

## **Module A:** Introduction to emerging respiratory viruses, including novel coronaviruses (nCoV)

Overall learning objective: To describe emerging respiratory viruses and why they are a threat to human health

### **(MA1) Unit 1: Emerging respiratory viruses: virus and transmission**

**Learning objective:** to be able to explain how respiratory viruses emerge and why they are a global threat to human health



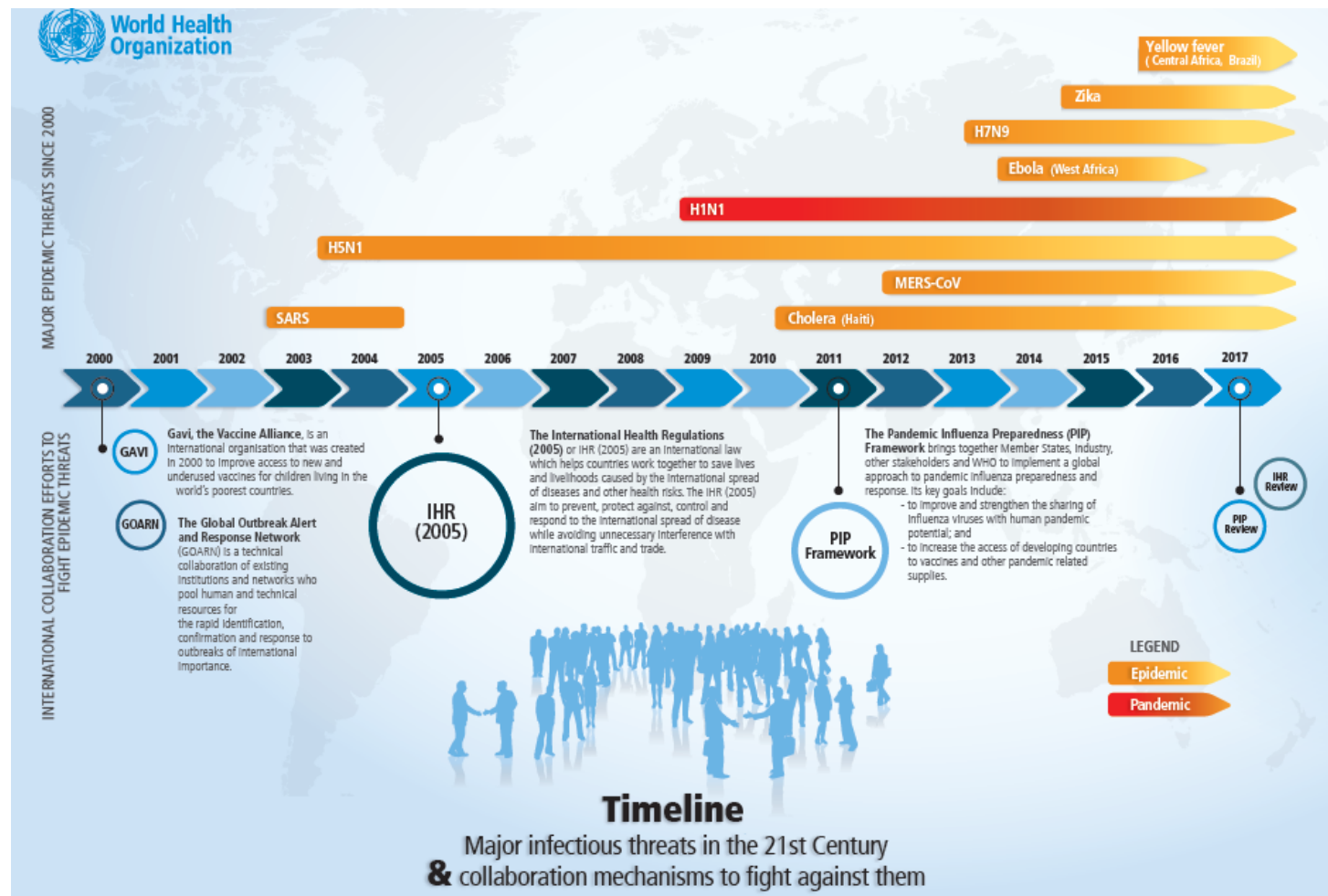


By the end of this unit, participants will be able to describe:

