

International Symposium on Zoonoses and Rabies Conference

Hefei, People's Republic of China 10-11 May 2019

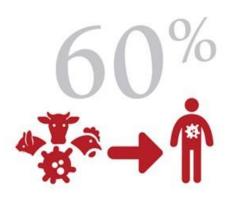
Zoonosis control in animals: A powerful public health intervention

Lea Knopf & Bernadette Abela-Ridder

Department of the Control of Neglected Tropical

Diseases, WHO, Geneva, Switzerland

The animal factor in Zoonoses



of existing human infectious diseases are zoonotic



of emerging infectious diseases of humans (including Ebola, HIV, and influenza) have an animal origin



new human diseases appear every year. Three are of animal origin



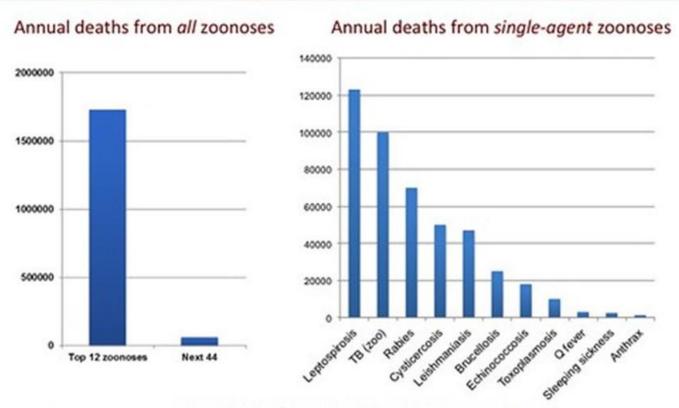
of agents with potential bioterrorist use are zoonotic pathogens

Source OIE



Burden of endemic zoonoses

A deadly dozen zoonotic diseases each year kill 2.2 million people and sicken 2.4 billion

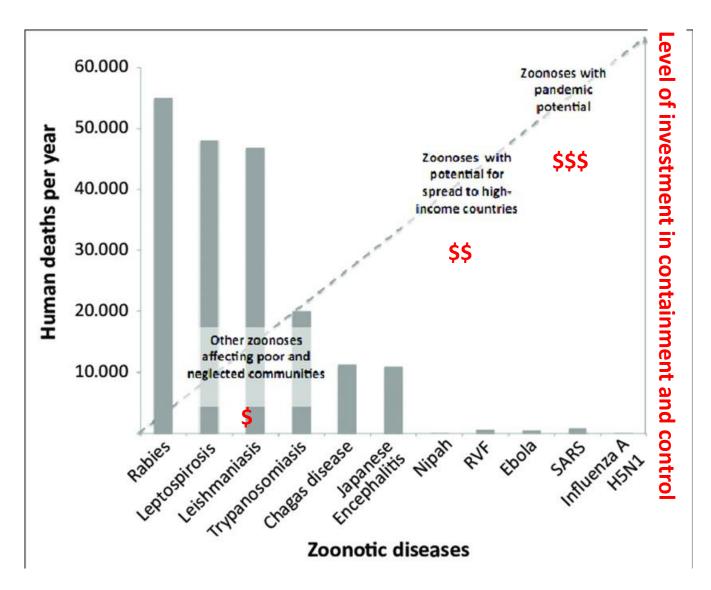




Almost all losses are in developing countries



Burden and investment in zoonoses control





Endemic & neglected zoonoses

- ➤ Do not receive enough attention, even though most of these diseases are preventable, treatable and can be cured
- Affect mainly poor and marginalized populations in low-resource settings, where:
 - People live in close proximity to domestic or wild animals
 - Are dependant on livestock as livelihoods
 - Have inadequate access to public health and veterinary services, education, safe water, and basic sanitation







Most common interventions: Zoonosis prevention and control

Human health

- Surveillance/detection
- Treatment:
 - Antiparasitic drugs
 - Antibiotics
 - Other medical interventions (e.g. surgery)
- Hygiene measures (e.g. WASH, cooking, ...)
- Education & Awareness
- Vector control
- Vaccination

