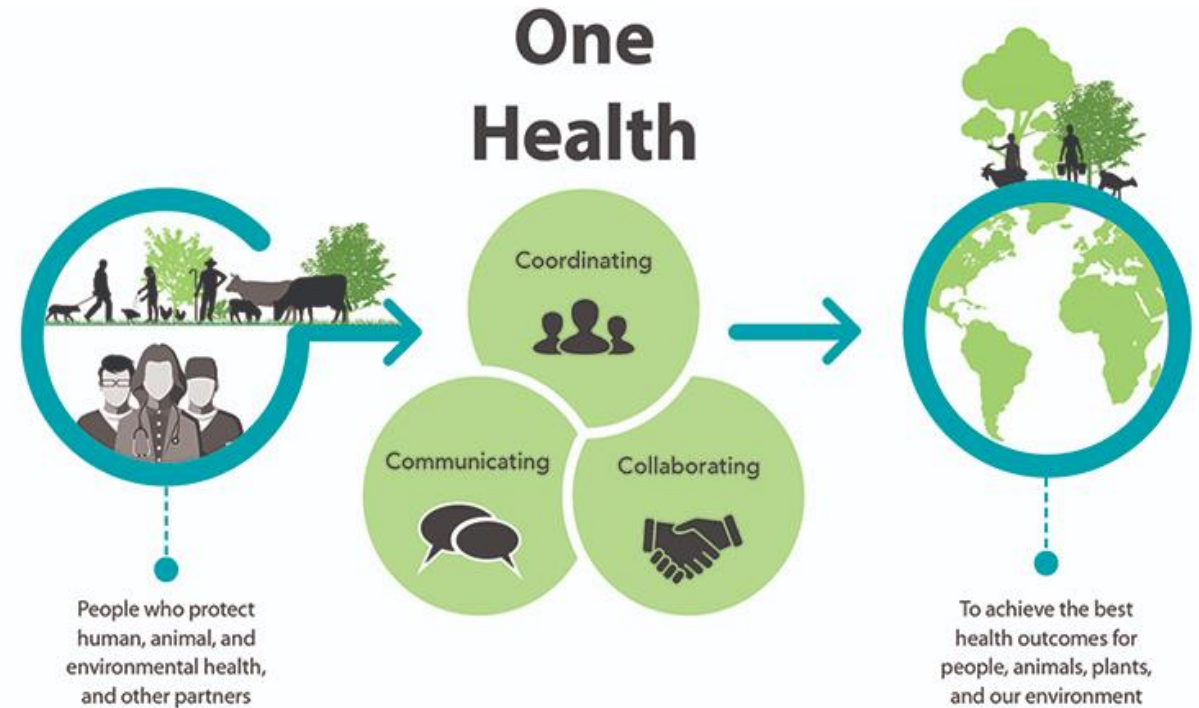


“One Health” Concept

“**Collaborative, multisectoral, and trans-disciplinary approach**— working at the local, regional, national, and global levels—with the goal of achieving optimal health outcomes recognizing the **interconnection** between people, animals, plants, and their shared environment”



CS292933-A

One Health Communities & Activities



<http://www.onehealthinitiative.com>



<https://www.onehealthcommission.org/>



<https://onehealthplatform.com/home>



Advancing science
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www.worldonehealthcongress.org



Origin of COVID-19

- SARS-CoV-2 is believed to originate from bats, similar to MERS-CoV and SARS-CoV
- Gene sequencing of SARS-CoV-2 is similar across countries to the strain in China, indicating single emergence from an animal reservoir
- 2 main hypotheses of CoV-2 evolution:
 - Natural selection in non-human host and jumping to humans
 - No documented case of coronavirus transmission from bat to human. Previous coronaviruses have passed through an intermediate host (Currently unknown: Pangolins? Cats? Dogs?)
 - Non-pathogenic version of CoV-2 jumped from animal to human and evolved within humans to its current state

AVMA FAQs on COVID-19 Animal Transmission

The National Veterinary Services Laboratory (NVSL) has confirmed only 4 pets nationwide confirmed with COVID-19. Globally, 25 reports of pets infected.

- Cats: 2 domestic cats tested positive in NY in a house where no human was positive for COVID-19.
- Other animals: Several lions and tigers at Bronx Zoo with respiratory illness. One Malayan tiger had positive COVID-19 test.
 - Transmission is believed to be from zoo worker who was shedding virus.
 - Only 1 tiger tested due to general anesthesia needed to obtain sample. Three more tigers and 3 African lions tested positive via fecal samples.

CDC (May 29, 2020): **To date, there is no evidence that animals play a significant role in spreading SARS-CoV-2.** Based on limited research, risk of animal spread to humans is considered to be low.

