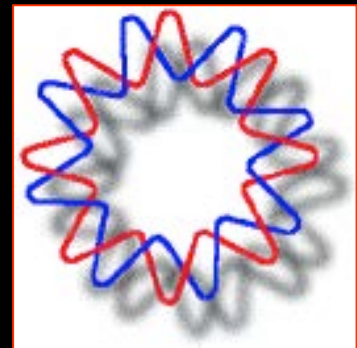




Emergent and re-emergent viral diseases: What? Where? Why?

Instituto de Biotecnología/UNAM

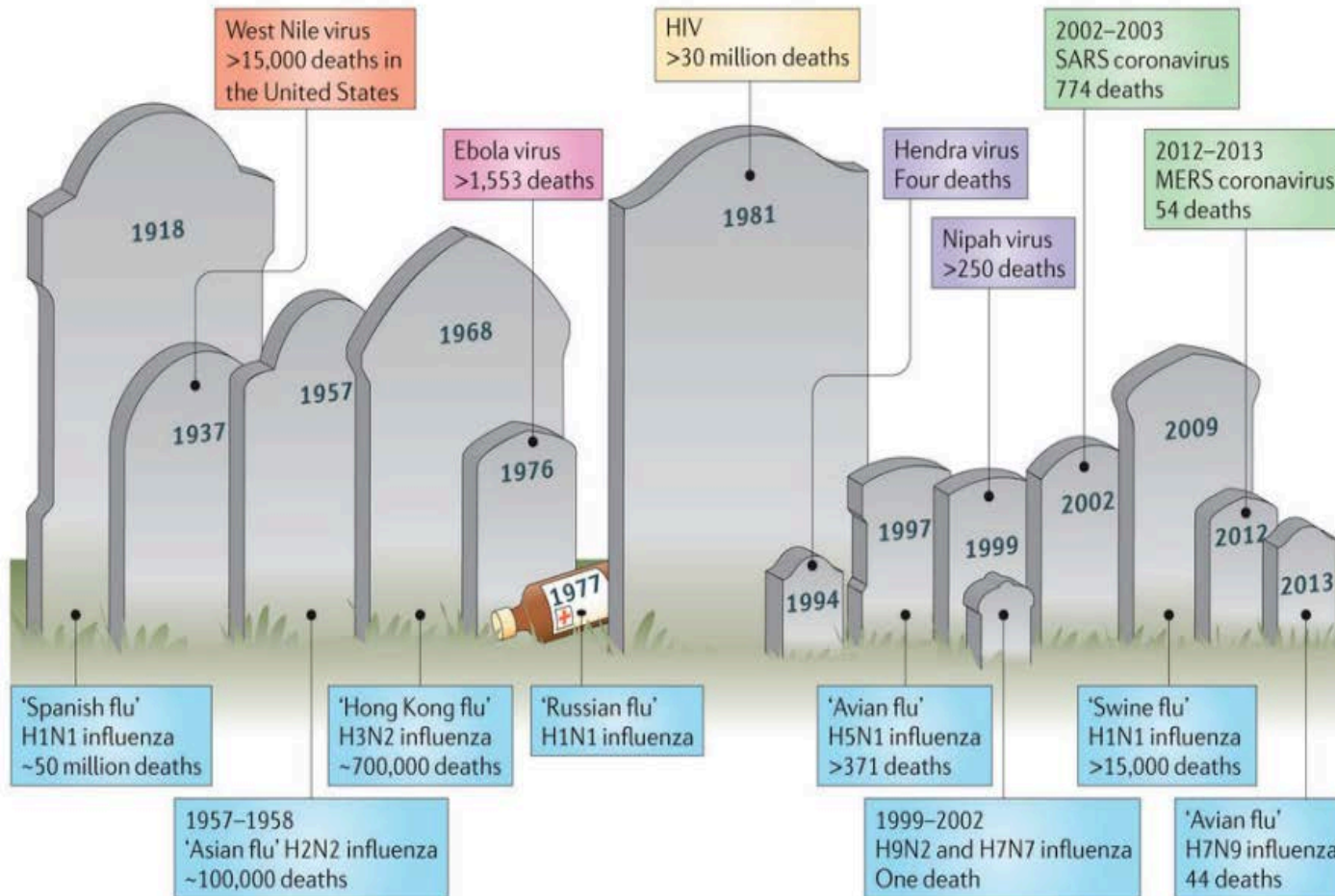


Emerging viruses

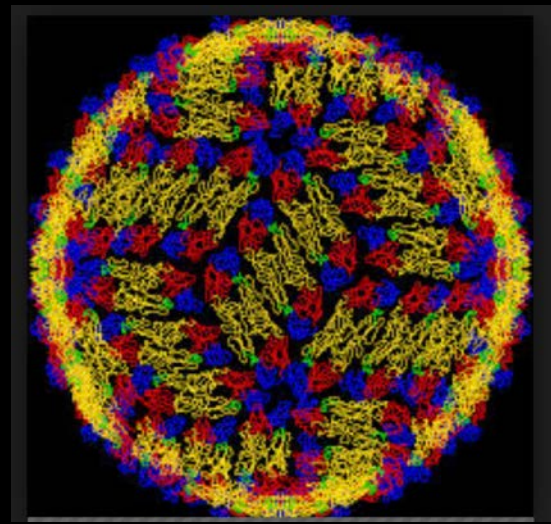


- An emerging virus is the causative agent of a new or previously unknown infection.
- The term became popular in 1990s, but in general emerging viruses are not new.
- New infectious agents have swarm human populations since the rise of agriculture, 11,000 years ago, when the concentration of people in a single place increased greatly.

