conducted in Indonesia. An OHZDP workshop will be held in Indonesia in 2021. Additional details can be found at: www.cdc.gov/onehealth/global-activities/prioritization.html</p>
One Health Zoonotic Disease Prioritization Process Training in Indonesia	CDC's One Health Office conducted one virtual introductory training session on the One Health Zoonotic Disease Prioritization Process for ministerial representatives from Indonesia. During this session, CDC facilitator trainers trained 22 participants from Indonesia. An OHZDP facilitator training will be held in Indonesia in 2021.
HHSProtect Surveillance Training in the United States	CDC's One Health Working Group is conducting trainings for members of the National Association of State Public Health Veterinarians and participants of a SARS-CoV-2 animal surveillance pilot project funded through the Council of State and Territorial Epidemiologists on a new One Health surveillance platform built in HHSProtect for epidemiological data collection, storage and analysis.
Ecologic sampling of VHF and monkeypox in wildlife in Sierra Leone	Trained staff at Njala University in ecological sampling/surveillance. Provided refresher training for ecological surveillance on pathogens in bats and rodents at Njala University.
Ebola virus disease training in the Democratic Republic of the Congo	Development of Epi/surveillance trainings for EVD surveillance officers in the Democratic Republic of the Congo for the 2020 Equateur EVD outbreak.
Monkeypox training for frontline workers in Cameroon and Nigeria	CDC has assisted the Cameroonian and Nigerian Ministries of Health with training materials and train-the-trainer instruction for workshops targeted for frontline workers in areas with recent human monkeypox cases. Training includes modules of disease recognition, surveillance, sample collection, laboratory analysis, and communication.

OIE twinning project	<p>CDC has assisted a multi-national team of rabies experts to conduct 3 trainings for 14 diagnosticians under the remit of the OIE twinning program, including ISO17025 accreditation. In 2019, training efforts resulted in testing of 906 animals; 589 were rabid (65%) compared to 0 rabid animals detected prior to Twinning. As a result of this program, India was designated as the 12th OIE Rabies Reference Lab at the 88th General Assembly; only the second successful rabies Twinning Program.</p>
Haiti and Ethiopia rabies laboratory training and support	<p>Remote rabies diagnostic training was provided to meet specific technical need requests of the national rabies laboratories in Haiti and Ethiopia. In addition, essential diagnostic reagents for DFA (FAT): anti-rabies conjugates, PBS and mounting medium were provided in 2020.</p> <p>CDC's new Zoom capabilities were used to virtually train microbiologists and leadership at Ethiopia's Public Health Institute (EPI) National Rabies Lab, Amhara Public Health Institute in Bahar Dar and Tigray Health Research Institute in Mekele.</p>
Anthrax in Indonesia	<p>CDC provided laboratory capacity building training for anthrax testing including PCR, culture and serology testing (supported by government and CDC budget).</p> <p>CDC will provide virtual technical assistance to define the disease incidence and mapping anthrax infection in human in selected district based on available surveillance data on animal and human anthrax cases and for outbreak response.</p>
Brucellosis surveillance in Jordan	<p>Provided refresher training to clinicians and veterinary workers on brucellosis symptomology, case definitions, laboratory criteria, and standardized case reporting.</p> <p>Multiple Locus Variable Number of Tandem Repeats Analysis (MLVA) training for laboratory scientists and GIS training for epidemiologist in both MoAg and MoH scheduled to occur in summer of 2020 was postponed due to the COVID-19 pandemic.</p>
Mitigating zoonotic transmission of Salmonella Heidelberg in the dairy calf production chain	<p>CDC has funded researchers from the Wisconsin Veterinary Diagnostic Laboratory and The Ohio State University to assess effectiveness of cleaning and disinfection methods to prevent the transmission of Salmonella Heidelberg through the dairy calf production chain. Researchers developed and disseminated educational materials on cleaning and disinfection to livestock markets and veal calf production facilities to reduce the spread of Salmonella Heidelberg.</p>