- How viruses emerge
- What coronaviruses are
- Who is most at risk from coronaviruses
- How to protect yourself



- Viruses continue to emerge and pose challenges to public health
- Some examples of emerging respiratory viruses include:
  - 2002: Severe Acute Respiratory Syndrome coronavirus (SARS-CoV)
  - 2009: H1N1 influenza
  - 2012: Middle East Respiratory Syndrome coronavirus (MERS-CoV)
  - 2019: Novel coronavirus (2019-nCoV)



- Human health, animal health and the state of ecosystems are inextricably linked
- 70-80% of emerging and re-emerging infectious diseases are known to be of zoonotic origin\*, meaning they can be transmitted between animals and humans
- Population growth, climate change, increasing urbanization, and international travel and migration all increase the risk for emergence and spread of respiratory pathogens



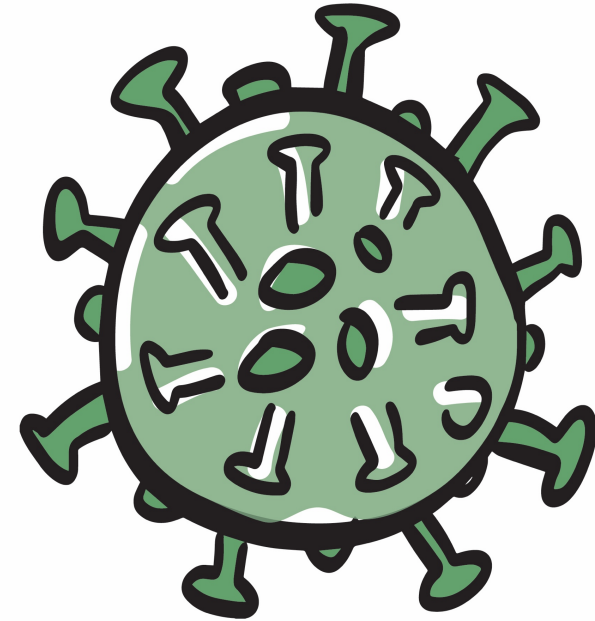
Avian influenza



MERS-CoV

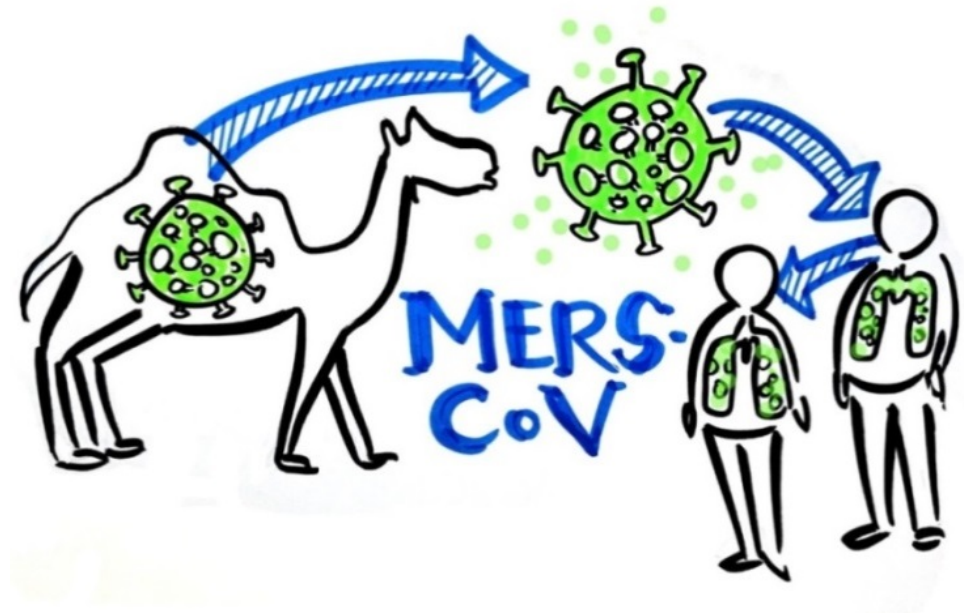
\*Jones et al (2008) Nature

- Coronaviruses are a large family of viruses that are known to cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS)
- A novel, or new, coronavirus is called nCoV