Emerging viral diseases have had a deep socio-economic impact in the story of the world.

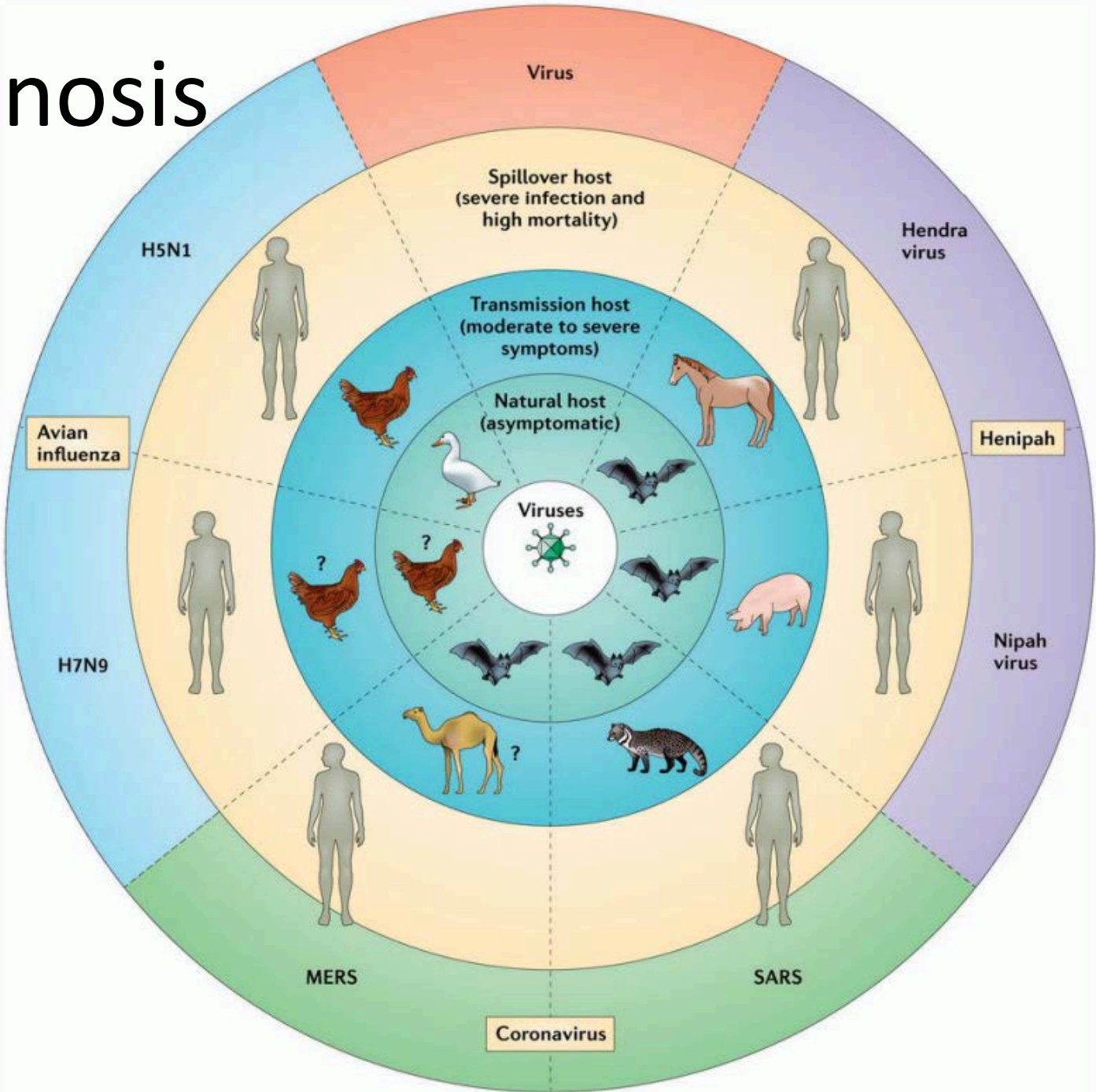


What are the causes of an emerging infection?



- Changes in the host-range of a virus, causing a disease not previously obvious .
- Transmission of a virus from wild or domesticated animals to humans (zoonosis).

Zoonosis



Emergent and re-emergent
viral diseases:

