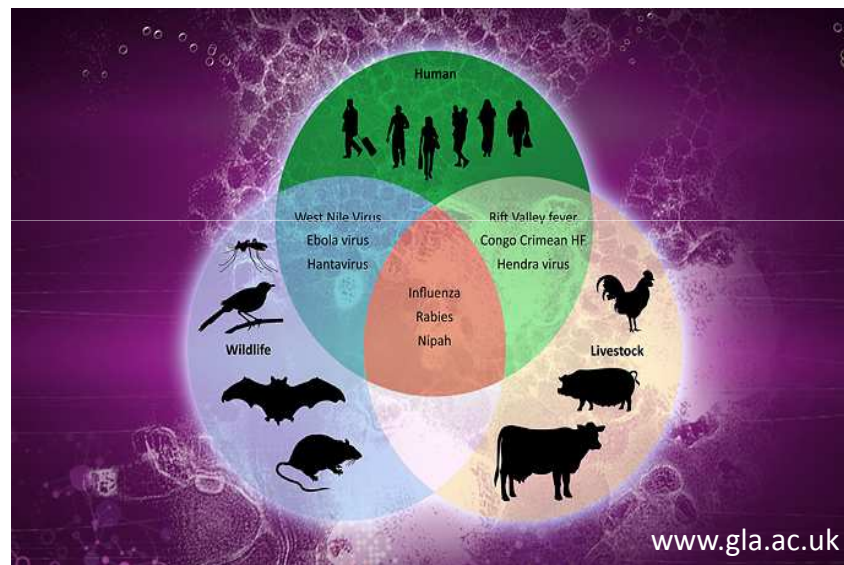


ZOONOTIC INFECTIONS - A VETERINARIAN'S PERSPECTIVE

emerging infectious disease threats



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Introduction

- ▶ Department of Veterinary Services (DVS) - one of the department under Ministry of Agriculture and Agro-based Industry (MOA) Malaysia
- ▶ DVS is the **competent authority in managing animal health and veterinary services in Malaysia**
- ▶ Comprise of Federal Level (Putrajaya) and State Level (Peninsular Malaysia- 11 states)
- ▶ Technical (Veterinary Officer, Assistant Veterinary Officer, Veterinary Assistant), Researcher and Administrative Staffs
- ▶ HQ is located at Precinct 4, Putrajaya

Vision and Mission

- ▶ Vision - A competent veterinary authority serving the animal industry
- ▶ Mission - Provide quality veterinary services as an assurance for *public health* and sustainable livestock industry to ensure the safety of human welfare

Functions (Empowered under Animal Act 1953)

1. Control, prevent and eradicate animal and zoonotic diseases.
2. Production of livestock, livestock produce and animal feed.
3. Inspection of meat, milk, eggs, animal feed, abattoirs and veterinary product processing plant
4. Control of import and export of livestock and animal produce and quarantine services
5. Training for the livestock and domestic animal industries.
6. Expand livestock production and animal health as well as general veterinary health.
7. Research on animal diseases and animal genetic sources
8. Control the welfare of animals welfare and conservation of animal's genetic materials

**FROM FARM TO PROCESSING PLANT
FROM FARM TO FORK**

OIE Director General Prologues

*The interaction between human and animal health is not a new phenomenon but the birth of a new era of emerging and re-emerging diseases, and the significant potential impact of these diseases on public health. **Most of the emerging diseases have an animal origin, and almost all of them have zoonotic potential which must be addressed through coordinated actions between animal and public health authorities.** In fact, emerging and re-emerging zoonotic diseases will become a progressively greater factor in the demands on the activities of Veterinary Services, thus impacting on future partnerships, resources, and programmes. This will imply cooperative actions between the three bodies that are - OIE, FAO and WHO – to provide important international linkages.*