Animal health

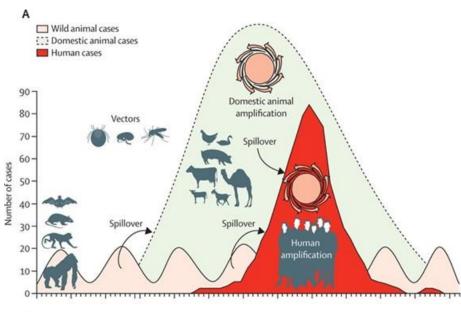
- Vaccination
- Slaughter and meat hygiene
- Treatment (preventative or curative):
 - Antiparasitic drugs
 - Antibiotics
- Animal population management & culling
- Surveillance/detection
- Vector control
- Education & Awareness



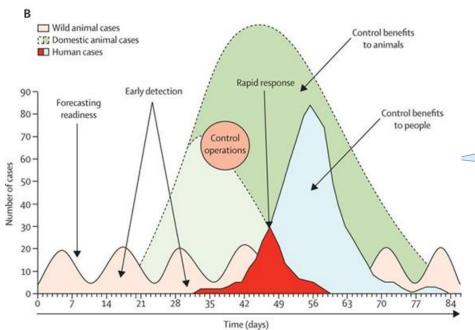
Zoonosis transmission and prevention – A One Health mission!







Example Rift Valley Fever (epidemic):



Early detection in animals and livestock vaccination reduce human health impact and cost for human (intensive) care, etc.



Bovine tuberculosis:



Veterinary public health reduces human health impact and cost for health sector trough:

- Prevention of food-borne transmission
- Test and slaughter/ herd certification
- Management of contacts between animals (people)



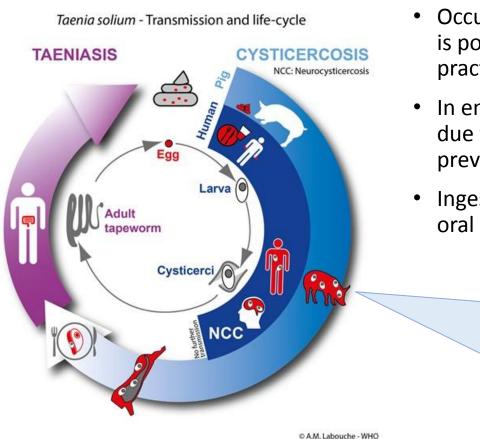








T. solium, Taeniasis & Neurocysticercosis



 Occurs in very poor communities in which there is poor basic sanitation and open defecation is practiced, and where pigs roam free.

 In endemic communities over 30% of epilepsy is due to *T. solium*. This type of epilepsy is preventable.

 Ingestion of eggs happens mainly by the faecaloral route due to poor hygiene

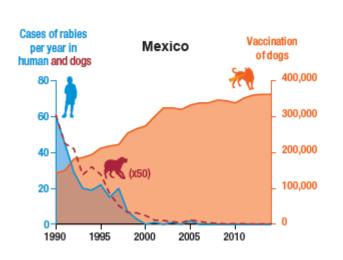
Reduce human health impact and cost for public health sector:

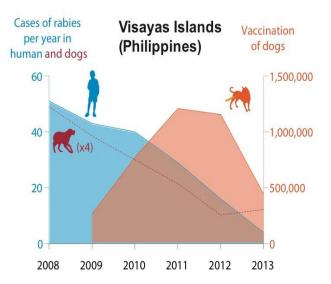
- Prevent food-borne transmission (cooking, meat inspection)
- Antiparasitic treatment of pigs
- Vaccination of pigs (new!)



Rabies control and elimination:

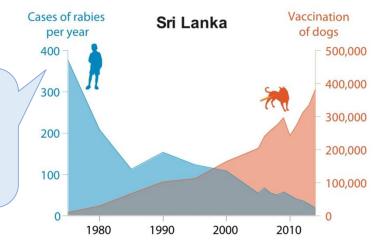
Human cases and dog vaccination are linked!