What? Where? **Why?**

Factors that favor the surge of emerging infectious diseases

Overpopulation



Globalization

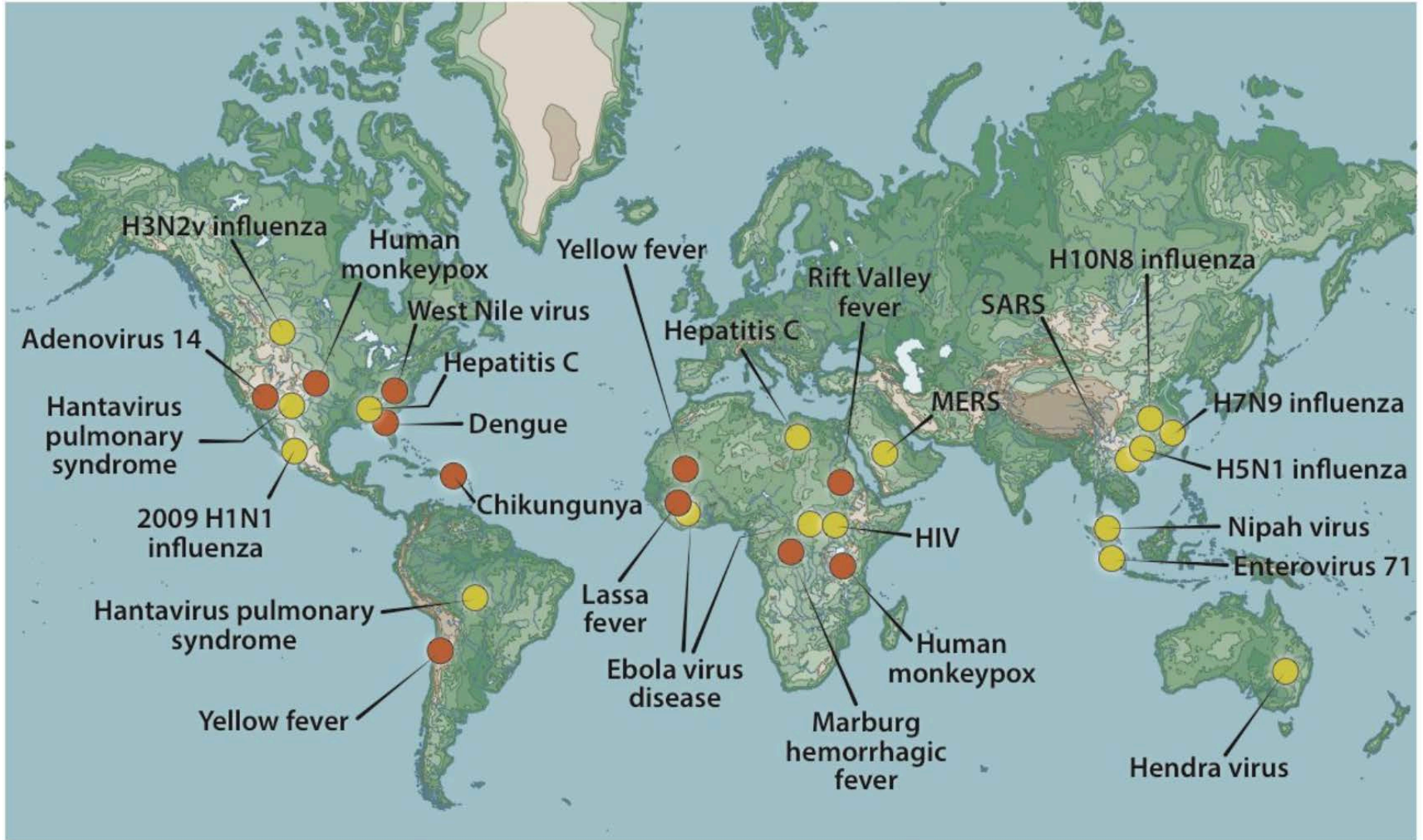



Environmental Changes




Deforestation





 Newly emerging

 Re-emerging

Developments facilitating spread

- Commercial air travel
- Global trade
- Urbanization
- Unchecked population growth
- Climate change

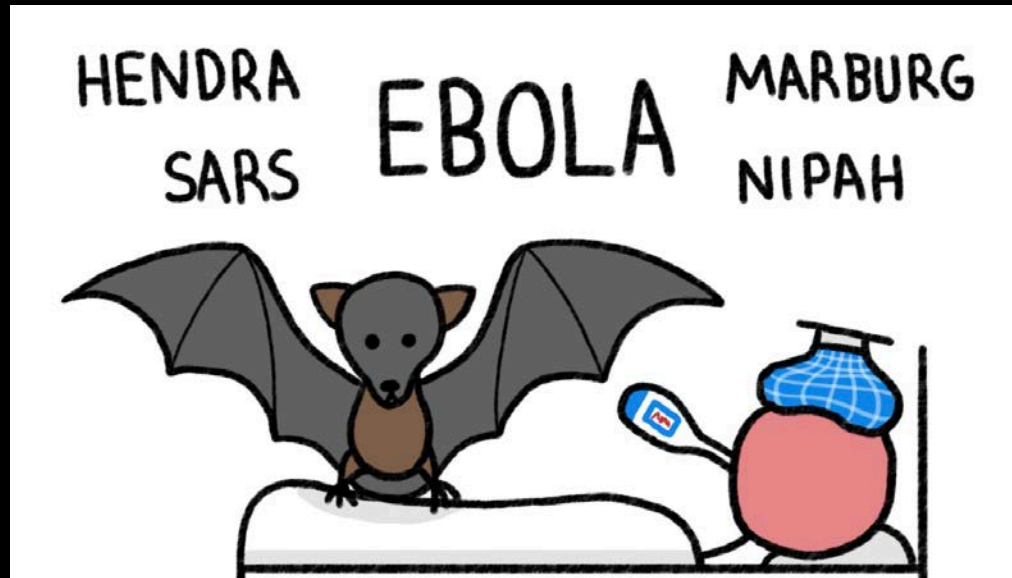
Advances facilitating control

- Genome sequencing to identify emerging viruses
- Global communication networks
- Rapid diagnostics
- New approaches to vaccine and therapeutic design



How does zoonosis happen???

Bats are important reservoirs of viruses



Mosquitoes excellent virus vectors



Nipah Virus



First outbreak, Malaysia, 1998

-Outbreak of respiratory and neurological disease in a pig farm.

