

# Epidemiology of COVID-19



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# What is Coronavirus & COVID-19?

- Coronaviruses are a large family of viruses, some cause illness in humans, and others cause illness in animals, such as bats, camels, and civets.
- Human coronaviruses cause mild illness, such as the common cold.
- Severe acute respiratory syndrome (SARS) is a viral respiratory illness caused by a coronavirus, called SARS-associated coronavirus (SARS-CoV)

- Previous Coronaviruses have included SARS- CoV and MERS-CoV
- **Severe acute respiratory syndrome coronavirus 2** (SARS-CoV-2) is a new strain of coronavirus that has not been previously identified in humans.

# Human Coronavirus Origins:

- The most likely ecological reservoirs for coronaviruses are **bats**, but it is believed that **the virus jumped the species barrier to humans from another intermediate animal host.**
- This is called a “**spillover**” and could be due to a range of factors such as mutations in the virus or increased contact between humans and animals.

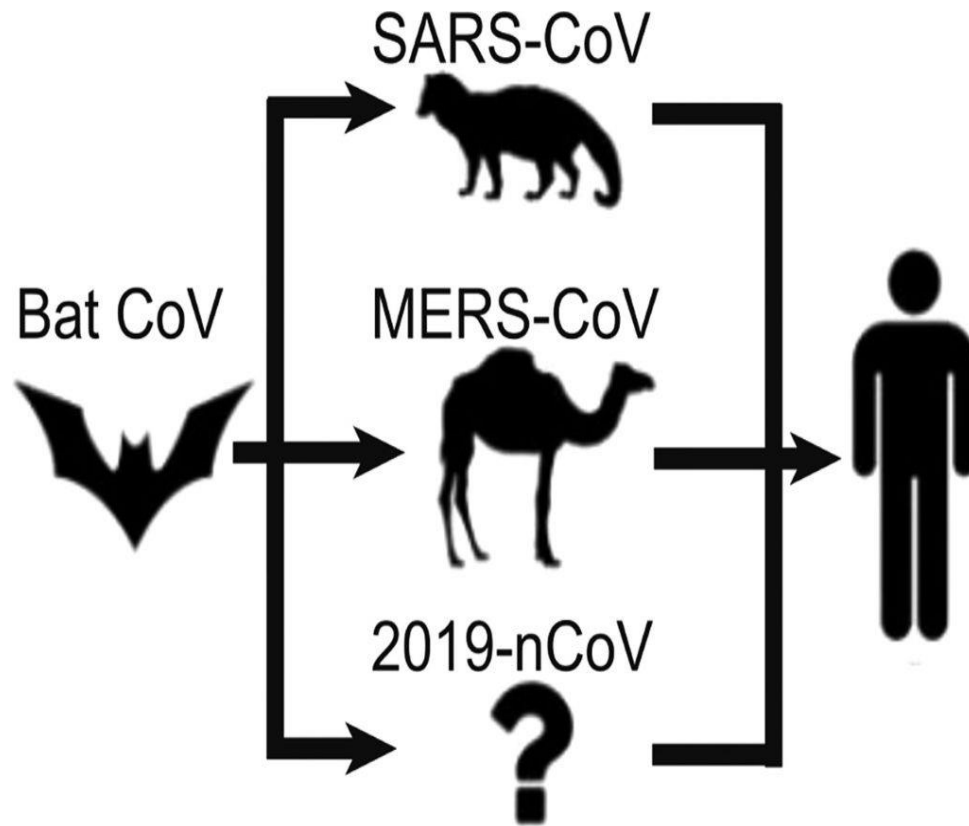


# Human Coronavirus Origins:

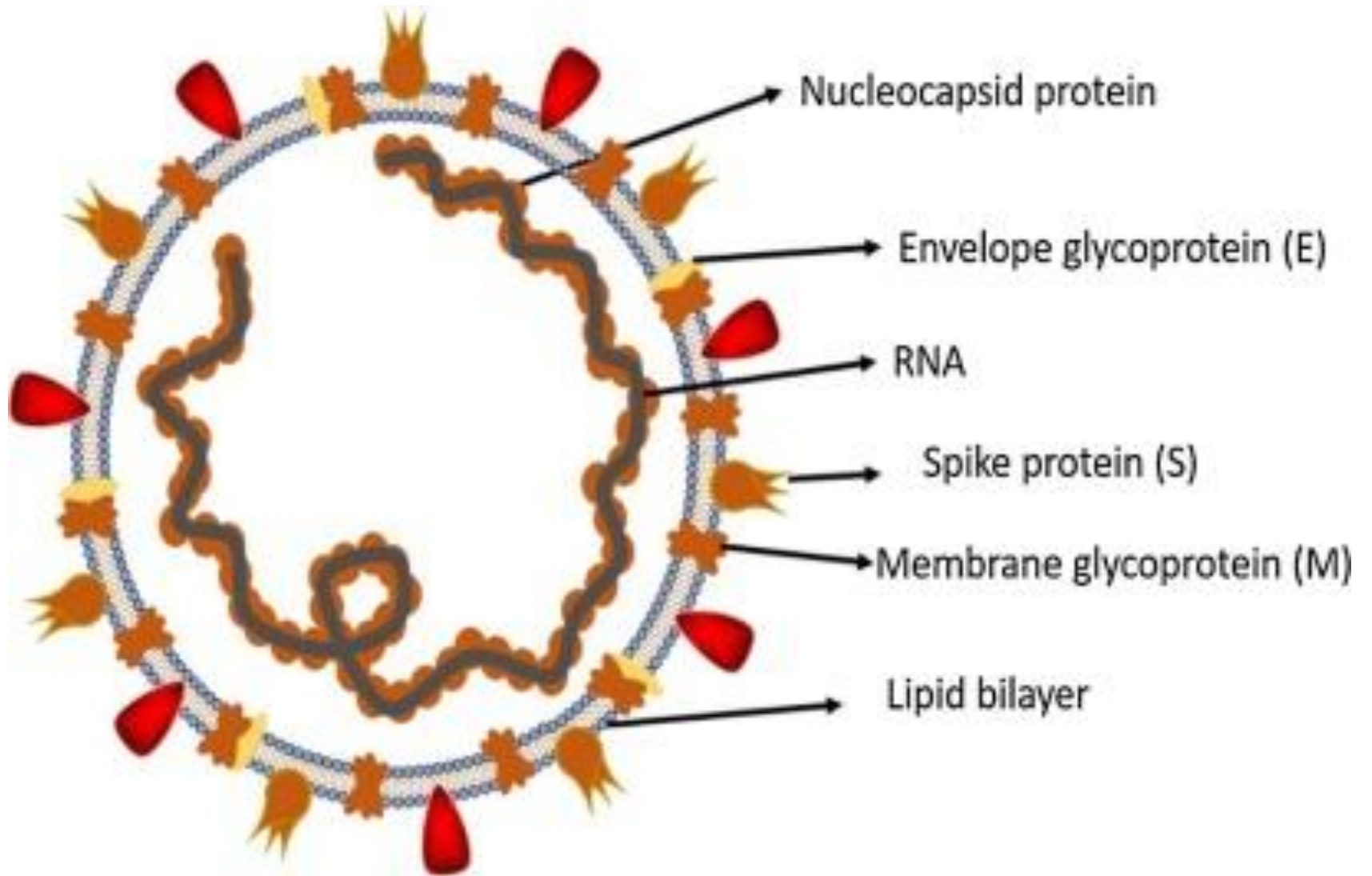
- For example, **MERS** CoV is known to be transmitted from **camels** and **SARS** CoV from **civet cats**. This intermediate animal host could be a domestic animal, a wild animal, or a domesticated wild animal which has not yet been identified.







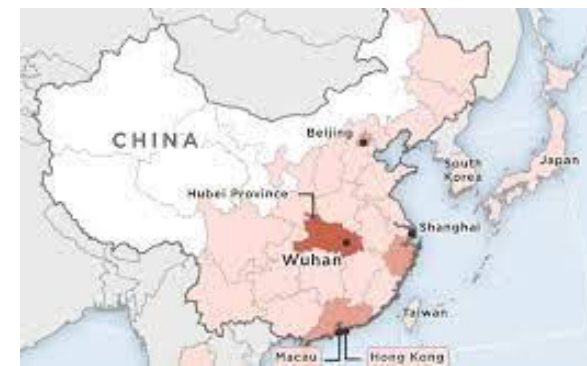
- Coronaviruses belong to the **Coronaviridae** family .
- Corona represents **crown-like spikes** on the outer surface of the virus; thus, it was named as a coronavirus.
- Coronaviruses are **enveloped viruses**, minute in size (**65–125 nm in diameter**) and contain a **single-stranded RNA** as a nucleic material.