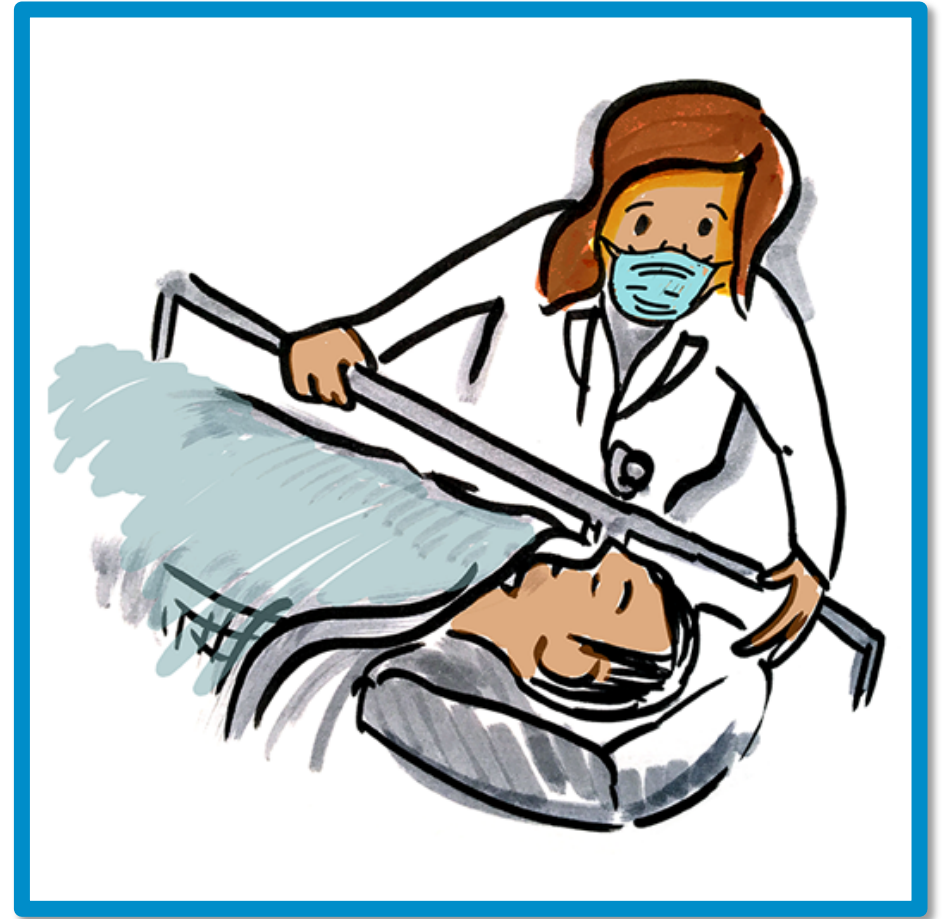


- Coronaviruses also cause disease in a wide variety of animal species
- SARS-CoV was transmitted from civet cats to humans in China in 2002 and MERS-CoV from dromedary camels to humans in Saudi Arabia in 2012
- Several known coronaviruses are circulating in animals that have not yet infected humans
- A spillover event is when a virus that is circulating in an animal species is found to have been transmitted to human(s)





- Coronaviruses may be transmitted from person to person, particularly if there is close contact
  - e.g. during provision of clinical care to an infected patient without applying strict hygiene measures





- People in close contact with animals (e.g. live animal market workers)



- Family members or health care workers who are caring for a person infected by a new coronavirus

## How can I protect myself from infection?

- Wash your hands with soap and water or alcohol-based hand rub
- Cover your mouth and nose with a medical mask, tissue, or a sleeve or flexed elbow when coughing or sneezing
- Avoid unprotected close contact with anyone developing cold or flu-like symptoms and seek medical care if you have a fever, cough and difficulty breathing
- When visiting live markets, avoid direct unprotected contact with live animals and surfaces in contact with animals
- Cook your food and especially meat thoroughly



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**Further reading:**

Coronaviruses

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>

Disease outbreak news

<https://www.who.int/csr/don/en/>