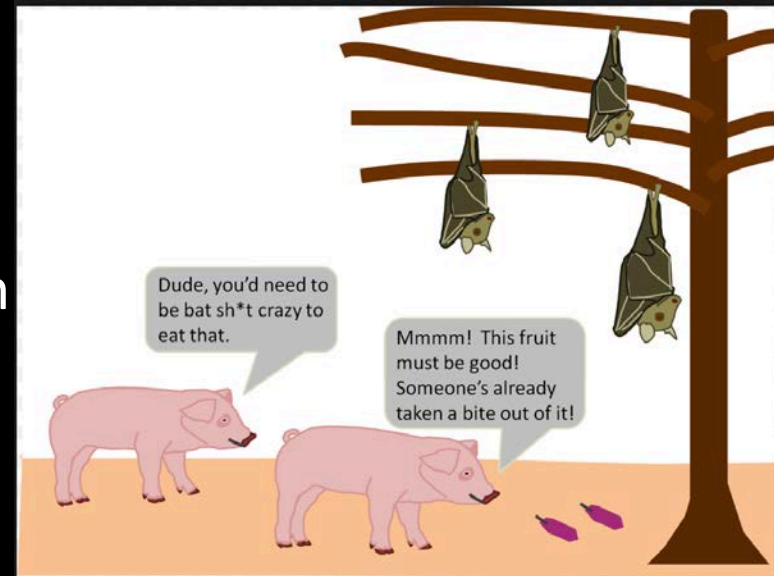
-105 human deaths, one million pigs culled

-Bats excrete virus in urine but are unaffected

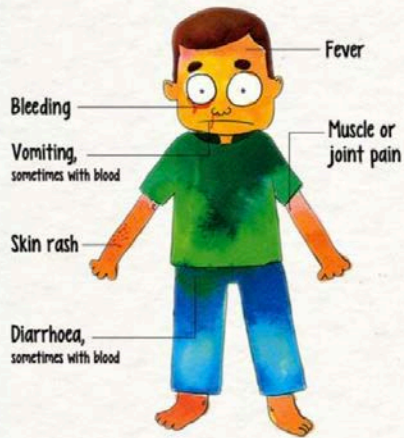
-Pig farmers plant mango trees near pigpen

-Pigs spread the infection to humans

-Human to human transmission, infections continue



EBOLA SYMPTOMS



50-90%
Of people infected with Ebola die.

But people who
SEEK TREATMENT EARLY
have a better chance of survival.

2 - 21
Number of days from exposure to virus to onset of symptoms.

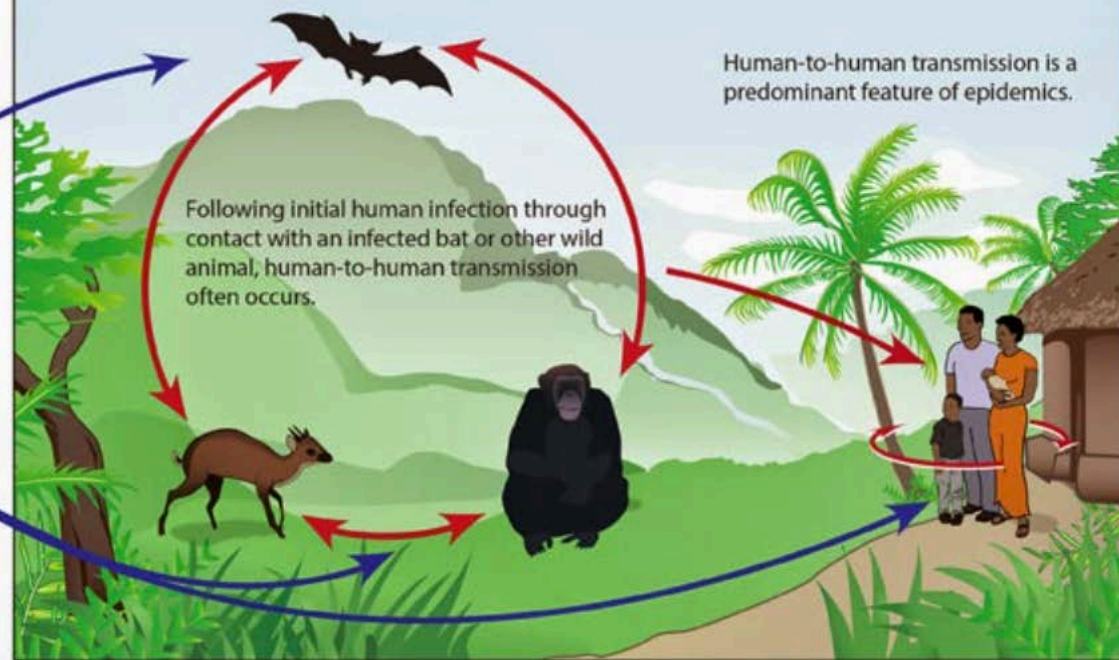
Patients become
CONTAGIOUS
once they begin to show symptoms.