<p>Workforce Development Training in Africa</p>	<p>Burkina Faso - USG supported the development of an In Service Applied Veterinary Epidemiology Training (ISAVET) strategic plan 2020-2024 in collaboration with the Ministry of Animal Resources and Fisheries and validated by all involved partners.</p> <p>Cameroon - Through the USG sponsored PH Emergency Management Fellowship program in Atlanta, veterinarians trained on the Incident Command System are supporting outbreak response to zoonotic disease.</p> <p>Ethiopia - USG supported development of the frontline ISAVET (In-Service Applied Veterinary Epidemiology Training) implementation plan in collaboration with MOA and the College of Veterinary Medicine and Agriculture (CVMA).</p> <p>Kenya - USG supported the MALFC to train 23 veterinary laboratory personnel drawn from 6 regional veterinary laboratories (RVIL) on basic epidemiology to conduct effective surveillance and outbreak response under a One Health approach.</p> <p>Tanzania - The Government of Tanzania has endorsed the USG supported project-ISAVET. The first in-country ISAVET course was successfully conducted with 25 trainees, who are currently working in the field.</p>
<p>Workforce Development Training in Indonesia</p>	<p>Indonesia - Since July 2020, with USAID support, FAO is supporting the Directorate of Animal Health (DAH) and MOA Animal Health Training Centre (BBPKH Cinagara) in conducting an online workshop to develop the training module for frontline level Field Epidemiology Training Program for Veterinarians (FETPV).</p>
<p>Laboratory Training in Multiple Countries</p>	<p>GDD Centers in Bangladesh, Guatemala, China, India, Kenya, and Thailand conducted 32 training sessions and trained 1,564 national and regional participants on topics related to One Health activities. Training topics included laboratory training for Trioplex RT-PCR for Zika, dengue and chikungunya, mosquito insecticide resistance testing, typing of rabies virus, third generation sequencing of zoonotic influenza, tabletop exercise on novel/avian influenza outbreak preparedness and response, sample collection and testing for anthrax, training on Livestock Emergency Guidelines and Standards in collaboration with FAO Myanmar team and scientific writing workshops.</p> <p>Sierra Leone - Three members of the CVL Teko laboratory supported by USAID have acquired the skills and competencies necessary to perform some of the basic tests for PZDs and TADs. The confirmed diseases were reported to OIE and other international organizations.</p>

<p>Enhancing Laboratory Capacity in Multiple Countries</p>	<p>Ethiopia - USG supported the capacity building of the National Animal Health Diagnostic and Investigation Center (NAHDIC) and to integrate it into a One Health framework demonstrated results as the NAHDIC lab becomes one of the first laboratories able to conduct COVID-19 tests.</p> <p>India - USG completed a 4-year rabies laboratory training program with Karnataka Veterinary, Animal, and Fisheries Science University (KVAFSU) as part of the OIE Official Lab Twinning Program. The program established OIE-standard diagnostic capacity for rabies and non-rabies Lyssaviruses. The KVAFSU laboratory was designated as the 12th OIE Reference Laboratory at the 88th General Assembly.</p> <p>Liberia - The Ministry of Health (MOH)/ National Diagnostic Division (NDD) through its Laboratory Technical Working Group (TWG) strengthened its quality management systems within the laboratory network. Three key strategic documents (the Lab Strategic Plan, Lab Policy, and Lab Standardization Guidelines) were validated and published.</p> <p>Mali - The USG in collaboration with FAO ordered primers and probes online for the CVL (Central Veterinary Laboratory) to strengthened its analytical capacity to detect avian influenza, rabies, anthrax, bovine tuberculosis, Rift Valley fever as well as non-zoonotic diseases such as peste des petits ruminants (PPR), African swine fever, foot and mouth disease and Newcastle disease.</p>
<p>Emergency Management and Rapid Response Teams (RRT)</p>	<p>Cote d' Ivoire - USG through an implementing partner is strengthening the country's response capacity by establishing a rapid response team from the Veterinary Public Health Emergency Operations Center (VEPHEC) within the veterinary services, linked to the Emergency Operation Center for Public Health (EOC-PH). In April 2020, the Ministry of Animal Resources and Fishery (MIRAH) established an Emergency Operations Center for veterinary public health (Emergency Operations Committee for Vet Public Health or "COU-SPV") to improve the response to outbreaks.</p> <p>Mali - Prevention and response capacities of 3 representatives from National Directorate of Veterinary Services (DNSV), Central Veterinary Laboratory (LCV), National Animal Health Support Centre (CNASA) were strengthened through a webinar on the new approach of Good Emergency Management Practices (GEMP), a tool developed by FAO's Emergency Management Center on Animal Health.</p> <p>Tanzania - Tanzania has established protocols and processes including the terms of reference for the IHR National Focal Points (NFPs) to share public health emergencies to the Disaster Management Department through the OHCD/PMO. Protocols are in place to report PHEIC to WHO and OIE from the respective NFPs.</p>
<p>Zoonoses</p>	
<p>Title of activity</p>	<p>Scope</p>
<p>Preventing, Detecting, and Responding to Emerging and Reemerging Zoonotic Diseases in Multiple Countries</p>	<p>Details on multiple zoonotic disease activities around the globe are cross reported in other sections of this document.</p>