# COVID-19

- The virus that causes COVID-19 is known as SARS-CoV-2, It appears to have first emerged in **Wuhan**, China, in late 2019. The outbreak has since spread across China to other countries around the world.
- By the end of January, the **new coronavirus had been declared a public health emergency** of international concern by the WHO.



- The most commonly reported symptoms include a fever, dry cough and tiredness, and in mild cases, people may get just a runny nose or a sore throat.
- In the most severe cases, people with the virus can develop difficulty breathing, and may ultimately experience organ failure.
- Some cases are fatal.

# Coronavirus (COVID-2019)

- February 2020 NSW Health responded to an outbreak of a coronavirus (COVID-2019), first reported in China in December 2019. It initially occurred in a group of people with pneumonia who had been associated with a seafood and live animal market, in the city of Wuhan.

- The WHO has declared that the official new name for the virus that also formerly went by the names “2019 novel coronavirus” or “2019-nCoV” is now to be known as “SARS-coV-2” which causes COVID-19.

- This name change is to differentiate it from other coronavirus outbreaks that include the common cold, but also the severe acute respiratory syndrome (SARS-CoV) and Middle East Respiratory Syndrome (MERS-CoV) which have previously afflicted the world.

- On the **11<sup>th</sup> of March 2020** , the WHO had been declared **COVID-19** a pandemic, with **100,000 cases**, with **4000 deaths** in **114 country**.



# COVID-19 Timeline

**Dec. 31, 2019**



China alerts World Health Organization (WHO) to several cases of pneumonia with no known cause in Wuhan. The disease goes on to be named COVID-19.

**Jan. 7**



WHO officials announce they have identified a new virus named SARS-CoV-2 that causes COVID-19. It belongs to the coronavirus family, which includes viruses that cause SARS, MERS and the common cold.

**Jan. 11**



China announces the first death linked to COVID-19.

**Jan. 13**



WHO reports the first case outside of China in Thailand.

**Feb. 26**



National Institutes of Health (NIH) begin the first clinical trial in the U.S. for a potential COVID-19 treatment, remdesivir, an antiviral drug originally developed to treat Ebola.

**Feb. 29**



The FDA took steps to expand novel coronavirus testing to hospital clinical microbiology laboratories.

**Mar. 11**



WHO declares COVID-19 a pandemic, with more than 100,000 cases and 4,000 deaths in 114 countries.

**Apr. 2**



Confirmed cases of COVID-19 top 1 million worldwide.

**Apr. 10**



Global deaths due to COVID-19 top 100,000.

# Epidemiology :

- As of 31 March 2024, over **775** million confirmed cases and over **7** million deaths have been reported globally.
- Currently, reported cases do not accurately represent infection rates due to the reduction in testing and reporting globally.
- **Percentage of total population vaccinated with a complete primary series of a COVID-19 vaccine until 26 November 2023 is 67%**

# Situation in Iraq :

- In Iraq, from **3 January 2020** to 31 March 2024, there have been **2,465 confirmed cases** of COVID-19.
- with **25,375 deaths**, reported to WHO.
- A total of **19.56m vaccine doses** have been administered.
- Percentage of total population **vaccinated** with a complete primary series of a COVID-19 vaccine is **20%**

# Incubation period

- The incubation period is estimated to be between 1 and 14 days, with a median of 5 to 7 days (9.6 days in children)

# Mode of transmission:

- According to the CDC, novel coronavirus, or COVID-19, can spread from person-to-person contact.
- Most transmissions of the virus frequently occur when in close contact (6 feet or less for a cumulative 15 min over a 24 hr. Period & the sick person not wearing a mask) with infected individuals.

- Transmission occurs via **respiratory droplets** (from coughs or sneezes).
- **Asymptomatic** individuals can spread the disease.
- It may be possible that a person can get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose or possibly their eyes.