If someone has been in an area known to have Ebola or in contact with someone suspected to have Ebola and they begin to have symptoms, they should seek medical care **IMMEDIATELY**

GRAPHIC © RAJ
SOURCE: UNICEF, WHO
RESEARCH: LAURIN HOLMES (WWW.LAURINHOLMES.COM) - KATEJA MISCHKE (WWW.ABOUT.ME/KATEJA.MISCHKE)

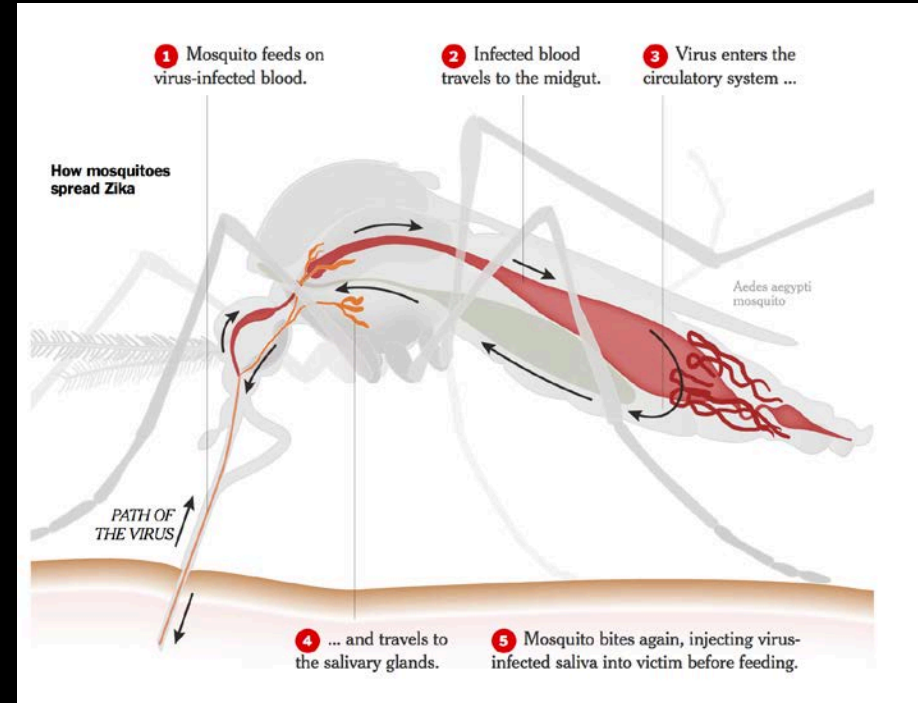
visual.ly | unicef

Ebola virus



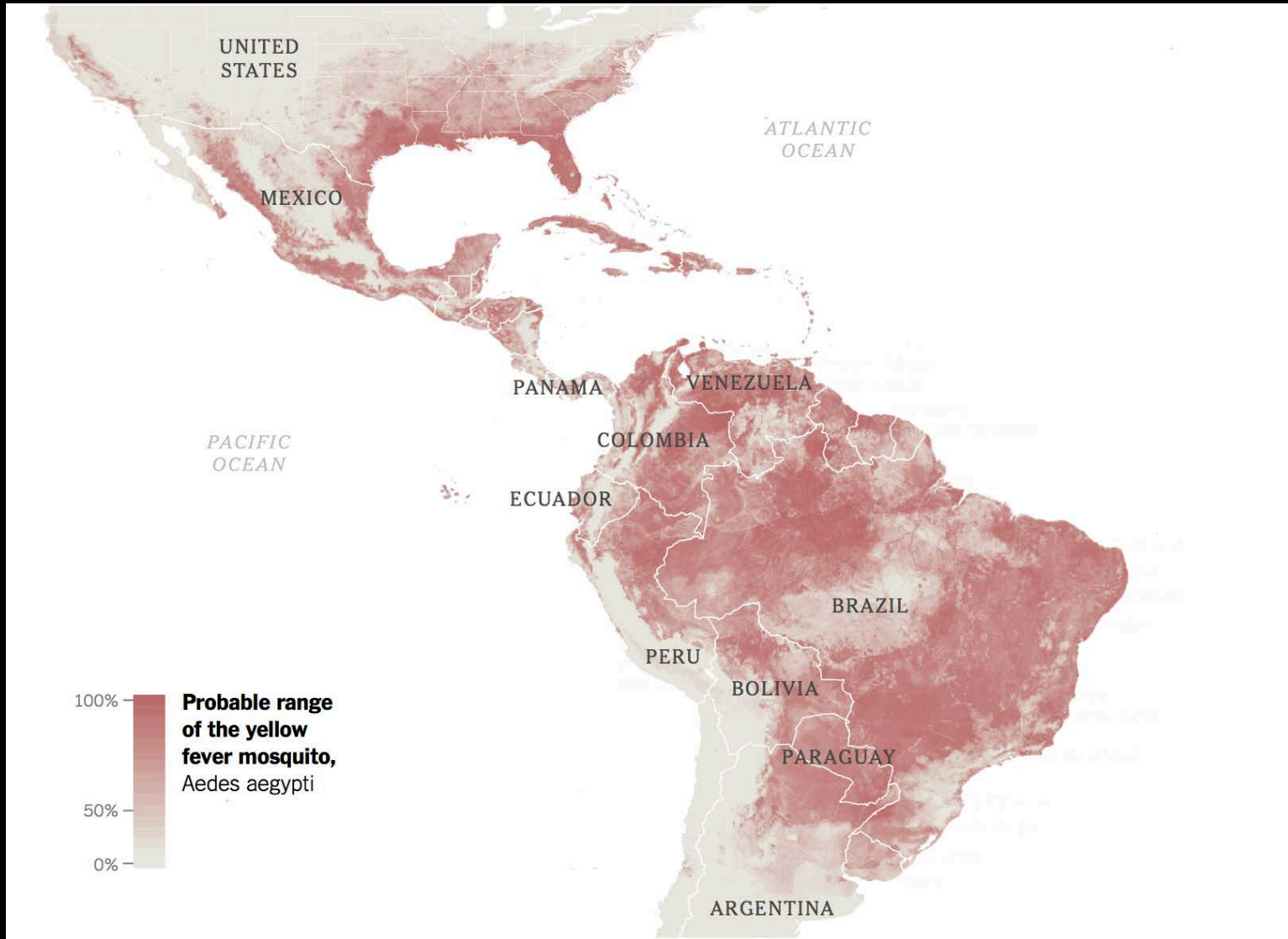
Arboviruses: Arthropod borne viruses

Mosquitos and ticks
are the main vectors

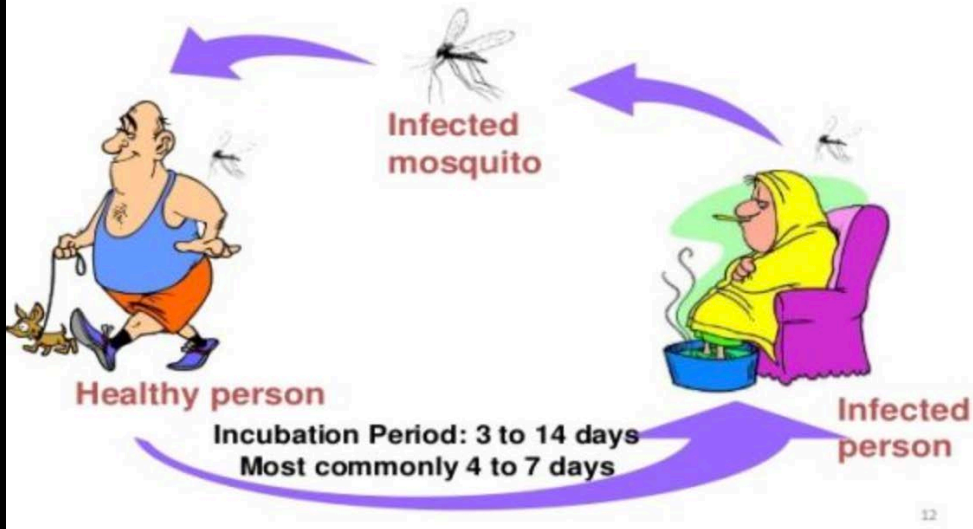


Aedes aegypti,
Aedes albopictus

Aedes geographic distribution



Transmission



Symptoms are very similar

SYMPTOMS OF DENGUE

- Abrupt onset of high **fever**
- Severe frontal **headache**
- Pain** behind the **eyes** which worsens with eye movement
- Muscle** and joint pains
- Loss of sense of taste and appetite
- Measles-like rash** over chest and upper limbs
- Nausea** and vomiting

VIRUS DE CHIKUNGUNYA

Cómo prevenirlo

¿QUÉ ES?
Es una enfermedad transmitida al humano por mosquitos, principalmente *Aedes aegypti* y *Aedes albopictus*, que están infectados con el alfavirus CHIKV.

EL VIRUS EN EL MUNDO
40 países lo han detectado
776 mil casos sospechosos en América durante 2014

PRINCIPALES SÍNTOMAS

- Aparición súbita de Fiebre
- Dolores de cabeza, musculares y articulares
- Náuseas
- Vómito