Ecological investigations on zoonotic orthopoxviruses	CDC is working with multiple partners to study the circulation of zoonotic orthopoxviruses in the Democratic Republic of the Congo, Nigeria, Sierra Leone, Cameroon, Georgia, Colombia, and Brazil.
Zoonotic monkeypox transmission at the animal-human interface	CDC is working with colleagues in the Democratic Republic of the Congo and Nigeria to characterize the animal-human interface to better understand potential risk factors for zoonotic transmission.
Leptospirosis	Indonesia - FAO supported the Directorate General of Livestock and Animal Health Services (DGLAHS) to complete the development of leptospirosis prevention and control guidelines for animal health. It is a joint One Health initiative between MoA/MoH and FAO/WHO. MoH and MoA will use the guidelines to guide leptospirosis prevention and control in the country.
Crimean-Congo Hemorrhagic Fever	Kazakhstan - CDC collaborated with Ministries of Health and Agriculture to conduct a survey to estimate the prevalence of CCHF among cattle in endemic and non-endemic regions. Results will serve to better allocate resources for prevention and control of this disease.
CDC has collaborated with designated Food Safety Centers of Excellence (CoE) projects around One Health and Antimicrobial Resistance (AMR)	<p>Tennessee CoE (Tennessee Department of Health and University of Tennessee) collaboration to explore knowledge, attitudes, and practices of pet store employees and feedstore workers regarding prevention of transmission of enteric illnesses from contact with animals and describe pet store and feedstore practices to reduce risks for staff and educate consumers.</p> <p>Colorado CoE (Colorado Department of Public Health and Environment and Colorado School of Public Health) collaboration to assess understanding of AMR and antimicrobial drug usage among pet owners and explore influences on pet owner attitudes toward antibiotic prescribing in animals in order to guide development of educational interventions and materials for owners and/or veterinarians.</p> <p>Minnesota CoE (Minnesota Department of Health and University of Minnesota School of Public Health) collaboration to explore and evaluate effective methods to provide education on antimicrobial stewardship in animal health.</p> <p>New York CoE (New York State Department of Health and Cornell University) to better understand antimicrobial use and to improve antimicrobial stewardship among veterinarians.</p>
Multistate Salmonella Illness Outbreak Infections Linked to Contact with Pet Hedgehogs	CDC, the Public Health Agency of Canada and several U.S. states investigated a multistate outbreak of Salmonella Typhimurium infections linked to contact with pet hedgehogs. Forty-one people were sickened from 20 states. Details at: https://www.cdc.gov/salmonella/typhimurium-09-20/index.html
Infection Prevention and Control in Cote d' Ivoire	Cote d' Ivoire - With USG support, the AMR Secretariat and its multi-sectoral technical committees on sanitation and IPC finalized six new documents: (1) the trainer's guides for animal health and human health, (2) the participant's handbook on hygiene, (3) the national guide for IPC in private vet clinics, (4) national guide for IPC in abattoirs, (5) national guide for breeders, (6) IPC national plan 2021- 2025 for animal health.
Diagnosis, biotechnology and laboratory	
Title of activity	Scope