# COVID-19: Circumstances that can increase risk:

- **Poor ventilation:** In enclosed and poorly ventilated space, the amount of virus in the air can build up and cause infections further away from an infectious space
- **Prolonged exposure** to someone who might be infected
- **Close contact – less than 1.8 meter .**
- **Activities that lead to exposure to a greater amount of respiratory fluids (i.e. aerosol generating procedures)**

# Clinical presentation:

- There can be a number of symptoms ranging from mild to severe. The wide range of symptoms reported:
- Fever or chills, muscle or body aches, anorexia, sore throat, nasal congestion or runny nose, headache, diarrhea, nausea, shortness of breath or difficulty breathing, and loss of smell or taste. In more severe cases, there has been pneumonia, kidney failure and death.

# People at higher risk for severe illness:

- In some cases, people who get COVID-19 can become seriously ill and develop difficulty breathing. These severe complications can lead to death ,
- The risk of severe disease increases steadily with **age**.
- Those of all ages with **underlying non-communicable** diseases, such as diabetes & cardiac disease, appear to be at higher risk to develop severe COVID-19 compared to those without these conditions.
- As more data become available, additional risk factors for severe COVID-19 may be identified.

# Medical conditions in adults that can lead to severe illness from COVID-19:

- Cancer
- Chronic kidney disease
- Chronic lung diseases (COPD, asthma, cystic fibrosis, etc.)
- Dementia or other neurological conditions
- Diabetes (type 1 or 2)
- Down syndrome
- Heart conditions
- HIV infection
- Immunocompromised states

# Medical conditions in adults that can lead to severe illness from COVID-19:

- Liver disease
- Overweight and obesity
- Pregnancy
- Sickle cell disease or thalassemia
- Smoking, current or former
- Solid organ or blood stem cell transplant
- Stroke or cerebrovascular disease
- Substance use disorders

# Case Fatality rate of COVID-19:

- 0.7 to 3.4 % (>5% in Wuhan itself during peak)
- Will be higher without access to healthcare, oxygen and ventilators.



# Diagnosis:

The infection can be diagnosed by a test called PCR, or Polymerase Chain Reaction. This test identifies the virus based on its genetic fingerprint.

There is currently no specific medication for this virus and treatment is in development.

## COVID-19: Preventative actions – vaccination:

- Safe and effective vaccines are a great tool for prevention, but it is important to continue other preventative actions as **new COVID-19 strains emerge** and **vaccination coverage** in some countries continues to be **low**.
- Research is still ongoing into how much vaccines protect against disease and also against infection and transmission.

## The World Health Organization (WHO) has authorized the use of the following vaccines for global use:

- **mRNA vaccines:** Comirnaty<sup>®</sup> (**Pfizer/BioNTech**); Spikevax<sup>®</sup> (**Moderna**)
- **Adenovirus vector vaccines:** Vaxzevria<sup>®</sup> (**AstraZeneca**); Ad26.COV2.S (Janssen)
- **Protein subunit vaccines:** Nuvaxoid<sup>®</sup> (**Novavax**); Covovax<sup>®</sup> (Serum Institute of India)
- **Inactivated virus vaccines:** Covilo<sup>®</sup> (**Sinopharm**); CoronaVac<sup>®</sup> (Sinovac); Covaxin<sup>®</sup> (Bharat Biotech)







SINOPHARM





# COVID-19: Other preventative actions to continue



# COVID-19: Other preventative actions to continue

- There are a number of standard hygiene practices that have been recommended to protect against infection and further spread. These include:
- Covering mouth and nose when coughing or sneezing with a medical mask, tissue or flexed elbow.
- Avoiding close contact with those who are unwell.
- Appropriate use of masks and **Personal Protective Equipment (PPE)** – especially in a health care setting.

- Physical distancing should be **at least 1.8 meters (6 ft)** based on CDC recommendations
- Hand washing should be done for at **least 40-60 seconds** based on WHO's recommendation
- Alcohol-based hand rub should contain at least 60% alcohol
- Actions that can be taken to prevent infection from an animal source .



**THANK YOU**  
Health Care Workers  
**EVERYWHERE**