- Cansancio
- Erupciones cutáneas
- Conjuntivitis

PERIODO DE INCUBACIÓN
De 1 a 12 días

¿CÓMO SE DIAGNÓSTICA?
A través de la prueba ELISA y técnicas moleculares.

TRATAMIENTO
No existe un tratamiento para erradicarlo, únicamente se alivian los síntomas.

PREVENCIÓN

- Reducir los depósitos de agua, naturales y artificiales, para no generar criaderos de mosquitos.
- Usar insecticidas para matar larvas en el agua.
- Aplicar repelentes para el cuerpo.
- Usar ropa que no exponga la piel.
- Colocar mosquiteros tratados con insecticidas.

SABÍAS QUE...
El nombre *chikungunya* deriva de una palabra **tsonga**, del sustrato de Tanzania y del norte de Mozambique, que significa "aquí que se encorva".

Sitios afectados recientemente
Europa y América

12

ZIKA VIRUS

What is Zika?

Zika is a virus transmitted by the *Aedes* mosquito, which also transmits dengue and chikungunya.

Zika can cause:

- Mild fever
- Conjunctivitis
- Headache and joint pain
- Skin rash

Onset is usually 2-7 days after the mosquito bite

1 in 4 people with Zika infection develop symptoms

A very small number of people can develop complications after becoming ill with the virus

EL VIRUS EN EL MUNDO
40 países lo han detectado
776 mil casos sospechosos en América durante 2014

Brotes mas extensos

- África
- Asia
- Subcontinente Indio (India, Pakistán, Bangladesh, Nepal y Birán)

