ONE HEALTH

BY PROTECTING ANIMALS, WE PRESERVE OUR FUTURE

Animal and human sectors work together to protect health and ensure food safety and security

- **60%** of human pathogens are of animal origin
- **5** new human diseases appear each year
- **20%** of animal production losses are caused by diseases globally

With regards to animal health, veterinarians are key players of the 'One Health' concept

Early detection of diseases and infections at animal source can prevent their transmission to humans or introduction of pathogens into the food chain

FROM FARM

Healthy animals raised in humane conditions

1 PRODUCTION

- Surveillance, prevention and control of animal diseases
- Animal welfare management to ensure robust and healthier animals
- Feed quality control
- Safe use of veterinary drugs

2 TRANSPORT

- Only healthy animals transported
- Animals health and welfare monitored during the journey from the farm to the slaughterhouse

3 SLAUGHTERHOUSE

Before slaughter
- Analysis of the health data from the farm
- Clinical examination

After slaughter
- Inspection of the carcass
- Laboratory analysis

4 PROCESSING, STORAGE AND DISTRIBUTION

- Verification of hygiene
- Cold chain integrity

5 SUPERMARKET RESTAURANT

- Verification of hygiene
- Cold chain integrity

TO FORK

Safe food for consumers

THROUGHOUT THE FOOD CHAIN
Veterinarians are responsible for regulations on animal health, animal welfare, traceability, food safety and safe trade of animal products

Open cooperation with all the actors involved along the food chain is essential

CASE REPORT

Animals as Sentinels of Human Health

» In early 2010 ducks began to disappear in Northern Nigeria

» Months later, public health officials learned that hundred of children had become sick, and two villages 1/4 had died within the past year

» An investigative team found unsafe levels of lead inside most of the homes and community wells, which was the cause of the spike in mortality rates (caused by unsafe gold mining practices)

» When asked, the villagers noted there were unsual deaths of ducks in the months prior

» This missing clue could have alerted officials of the crisis earlier

https://www.cdc.gov/onehealth/in-action/lead-poisoning.html

Other examples of veterinarians protecting the health and welfare of animals, and thus also protecting the health of humans

RABIES

Eliminating diseases and infections at their animal source to save human lives

- Dog vaccination against rabies
- Awareness on responsible ownership
- Dog identification
- Control of stray dog populations

Infected dogs cause more than **95%** of human cases through bites

100% of human cases can be prevented

Tracking and controlling animal diseases, including those transmissible to humans

AVIAN INFLUENZA

Rapidly containing such outbreaks is necessary to prevent potential mutations of the virus and risks of transmission to humans

Avian influenza generates huge production losses in animals

- Prevention and control of animal diseases
- Surveillance and early detection of sanitary events, including wildlife

ANTIBIOTICS

Ensuring appropriate use of drugs in animals to preserve their effectiveness

Antibiotics are drugs used to treat infections in both humans and animals

- Prescription and administration of antibiotics to animals under the supervision of **well-trained veterinarians**

Their misuse in humans or in animals can lead to the emergence of bacteria resistant to their action, and hamper the control of animal and human diseases

European Commission
ec.europa.eu/dgs/health_food-safety

WORLD ORGANISATION FOR ANIMAL HEALTH
Protecting animals, preserving our future
www.oie.int/onehealth

FAST FACTS

Zoonotic Diseases

» 6 out of every 10 **known** infectious diseases in people are spread from animals

» 3 out of every 4 **new or emerging** infectious disease in people are spread from animals

» Most dangerous zoonotic diseases in the US:

- Lyme disease & Rocky Mountain spotted fever
- West Nile, Dengue, malaria, and chikungunya
- Salmonella
- E. Coli

https://www.cdc.gov/onehealth/basics/zoonotic-diseases.html

ANTIBIOTIC RESISTANCE
THE GLOBAL THREAT

Antibiotic resistance – *when bacteria change and cause antibiotics to fail* – is happening **RIGHT NOW,** across the world

The full impact is unknown. There is no system in place to track antibiotic resistance globally

Without urgent action, many modern medicines could become obsolete, turning even common infections into deadly threats.

A GROWING CRISIS WORLDWIDE

In the EUROPEAN UNION, antibiotic resistance causes 25,000 deaths per year and 2.5m extra hospital days[1]

In INDIA, over 58,000 babies died in one year as a result of infection with resistant bacteria usually passed on from their mothers[2]

In THAILAND, antibiotic resistance causes 38,000+ deaths per year and 3.2m hospital days[3]

In the UNITED STATES, antibiotic resistance causes 23,000+ deaths per year and >2.0m illnesses[4]

FAST FACTS

Antibiotics and Resistance

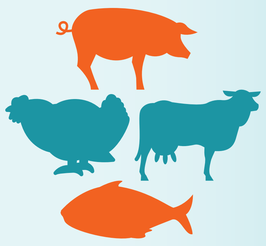
- In many countries antibiotics are **unregulated** and are available over the counter without a prescription
- The number of **new antibiotics** being approved has steadily decreased over the past 30 years
  - Drug manufacturers are focusing on **more expensive** medications to develop, such as cancer treatments
- Nearly **2 million** Americans develop healthcare-related infections per year
  - From these **99,000** deaths result, mostly due to anti-bacterial-resistant pathogens

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4378521

CAUSES OF ANTIBIOTIC RESISTANCE

Over-prescribing of antibiotics

Patients not taking antibiotics as prescribed



Unnecessary antibiotics used in agriculture

Poor infection control in hospitals and clinics

Poor hygiene and sanitation practices

Lack of rapid laboratory tests

#AntibioticResistance
www.who.int/drugresistance

HOW CAN WE STOP IT?

1. Improve labs:
Countries need medical labs to identify bacteria and choose the right drugs to treat them.

2. Collect and share data:
Countries need systems to track cases and report results globally to make better policy decisions.

3. Use antibiotics wisely:
To ensure antibiotics are here when we need them, they must be prescribed and taken correctly now.

4. Take measures to prevent infections:
Especially in healthcare settings, good infection control practices are critical to stopping spread of resistant germs.

Centers for Disease Control and Prevention
National Center for Emerging and Zoonotic Infectious Diseases

Learn More
http://www.cdc.gov/getsmart
http://www.cdc.gov/drugresistance

1. The Bacterial Challenge: Time to React. ECDC/EMEA Joint Technical Report 2009.
2. Laxminarayan, Ramanan et al. Antibiotic Resistance: the need for global solutions, The Lancet Infectious Diseases, Volume 13 , Issue 12, 1057 - 1098
3. Pumart et al. Health and economic impacts of antimicrobial resistance in Thailand. J Health Systems Res 2012;6:352-60.
4. http://www.cdc.gov/drugresistance/