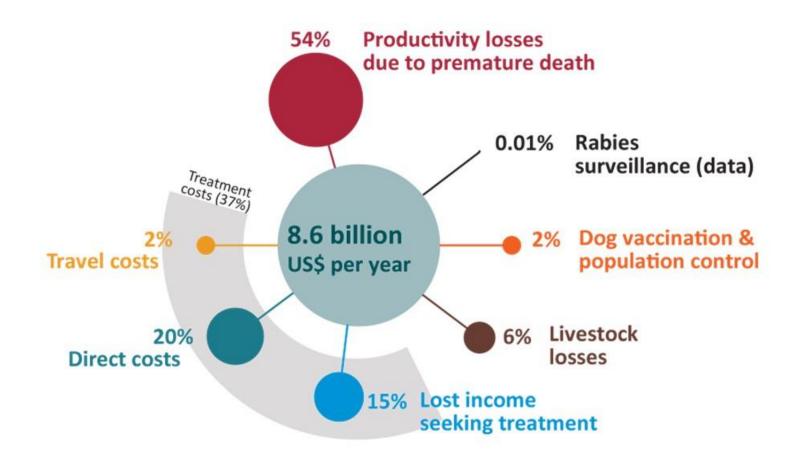
Reduce human health impact :

- Mass dog vaccination
- Awareness campaigns



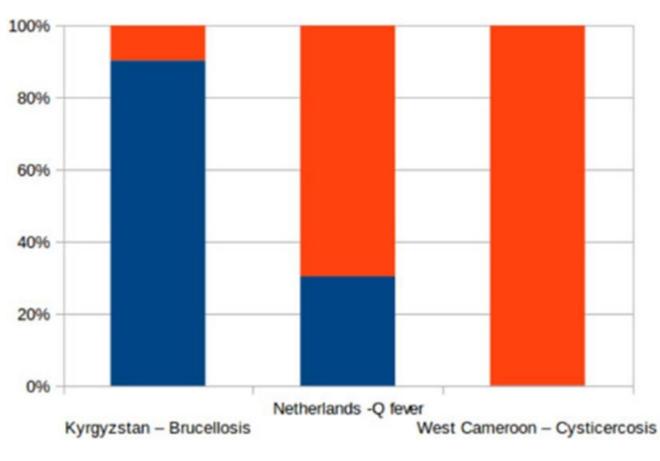


The imbalance of the sectoral cost of rabies





Impact of a zoonotic diseases on human or animal health — which priorities for interventions?



DALYs = Disability Adjusted Life Years

ALEs = Animal loss equivalents

Source Torgerson et a. https://doi.org/10.1016/j.onehlt.2017.11.003







Inadequate food hygiene / cooking preparation

Diet and eating practices

Inadequate slaughter, processing, storage

Farming practices

(symbiotic agriculture, crowding, intensification, poor compliance with disease treatment)



Behavioural factors for zoonoses exposure

Perception of the animal

(lower value of non-livestock animals leading to less care;

e.g. dogs)

Use of animal faeces

(fuel, construction, fertilizer)

Use of animal by-products

(hides, hairs)

Cohabitation with animals

(livestock, pet for livehood, cultural, medical uses)

Access to

- preventive measures?
- treatment?
- knowledge to change behaviour/ practice?

Zoonoses and the dogs

Dogs are:

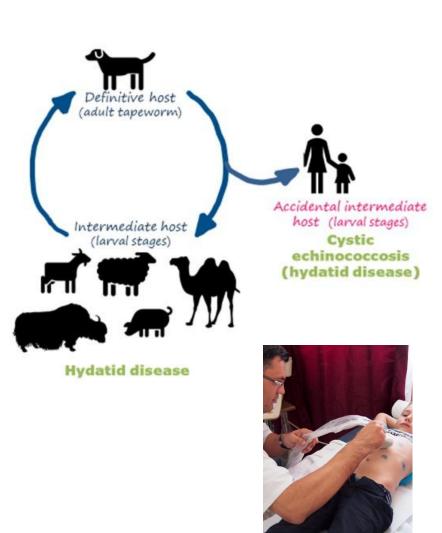


- Ubiquitous and associated with mankind
- Have multiple functions, but little economic value and usually receive little care
- Are a reservoir for or play a role in numerous zoonoses (Rabies, Echinococcosis, Leishmaniosis, Leptospirosis, other bacterial or fungal zoonoses...)
- Transmitting diseases directly, through food or vectors
- Posing a hygiene problem (stray dogs, poop,...)
- A major source of traffic accidents
- Their bites are a public health issue