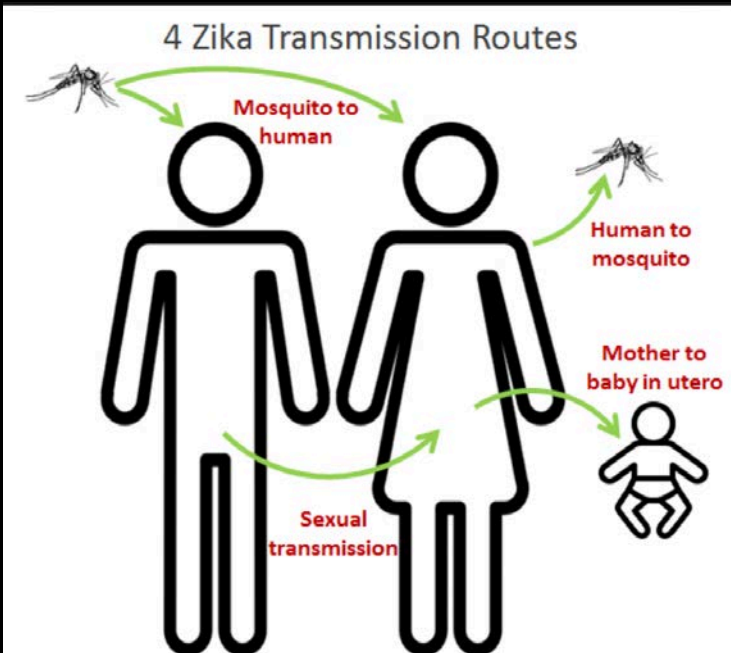
Sitios afectados recientemente
Europa y América

#zika
#FightAedes
#ZikaVirus
www.paho.org/zikavirus

Pan American Health Organization
World Health Organization
Américas



The current Zika virus outbreak has been declared a Public Health Emergency of International Concern (PHEIC) by the WHO (Feb 2016).



Microcephaly

Guillain-Barré syndrome



Zika virus outbreak: reproductive health and rights in Latin America

In mid-January, 2016, health ministers from different Latin American countries made public recommendations to women and couples to postpone pregnancy

who determines whether a risk to the physical, mental, or social wellbeing of the woman is present, the decision remains in the woman's hands. However, local health authorities at municipal levels, who are closer to women at risk, are not providing enough information to these women about the risks and the choices available according to the law

CDC guidelines for pregnant women during the Zika virus outbreak

Zika virus is attracting worldwide attention and everyone fears its potential dramatic effects on the fetal brain. The US Centers for Disease Control and Prevention (CDC) have



Published Online
February 12, 2016
[http://dx.doi.org/10.1016/S0140-6736\(16\)00331-7](http://dx.doi.org/10.1016/S0140-6736(16)00331-7)

This online publication has been corrected. The corrected version first appeared at thelancet.com on February 25, 2016

The Zika virus crisis offers a belated opportunity for governments to begin to close gaps in sex education and access to contraceptives, safe motherhood, safe abortion, and programmes to prevent discrimination and exclusion of people living with disabilities. If governments do not take this opportunity, the Zika virus will not only be a public health issue, but also exacerbate existing gender inequalities and social injustice.

World Health Organization

Is ZIKA a risk if I am PREGNANT?

Everyone runs the same risk of getting infected by Zika.

Symptoms of Zika virus disease are generally mild.

There is a risk that Zika may cause microcephaly in your baby.

Protect yourself from mosquito bites and see a doctor if you think you have been infected.