<https://www.cdc.gov/coronavirus/2019-ncov/faq.html#COVID-19-and-Animals>

AVMA (May 29, 2020): <https://www.avma.org/resources-tools/animal-health-and-welfare/covid-19/sars-cov-2-animals-including-pets>

In-depth Summary of Reports of Naturally Acquired SARS-CoV-2 Infections in Domestic Animals and Farmed or Captive Wildlife

AVMA (May 28, 2020):

<https://www.avma.org/resources-tools/animal-health-and-welfare/covid-19/depth-summary-reports-naturally-acquired-sars-cov-2-infections-domestic-animals-and-farmed-or>

EVENT START OR REPORT DATE	COUNTRY (STATE)**	SPECIES (NUMBER)	RESULTS OF TESTS PERFORMED*				PUBLISHED ON OIE-WAHIS (DATES OF REPORTS)
			RT-PCR	VIRUS ISOLATION	NEUTRALIZING ANTIBODY		
May 21, 2020	Spain ²	CAT (1)	Positive	Not reported	Not reported	NO	
May 18, 2020	Russia ¹²	CAT (1)	Positive	Not reported	Not reported	Yes (May 26)	
May 15, 2020	The Netherlands ¹⁰	DOG (1)	Negative	Not reported	Positive	NO	
May 15, 2020 May 25, 2020	The Netherlands ¹	CATS (3; mink farms) CATS (4; mink farms)	Positive (1 cat only)	Not reported	Positive (all 7 cats)	NO	
Mar 27, 2020	USA (New York/Bronx Zoo) ⁷	TIGERS/LIONS (7) ^{***}	Positive	Not done	Not done	NO	
Mar 27, 2020	USA (New York/Bronx Zoo) ⁷	LION (1)	Positive	Not reported	Not reported	Yes (Apr 17)	
Mar 27, 2020	USA (New York/Bronx Zoo) ⁷	TIGER (1)	Positive	Not reported	Not reported	YES (Apr 6)	
Mar 18, 2020	Belgium ⁸	CAT (1)	Positive	Not reported	Not reported	NO; but OIE is aware	
Mar 18, 2020	Hong Kong ⁶	DOG (1)	Positive	Positive	Positive	YES (Mar 20 & Apr 7)	

AVMA FAQs on COVID-19 Animal Transmission

- According to AVMA:
 - Animals susceptible to COVID-19: Cats, ferrets, minks, Syrian hamsters
 - Animals less or not susceptible: Dogs, pigs, chickens, ducks
- Generally, low risk of transmission from human to animal (but do not kiss, lick or snuggle with your pet if you are COVID-19 positive)
- No evidence of transmission from domestic pet to human
- Recommendation = Wash hands after being around animals

Meat and Poultry Processing Facilities

COVID-19 cases among U.S. workers in 115 meat and poultry processing facilities were reported by 19 states.

CDC MMWR (May 8, 2020): <https://www.cdc.gov/mmwr/volumes/69/wr/mm6918e3.htm>

- ❖ Meat/Poultry processing facilities form part of the critical infrastructure within the Food and Agriculture Sector
- ❖ Workers involved in meat and poultry processing are not exposed to SARS-CoV-2 through the handled meat products. Their work environments may contribute substantially to potential exposure
- ❖ Risk factors: distance between workers, duration of contact, type of contact

Interim Guidance from CDC/OHSA (May 12, 2020): <https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/meat-poultry-processing-workers-employers.html>

US Agency of International Development's Role

- PREDICT (2009-2019)

- Launched in 2009 (after 2005 H5N1 bird flu), USAID's Emerging Pandemic Threats (EPT) program developed 4 projects: PREDICT, RESPOND, IDENTIFY, PREVENT
- To build global capacity and identify sources of zoonotic disease and places/practices of high exposure of humans to pathogens for zoonotic spillover
- Accomplishments:
 - Identified ~1,000 new viruses, including new strain of Ebola
 - Trained ~5,000 people around the world to identify new diseases
 - Improved and developed 60 research laboratories
 - Formed <20% of USAID investment (US\$200M) in global health security

- Strategies To Prevent (STOP) Spillover Program (Sept 2020 - ?)

- To leverage the data collected and knowledge gained by PREDICT to develop interventions to reduce risk of the transmission of dangerous zoonotic pathogens (e.g. strains of influenza, Ebola, Lassa fever, Marburg, Nipah, coronaviruses) that lack specific, proven treatments and vaccines.

Discussion Points

The One Health approach can aid to curb disease spread!



Integrating innovative data and technology – like Earth observation and public health data – will be instrumental to examine SARS-CoV-2 transmission!

- Which data and tools can help us identify emerging threats and predict the next pandemic?
- Additional data are important to explore pending questions:
 - ✓ Primary: clinical (e.g. immunity), epidemiology (e.g. human/animal surveillance), and environmental (e.g. seasonality)
 - ✓ Secondary: environmental (e.g. lockdown effects)
- Which research questions would be ideal for integrating Earth and health science data?
- How can we best motivate transdisciplinary collaborations in a strongly connected clinical-epidemiology research?
- How should we approach the next steps to curb disease transmission?