SARS-CoV-2 laboratory diagnostics in the United States	CDC is supporting laboratory work for linked human and animal samples submitted for SARS-CoV-2 diagnostics by state, tribal, local, and territorial partners or as part of CDC-led One Health Investigations. CDC diagnostic capabilities for SARS-CoV-2 include nucleic acid extraction, RT-PCR, antibody testing, virus isolation, histopathology, sequencing, and genomic analyses.
<p>OIE Scientific and Technical Review, Disaster prevention and preparedness. Scientific and Technical Review, Vol. 39 (2), August 2020</p> <p>Title: Detecting national human enteric disease outbreaks linked to animal contact in the United States of America</p> <p>La détection de foyers d'infections entériques humaines de dimension nationale associés à des contacts avec des animaux aux États-Unis d'Amérique</p>	<p>CDC experts authored a paper describing detection of human enteric diseases outbreaks linked to animal contact in the U.S. Enteric pathogens, such as non-typhoidal Salmonella, Campylobacter and Escherichia coli, can reside in the intestinal tract of many animals, including livestock, companion animals, small mammals and reptiles. Often, these animals can appear healthy; nonetheless, humans can become infected after direct or indirect contact, resulting in a substantial illness burden. An estimated 14% of the 3.2 million illnesses that occur in the United States of America (USA) each year from such enteric pathogens are attributable to animal contact. Surveillance for enteric pathogens in the USA includes the compilation and interpretation of both laboratory and epidemiologic data. In this paper, the authors describe three recent, multi-state human enteric illness outbreaks linked to animal contact in the USA and discuss how integrated disease surveillance was essential to outbreak detection and response. Additional data-sharing between public health and animal health laboratories and epidemiologists at the local, national, regional and international level may help to improve surveillance for emerging animal and human health threats and lead to new opportunities for prevention.</p>
Orthopoxvirus Diagnostics in Multiple Countries	CDC provides Orthopoxvirus diagnostic support for suspected Orthopoxvirus infections in humans and animals, domestically and internationally. CDC provided reagents for molecular diagnosis to the national laboratories (human health) in Nigeria and DRC.
Additional lab space at Uganda Virus Research Institute (UVRI)	Completed the renovation of VHF laboratory space at UVRI to be used for the detection of VHF in animals.
Laboratory technical assistance for Viral Hemorrhagic Fevers, multiple countries	CDC provided diagnosis, biotechnology and laboratory technical assistance for VHF programs in Liberia, Bolivia, Brazil, Sierra Leone, Uganda, Bangladesh, Iraq, Pakistan and South Sudan.
Molecular diagnosis of VHF and other high consequence pathogens in Uganda	<p>Provided laboratory reagents for molecular and serological diagnostic testing of filoviruses, CCHF and RVF to the Uganda National VHF Reference Laboratory at UVRI.</p> <p>Provided Next Generation Sequencing (NGS) Reagents to UVRI for characterization of CCHF and RVF isolates, provided on-line training to UVRI staff for pathogen discovery using NGS methods.</p>
Rapid Diagnostic Testing for leptospirosis in Indonesia and Bangladesh	<p>Introduced use of leptospirosis RDTs for surveillance in Jakarta and satellite sites in East Java. Provided lab supplies to perform Microscopic agglutination testing (MAT) for leptospirosis.</p> <p>Supported IEDCR to continue leptospirosis surveillance using Rapid Diagnostic Tests for presumptive diagnosis at 10 hospital sites, along with PCR confirmatory testing at IEDCR. Much of these surveillance activities were on hold from March through September but resumed in October 2020.</p>