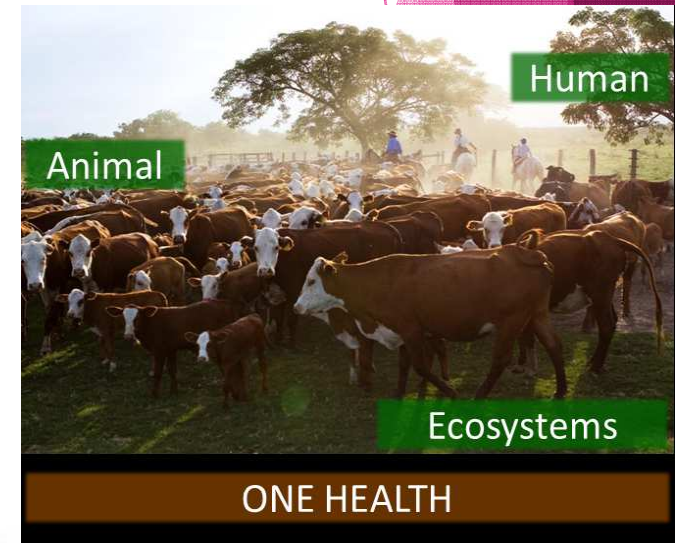
One cannot forget that the fight against zoonoses starts by eliminating the pathogen at its animal source. Thus, provides Veterinary Services, veterinarians, farmers, managers of wildlife and the OIE, with a leading role at both national and international level.



One Health Concept

Globalization, land encroachment and climate change contribute to outbreaks of **zoonotic diseases** – e.g brucellosis, bovine TB, parasitic illnesses, anthrax, BSE and certain strains of influenza viruses. High-impact animal diseases such as foot-and-mouth disease, peste des petits ruminants, classical or African swine fevers, while not directly affecting human health, do affect **food and nutrition security** and **livestock production and trade**. Therefore, seriously compromised food security and causing a high **socioeconomic impact** on agricultural exporting nations increased the need to focusing **animal health services** on the early epidemiological investigation and prevention of zoonoses through a **holistic and transdisciplinary joint initiative** called the “**One Health**”.

Human health and animal health are interdependent and bound to the health of the ecosystems in which they exist



Animals, Humans and Diseases

Diseases of animal origin that can be transmitted to humans, such as avian influenza, rabies, Rift Valley fever and brucellosis, pose worldwide risks to public health. Other diseases which are mainly transmitted from person to person also circulate in animals or have an animal reservoir, and can cause serious health emergencies, such as the recent epidemic of Ebola virus. These risks increase with globalisation, climate change and changes in human behaviour, giving pathogens numerous opportunities to colonise new territories and evolve into new forms.