#ZikaVirus

Correspondence
www.thelancet.com
Vol 387 February 27, 2016

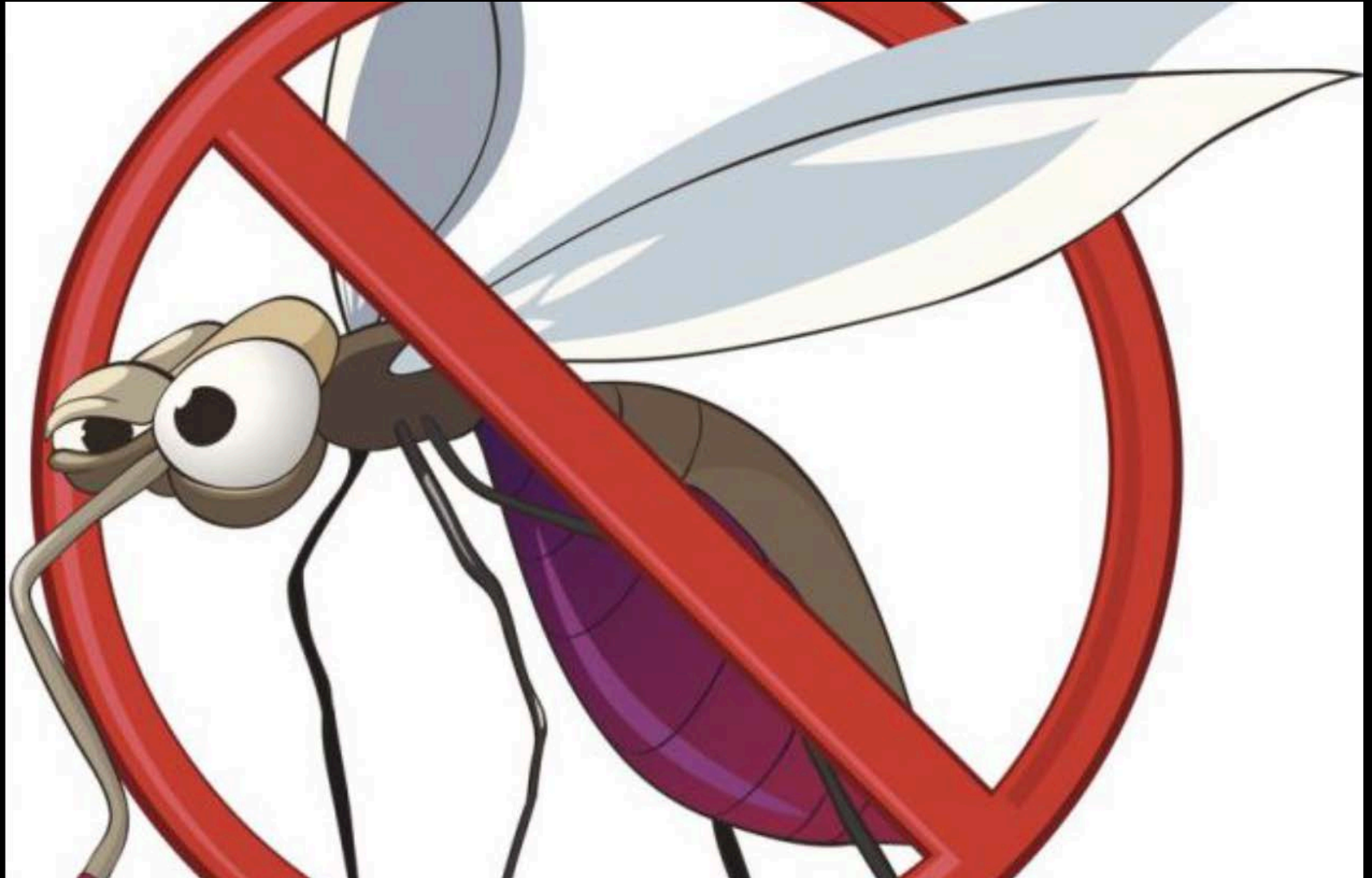
Take home messages

We can protect ourselves, and our families

- Apply vaccines when available
- Extreme hygienic precautions
- Prevent close contact with wild animals
- Avoid mosquito bites
- Use common sense!



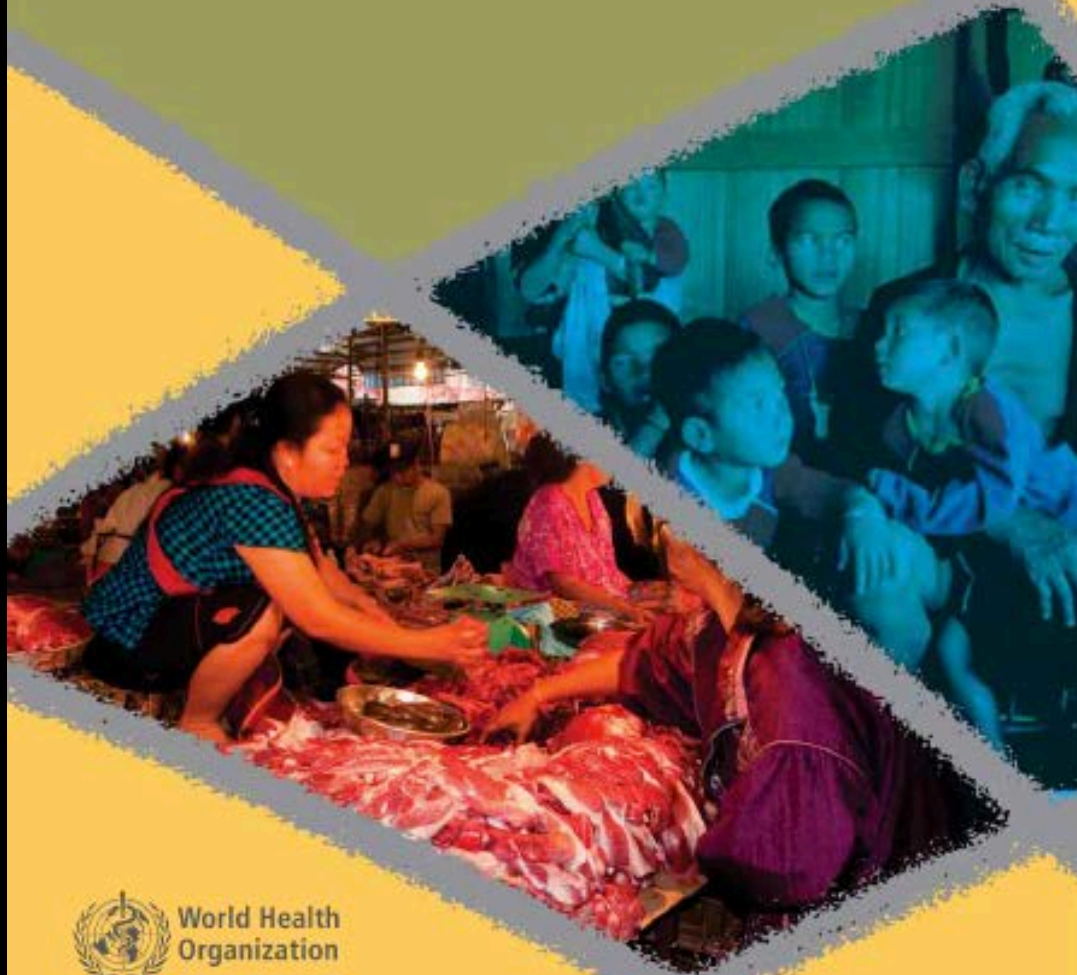
Prevention!!!





Gracias

**Taking sex and gender into account
in emerging infectious disease programmes:
An analytical framework**



World Health
Organization

Western Pacific Region