Antimicrobial Resistance in Africa	<p>Uganda - Working with MAAIF, the National Drug Authority, Makerere University, and the National AMR sub-Committee, USAID/MTaPS advanced the process to develop guidelines on infection prevention and use of antimicrobials to strengthen antimicrobial stewardship in the agricultural sector, utilizing the current global and national recommendations by WHO, OIE, and FAO.</p> <p>Senegal - USG supported the Ministry of Livestock to conduct surveillance and monitoring missions on antimicrobial resistance (AMR) and antimicrobial use (AMU) in 99 livestock farms and conducted surveillance of Rift Valley fever (RVF), avian influenza (AI).</p> <p>Guinea - FAO's Emergency Center for Transboundary Animal Diseases Team (ECTAD) developed an antimicrobial administration training program for veterinary professionals.</p> <p>Mali - The USG supported the Multi-Sectoral Coordination (MSC) group in Mali to revise the National Action Plan for AMR and set up structures for its implementation. AMR stakeholders include USAID, CDC, FAO, OIE, and WHO, as well as national experts.</p>
Antimicrobial Resistance in India	<p>India - USG supported a training course on antibiotics and AMR for members of the Indian Network for Fishery and Animals Antimicrobial Resistance (INFAAR), attended by 45 officials from the ICAR, the Indian Veterinary Research Institute, and members of the INFAAR.</p>
Biosafety and Biosecurity in Multiple Countries	<p>Indonesia - FAO provided technical support to DGLAHS and BBPKH Cinagara (training center for animal health) to conduct online training on market biosecurity for local animal health officers and market staff.</p> <p>Sierra Leone - Three members of the animal health laboratory staff have acquired knowledge and skills in risk identification and quantification to implement the principles of biosafety and biosecurity in diagnostic and research laboratories.</p> <p>Kenya - USG supported the development of the biosafety and biosecurity curriculum for Kenya that used a "One Health" approach to include not only the MOH but also the ministries of agriculture and veterinary medicine.</p>
Vaccines	
Title of activity	Scope
Assessment of the anthrax vaccine value/distribution chain in Ethiopia	<p>Assessing the gaps on the demand, production, transport/distribution and storage facilities of anthrax vaccine in selected regions in Ethiopia. In addition, we evaluated the potency of anthrax vaccine stored at selected temperature points for differing duration of time and those collected from selected districts. Conducted comparative potency evaluation of the freeze-dried anthrax vaccine formulation locally produced with imported suspension vaccine formulation with respect to tolerance to cold chain breaches.</p>

Smallpox vaccine study to prevent monkeypox in humans in DRC	CDC has been working with local partners in DRC on a study to evaluate the immunogenicity and effectiveness of a 3rd generation smallpox vaccine to prevent monkeypox in frontline healthcare workers in high risk areas.
Evaluating the Sterne vaccine formulation	Working with academic partners to test the efficacy of a Texas A&M encapsulated Sterne vaccine formulation via different routes of administration in ruminants. This will permit an in-depth investigation into the varying immune responses generated by the different formulations and vaccination administration routes to create an oral form of the Sterne vaccine.
Ebola virus disease vaccine	<p>ACIP recommendations for Ervebo vaccine (Merck) being drafted</p> <p>Everbo vaccine acceptability study amongst healthcare workers at state designated Ebola treatment centers underway</p> <p>CDC is IND application sponsor for investigational-labelled Ebola vaccine and performing monitoring of select adverse events following vaccination</p> <p>Study to evaluate long-term protection following vaccination with Ebola vaccine</p>
Crimean-Congo Hemorrhagic Fever vaccine development	CDC has also developed a prototype vaccine for CCHFV. This novel vaccine uses virus-like particles (VRPs) that are similar to the virus, but lack genes encoding the virus glycoproteins with the result to be replication-competent but not spreading. The vaccine was tested and shown to be safe and highly efficacious in a small animal model.