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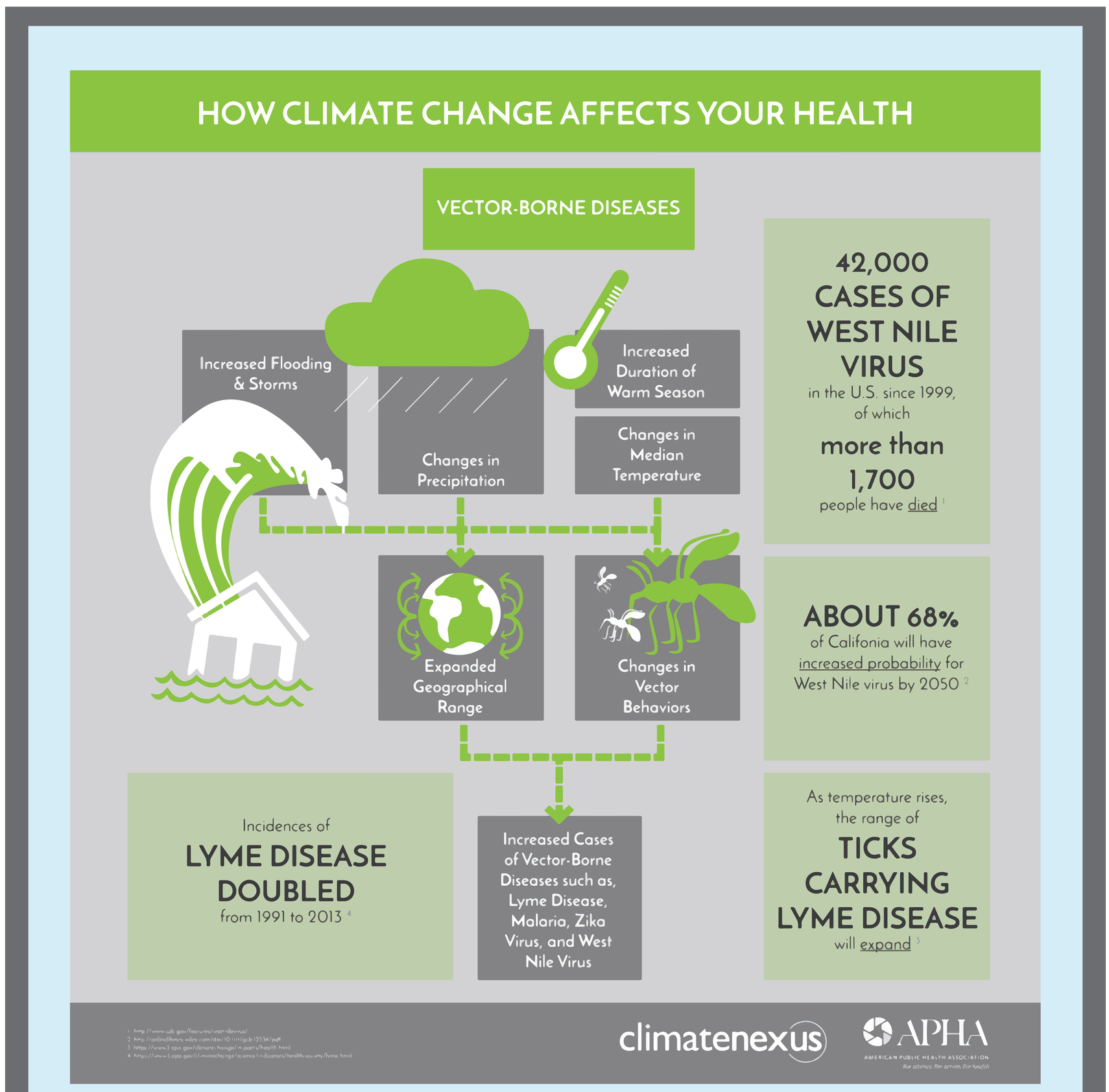


If you are interested in learning more about One Health and the interconnectedness between human health, animal health, and the environment see the resources below

Mobile Apps

https://www.cdc.gov/ncezid/multimedia/mobile-apps.html

TravWell

Tickborne Diseases

Can I Eat This?

Websites

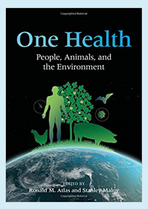
American Veterinarian Medical Association

World Organization for Animal Health

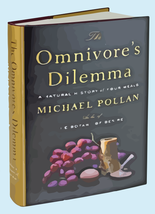
One Health Initiative
http://www.onehealthinitiative.com/

Center for Disease Control and Prevention
https://www.cdc.gov/onehealth/index.html

Books



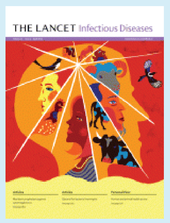
One Health: People, Animals, and the Environment
http://ebookcentral.proquest.com/lib/buffalo/detail.action?docID=1678949



The Omnivore's Dilemma

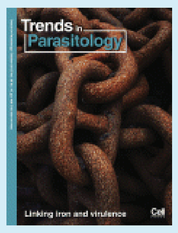
One Health: The Human-Animal-Environment Interfaces in Emerging Infectious Diseases
http://ebookcentral.proquest.com/lib/buffalo/detail.action?docID=1592693

Journal Articles



Towards a conceptual framework to support one-health research for policy on emerging zoonoses
DOI: 10.1016/S1473-3099(10)70312-1

Impacts of biodiversity on the emergence and transmission of infectious diseases
DOI: http://dx.doi.org/10.1038/nature09575



Ticks and tick-borne diseases: a One Health perspective
https://doi.org/10.1016/j.pt.2012.07.003

ONE HEALTH

The health of people is connected to the health of animals and the environment

This connection requires a multisectoral, One Health approach to improve health for all

Epidemiologists

Microbiologists

Infectious Disease Specialists

Veterinarians

Ecologists

Public Health Professionals

Medical Doctors