OIE 2016



ONE HEALTH

BY PROTECTING ANIMALS, WE PRESERVE OUR FUTURE

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



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

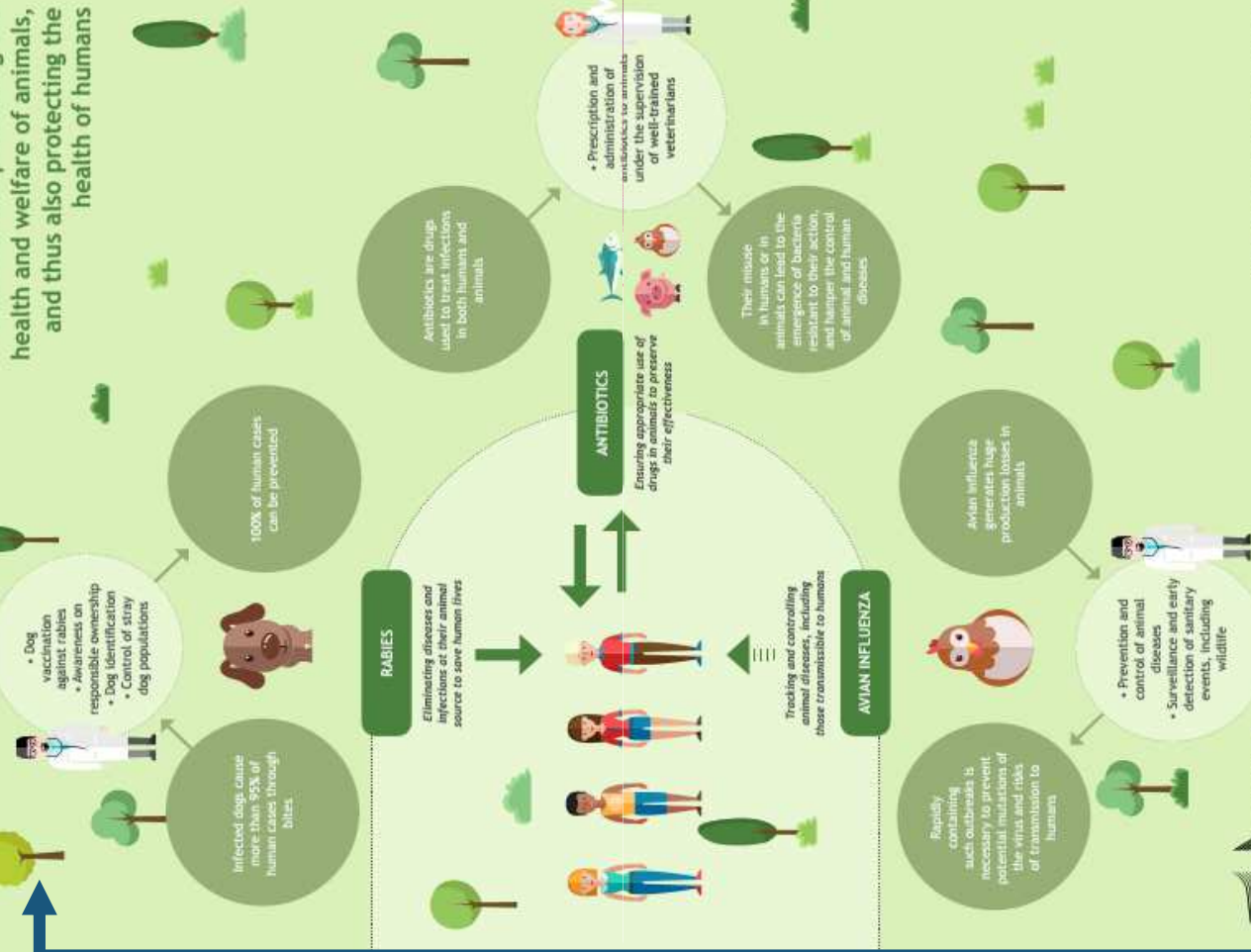
Early detection of diseases and infections at animal source can prevent their transmission to humans or introduction of pathogens into the food chain



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



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



What is zoonotic and emerging disease?

OIE-Terrestrial Animal Health Code defines zoonotic and emerging as :

Zoonotic : Any disease or infection which is naturally transmissible from animals to humans

Emerging Disease : new occurrence of a disease, infection or infestation, causing a significant impact on animal or public health.

Most of the emerging diseases have an animal origin, and almost all of them have zoonotic potential



Important of Animal Diseases

60% of existing human infectious diseases are zoonotic



At least 75% of emerging infectious diseases of humans (including Ebola, HIV, and influenza) have an animal origin



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



80% of agents with potential bioterrorist use are zoonotic pathogens



ZOONOTIC AND EMERGING DISEASE THREATS

- ▶ HUMAN AND ANIMAL HEALTH IS CLOSELY LINKED
- ▶ THREATS RELATED TO ANIMAL DISEASE & PATHOGENS
 - ▶ animal health,
 - ▶ economy,
 - ▶ biodiversity,
 - ▶ food security,
 - ▶ food safety, and
 - ▶ public health
 - ▶ Bio-threat/Agro-threat
 - ▶ Invasive alien species (IAS)
 - ▶ AMR

ZOONOTIC & EMERGING THREATS

- ▶ Disruption of the epidemiological triad balance (agent-host-environment) - cause disease occurrence
- ▶ Animals play an important role as biosensors for accidental or deliberate releases of infectious agents and toxins, and for emerging diseases.
- ▶ Animal disease surveillance of natural outbreaks in animals, can be used to detect occurrence of zoonotic and emerging diseases

ECONOMIC/FOOD SAFETY AND FOOD SECURITY IMPACT

- ▶ Animal diseases have very huge impact on economy (farmers to country)
- ▶ Trade
- ▶ Socio-economy
- ▶ Tourism
- ▶ Food supply
- ▶ Human Health

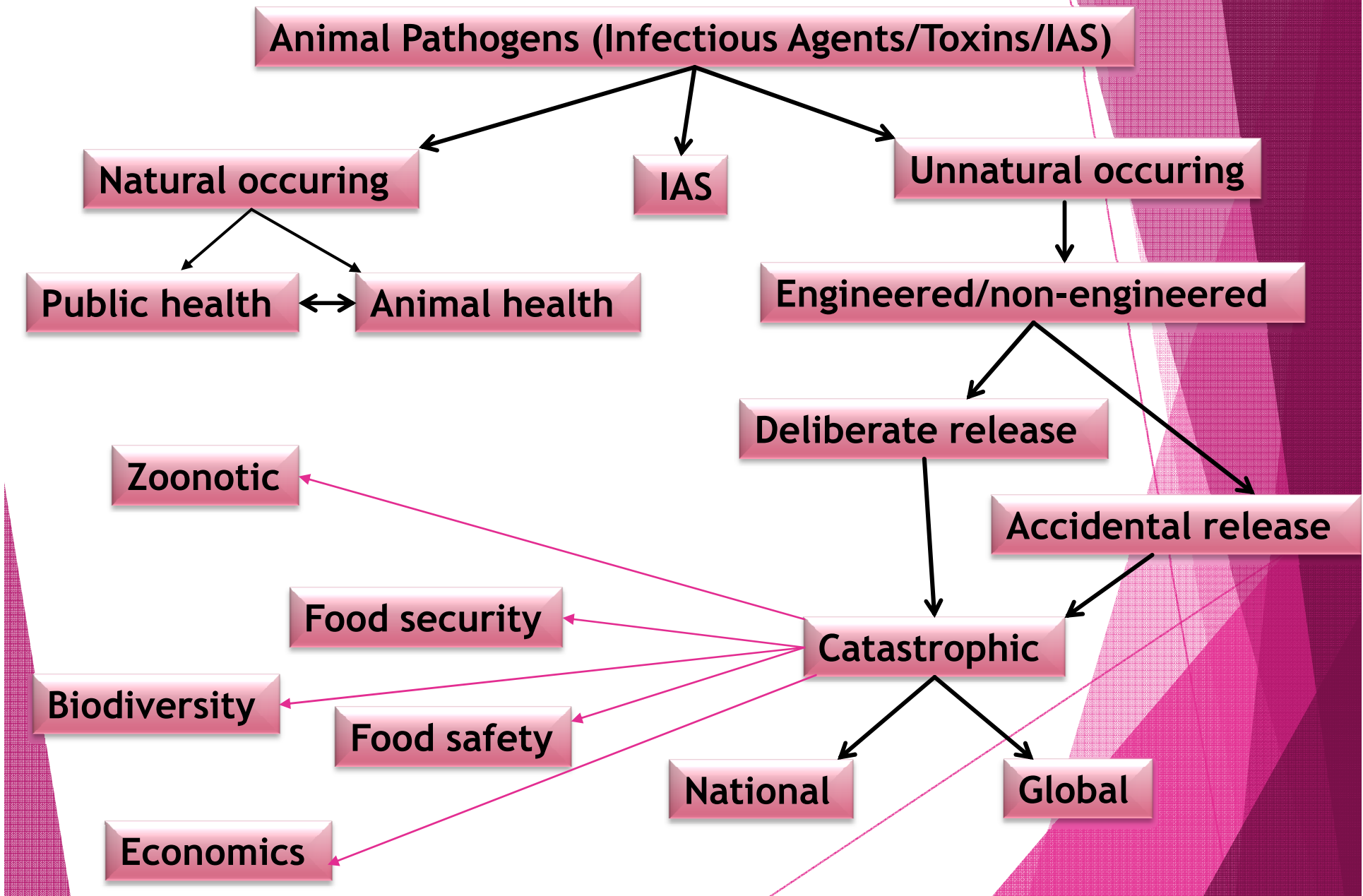
BIO/AGRO THREATS

- Animal pathogens being used as bioweapon
- Impact on human population
- Impact on agriculture
- Impact on socio-economy
- Impact on tourism
- Impact on trade
- Impact on public health

Invasive Alien Species

- 1 New or emerging threats to environment and human population
- 2 Invasive alien species (IAS) are species whose introduction and/or spread outside their natural past or present distribution threatens biological diversity.
- 3 IAS occur in all taxonomic groups, including animals, plants, reptiles, amphibians, fungi, bacteria and microorganisms, and can affect all types of ecosystems
- 4 Can be a threat - destroying the eco-system/biodiversity

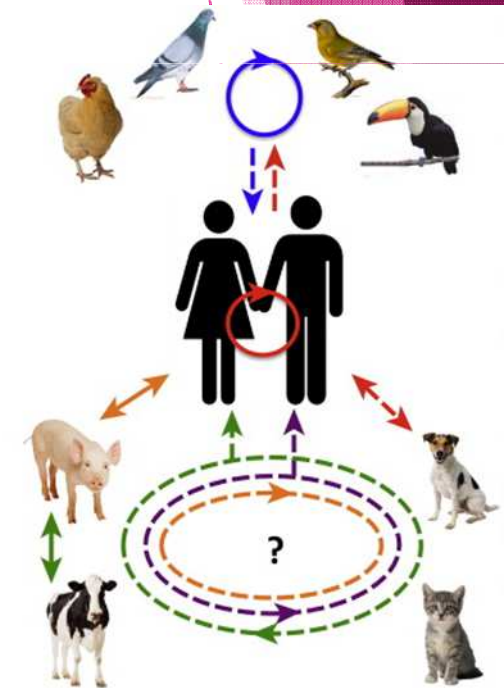
ANIMAL'S PATHOGENS THREAT



Malaysia experiences of Emerging & Re-Emerging Zoonoses

1. 1998-1999 – Nipah Encephalitis Virus
2. 2004-2007 & 2017 – Highly Pathogenic Avian Influenza H5N1
3. 2009 – Swine Influenza Virus H1N1
4. 2012 – Q-fever
5. 2012 - Tuberculosis
6. 2013 – Brucella abortus
7. 2014 – Brucella melitensis
8. 2015 – Rabies and Equine Influenza Virus
9. Salmonellosis

Listed are some of zoonotic diseases present in Malaysia that have impact on both human health and economy



List of Strategy for Preventing Diseases

- i. Establishing National Disease Control and Surveillance Programme
- ii. Import Risk Analysis
- iii. Quality Assurance – MyGap and VHM
- iv. Audit – Processing Plant Inspection
- v. Border Control – collaboration between DVS Enforcement, MAQIS, LE (Police, Army etc) Custom and Immigrations



List of Strategy for Preventing Diseases

- vi. Sharing Information on zoonoses – regular meeting between DVS and MOH
- vii. Multidisciplinary collaborations – One Health (Animal Health, Public Health, Environmental)
- viii. Bilateral Collaborations



List of Strategy for Preventing Diseases

- ix. Disease Management – Animal Disease cases will be monitored until disease resolved and freedom gained
- x. Stamping out for highly economic and zoonotic disease e.g HPAI and Nipah Encephalitis
- xi. Culling policy – Brucellosis, Salmonellosis, Tuberculosis, Rabies
- xii. Vaccination – animal disease more of preventing the herd rather than treating individual animal



List of Strategy for Preventing Diseases

- xiii. Identification of outbreak area and surveillance
- xiv. Gazetting the outbreak area/states
- xv. Movement control
- xvi. Quarantine
- xvii. Rabies in immune belt area – leash/harnessing and licensing of dogs (dogs have to be kept indoors)



CHALLENGES

1. To change policy makers perspective
2. Multi disciplines' collaboration
3. Capability to diagnose intentional occurrence
4. Public awareness
5. Lack of experience of foreign diseases or intentional disease occurrence. Will delay recognition of symptoms in case of outbreaks
6. To predict/forecast emerging or re-emerging of diseases

Summary

Protecting animals to preserve our future

Controlling zoonotic pathogens at their animal source - that is, pathogens that can be transmitted from animals to humans and vice versa - is the most effective and economic way of protecting people. Consequently, global strategies to prevent and control pathogens must be developed if we are to protect public health. These should be coordinated at the human-animal-ecosystems interface and applied at the national, regional and global levels, through the implementation of appropriate policies.

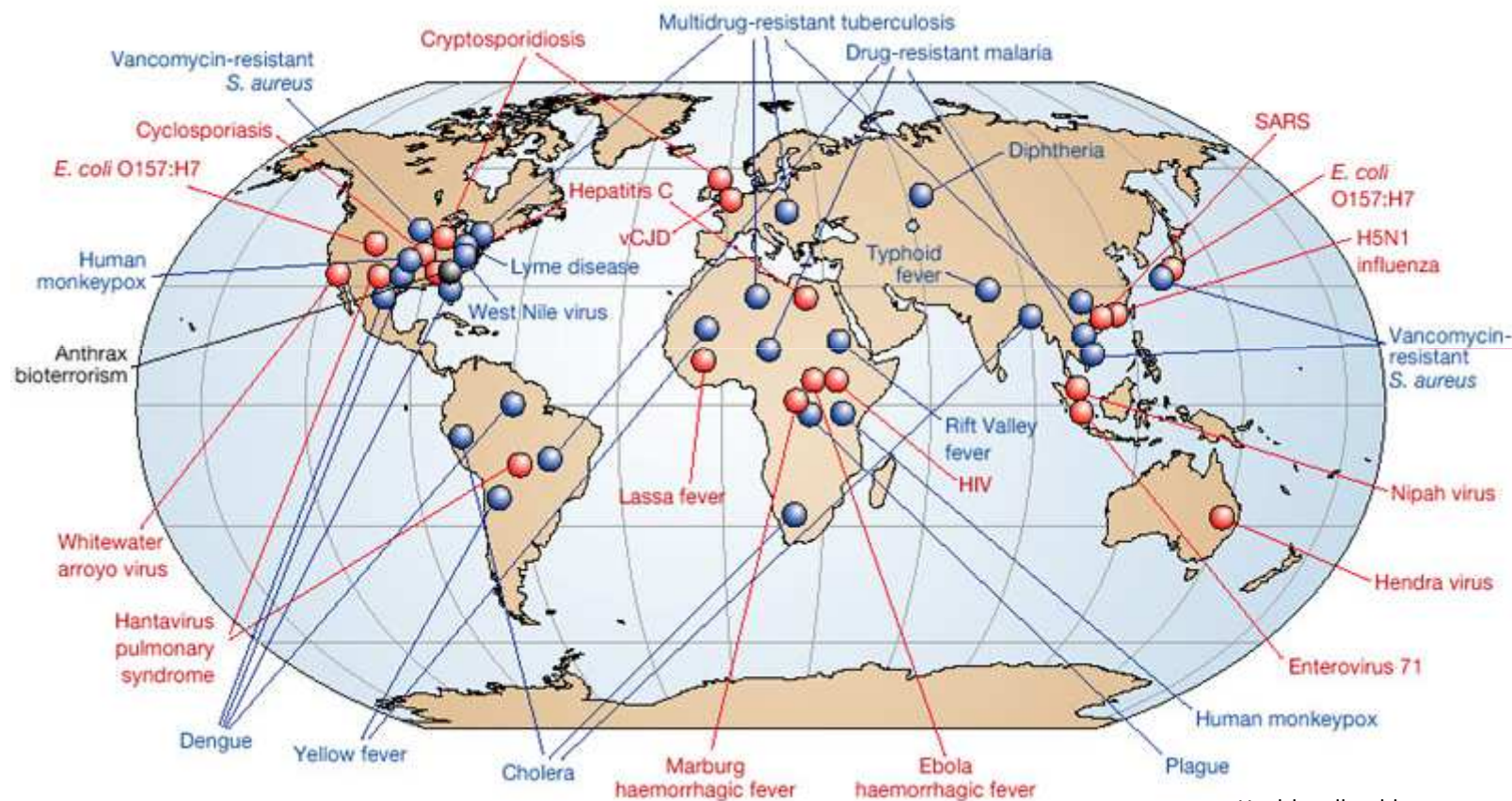
Conclusion

Veterinary Services, in both their public and private components, play an essential role in the development and implementation of policies to manage animal health risks. In protecting animal health and welfare, they meaningfully contribute towards improving human health, as well as food safety and security.

For that reason, they need appropriate and effective methods to **prevent and control animal diseases (emerging zoonoses & TADs)**, and must be able to communicate and work in close collaboration with a wide range of stakeholders, in order for joint action to be taken (OIE).



THANK YOU



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