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
Collaborating for the Implementation of the Revised International Health Regulations National Surveillance and Response Capacity	CDC works 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.	<input checked="" type="checkbox"/> Surveillance and control of animal diseases <input type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare

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
Multiple 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 centres, reference laboratories, and other organizations from multiple countries and regions 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>

Diagnosis of Animal Diseases in the Americas	United States	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	Diagnostic testing for SARS-CoV-2 in animals; collaboration on diagnostic testing and sequencing for animals on mink farms with SARS-CoV-2; CDC conducted on-farm investigations into multiple affected mink farms including testing for human and animal samples and coordinating comparative analysis of sequences from people and animals on affected farms (ongoing)
Research, Diagnosis and Surveillance of Wildlife Pathogens	United States	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	Collaborating on One Health aspects of COVID-19 including for wildlife and zoo animals and mink farms (ongoing)
FAO, OIE, WHO	International	<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.</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
Casey Barton Behravesh, MS, DVM, DrPH, DACVPM	Technical Assistance, Attendance at OIE Meetings, Steering committee Members, OIE ad hoc Group on COVID-19 at the human-animal interface	One Health, global health security, emerging and reemerging zoonoses, surveillance, outbreak investigation and response, antimicrobial resistance, public health, and World Animal Health Information System + Steering Committee
Julie R. Sinclair, MA, DVM, MPH, DACVPM	CDC One Health Liaison to OIE (January-July 2020), OIE ad hoc Group on COVID-19 at the human-animal interface	Global health security, emerging and reemerging zoonoses, border health, surveillance, laboratory capacity, workforce development, joint risk assessment, antimicrobial resistance, and World Animal Health Information System + Steering Committee

Sean Shadomy, DVM, MPH, DACVPM	CDC Loaned Expert and One Health Liaison FAO; Technical Assistance, FAO Technical project lead and focal point for OIE-FAO-WHO joint project "Building Tripartite International Guidance Tools for the National Implementation of One Health"; FAO member, OIE Ad Hoc Group on COVID-19 at the Human-Animal Interface; contributor, FAO Emergency Management Centre-Animal Health Incident Coordination Group (ICG) for Rift Valley Fever and for COVID-19; FAO observer to OIE Ad Hoc Group on Rabies, developed performance indicator Monitoring and Evaluation template for dog- mediated rabies control programs endorsement by OIE; FAO focal point for FAO-OIE-WHO United Against Rabies collaboration; co-presenter for FAO-OIE invited joint presentation for European Food Safety Agency Parma Summer School (June 2020)	Global health security, emerging and reemerging zoonoses, bioweapons/weapons of mass destruction, surveillance, laboratory capacity, outbreak investigation and response, and antimicrobial resistance
Ryan M. Wallace, DVM, MPH	CDC One Health Liaison to OIE (August-December 2020); Technical Assistance, Ad-hoc Committee Member on Rabies; Head of the OIE Reference Laboratory for Rabies; Technical assistance on Chapter on Rabies Surveillance for the OIE Terrestrial Manual; Technical Assistance for the ad hoc Group on Official Rabies Program Status, OIE ad hoc Group on Rabies, developed Monitoring and Evaluation template for performance indicators for dog- mediated rabies control programs for OIE endorsement submission(Jan 2020); Technical Assistance to United Against Rabies; Tripartite Secretariat	Global health security, emerging and reemerging zoonoses, surveillance, laboratory capacity, Rabies, One Health, Zoonoses
Laura Smith Murrell	Communications Assistance	OIE WAHIS+ communication strategy
Multiple CDC Subject Matter Experts	Technical Assistance	One Health, Zoonotic Diseases

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: 40
- c) Hands-on training courses: 20
- d) Internships (>1 month): 25