Cystic echinococcosis (CE)



- Caused by the parasite Echinococcus granulosus.
- The definitive hosts of this tapeworm are dogs which release the parasite eggs with their faeces.
- Intermediate hosts (sheep, camels, yaks, goats, pigs) get infected by ingesting those eggs. They develop hydatid cysts in their livers and lungs.
- Humans get infected by ingesting the parasite eggs released with the faeces of a dog harboring the tapeworm. Children are at particular risk because of their frequent contact with dogs.
- where pastoral activities predominate and where offal from slaughtered animals is accessible to dogs, mainly in central Asia, southern and eastern Europe, northern Africa and the southern top of South America.
- Humans develop CE characterized by fluid/filled parasitic cysts that occur most commonly in their liver and lungs but may occur in any body organ. It interferes with the functions of the organ involved causing anaphylaxis and death.

Proven pillars for success, Rabies and beyond

Awareness & community engagement





Dog bite prevention, appropriate behaviour around dogs/animals



Dogs can be your best friends, but sometimes when we are angry or scared we might bite. Let's learn to live together responsibly and safely to prevent being bitten.

1



Don't disturb me or frighten me, particularly when I am eating or tied up.

 Don't disturb me when I am with my toys, my puppies, in a car, behind a fence or when I am askep or il.

2



Keep away from me when I am angry or scared.

- When I am angry, I will show my teeth.
 When I am scared, my tail will be between my legs and I will try to run away.
- 3

Don't move if I approach you when I am not on a lead.

 Stand still like a tree trunk.
 If you fall over, curl up and stay as still and he avy as a rock.

4



Approach me slowly and quietly.

 Ask my owner or your parents/guardian's permission before you touch me. Let me snift your hand before you touch me.
 When you stroke me, stroke my back first.



If a dog bites you act quickly. Wash the wound with soap and water and look for a first aid centre.

Remember to tell your parents that you were bitten.
 Tell them which dog it was and where you were when it bit you.

Robies is a disease that kills people and dogs. If a dog has rabies and it bites you it can give you the disease. If you are biten remembering what the dog that bit you looked like and getting medical help can save your life. Don't disturb, mistreat or kill the dog.

Remind your parents, teachers, friends and everyone you know that the best way to stop rabies is to make sure all dags are vaccinated against it every year.





RABIES PREVENTION







3. MONITOR
THE DOG





Designed by AM Labouche; original dog drawings by @ Lili Chin

http://www.who.int/rabies

Dog population management

- Create awareness about responsible dog ownership
 - Compliance with dog-related legislation (leash, registration)
 - Assure behavioural, physical and medical needs of a dogs
 - Prevent risks (aggression, disease transmission or injuries) to community, animals or the environment.



- Surgical or chemical sterilization
- Enforce leash laws/animal confinement- especially during females heat cycles
- Decrease influx of new dogs
 - Remove garbage from streets
 - Rubbish bins with lids
 - Don't feed community dogs







Strengthening collaboration across sectors and disciplines

Challenges

- Different sectors with different focus
- Health systems not developing equally
- Limited communication
- Limited evidence and guidance on how to deliver e.g. WASH alongside other disease interventions most effectively
- Cost sharing

Opportunities

- Examples of success
- Building a body of evidence
- More cost-effective delivery
- Tackling multiple health issues at once
- Health system strengthening
- Sustainable over long-term



No one sector can do it alone!

The FAO-OIE-WHO Collaboration

Sharing responsibilities and coordinating global activities to address health risks at the animal-human-ecosystems interfaces

A Tripartite Concept Note







Taking a Multisectoral, One Health Approach:

A Tripartite Guide to Addressing Zoonotic Diseases in Countries



https://extranet.who.int/sph/one-health-operations

Thank you!



WHO technical and other updates on neglected zoonotic diseases:

• For further reading:

https://www.who.int/neglected_diseases/zoonoses/en/

Resources by disease

Echinococcosis

Foodborne trematode infections

Rabies

Snakebite envenoming

Taeniasis / Cysticercosis