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 (ZOHU Call), a monthly webinar to provide the latest news and resources on zoonoses and other One Health issues, including public health and animal health professionals working in government, non-governmental organizations, industry, and academia. ZOHU calls offers continuing education for a variety of health professionals. For more information on the ZOHU calls or to access archived webinar recordings, please visit: www.cdc.gov/onehealth/zohu/index.html	USA	15000
d	CDC's One Health Office hosted Epidemiology Elective Students and graduate student interns to provide public health training; students supported work on OIE projects	USA	25
c	CDC's One Health Office and other trained CDC facilitators conducted a virtual introductory training session on the One Health Zoonotic Disease Prioritization Process for Indonesia	Indonesia	22
c	CDC's One Health Working Group conducted a virtual training webinar for state public health veterinarians on how to conduct and collect information as part of a One Health epidemiological investigation for linked human and animal cases of SARS-CoV-2.	USA	45
c	CDC's One Health Working Group hosted a national webinar for mink farmers, state officials, and industry partners across the country to share information on COVID-19 in humans, SARS-CoV-2 infections in animals, worker safety , and strategies to prevent introduction of SARS-CoV-2 on mink farms.	USA	61
c	CDC's One Health Working Group is conducting trainings for members of the National Association of State Public Health Veterinarians and participants of a SARS-CoV-2 animal surveillance pilot project funded through the Council of State and Territorial Epidemiologists on a new One Health surveillance platform built in HHSProtect for epidemiological data collection, storage and analysis.	USA	23

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
International	OIE ad hoc Group on COVID-19 at the animal-human interface (January-December 2020)		Monthly	Virtual	20
International	Global Laboratory Leaders Program - Animal Subgroup		Weekly	Virtual	6
International	European Food Safety Agency (EFSA)/ Università di Parma/Università Cattolica del Sacro Cuore di Piacenza "2020 Parma Summer School"	Co-developed and co-presented with T. Brand (OIE) invited keynote address on "FAO-OIE-WHO Tripartite Alliance: One Health in the context of International Organisations".	06/2020	Virtual	235
International	OIE ad hoc Group on Dog Rabies Control Program - Status Evaluation		11/2020	Virtual	15
International	15th Meeting of the Advisory Committee - OIE World Animal Health and Welfare Fund		12/20	Virtual	40

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: 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:

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. www.cdc.gov/ncezid/

CDC's One Health Office maintains two websites (One Health website [www.cdc.gov/onehealth/index.html] and Healthy Pets, Healthy People website [www.cdc.gov/healthypets/]), which provide up-to-date information on One Health activities and zoonoses-related prevention for the general public, public health professionals, human and animal health professionals, policymakers, partners, and other stakeholders. 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 included social media, graphic development, blog posts, feature articles, newsletters, ZOHU Call presentations, and partner outreach, resulting in global awareness. The One Health Office supported CDC programs in promoting One Health-related activities, publications, and events.

Additionally, the office continued its monthly Zoonoses and One Health Updates (ZOHU) Call, a webinar that reaches public health and animal health officials, epidemiologists, physicians, nurses, and other public health practitioners in federal, state, and local agencies as well as non-governmental organizations, industry, and academia. In 2018, ZOHU Calls started offering free Continuing Education, and subscribers to the call have since increased to more than 15,000. During the COVID-19 pandemic, seven ZOHU Calls have included presentations on COVID-19 topics relevant to One Health and average call attendance has increased to ~550 attendees per live call.

Communication activities in 2020 have focused primarily on COVID-19. The One Health Office developed and distributed social media messaging and graphics for key One Health audiences throughout the pandemic response outlining the risks and information known on SARS-CoV-2 and animals, including pets. Two blog posts were released on COVID-19 and pets and on One Health and its global impact; a new social media graphics webpage was posted on the Healthy Pets, Healthy People website; two new One Health Zoonotic Disease Prioritization Reports were posted; and 14 webpages with information on animals and COVID-19 were posted on the CDC COVID-19 website. The office added a new newsletter specifically for pet owners and distributed 8 newsletters to nearly 15,000 subscribers in 2020. The Office also distributed 13 One Health newsletters on COVID-19, zoonotic diseases, and One Health topics to >51,000 subscribers in 2020.

9. Additional comments regarding your report: