AIRBORNE DISEASES

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INTRODUCTION

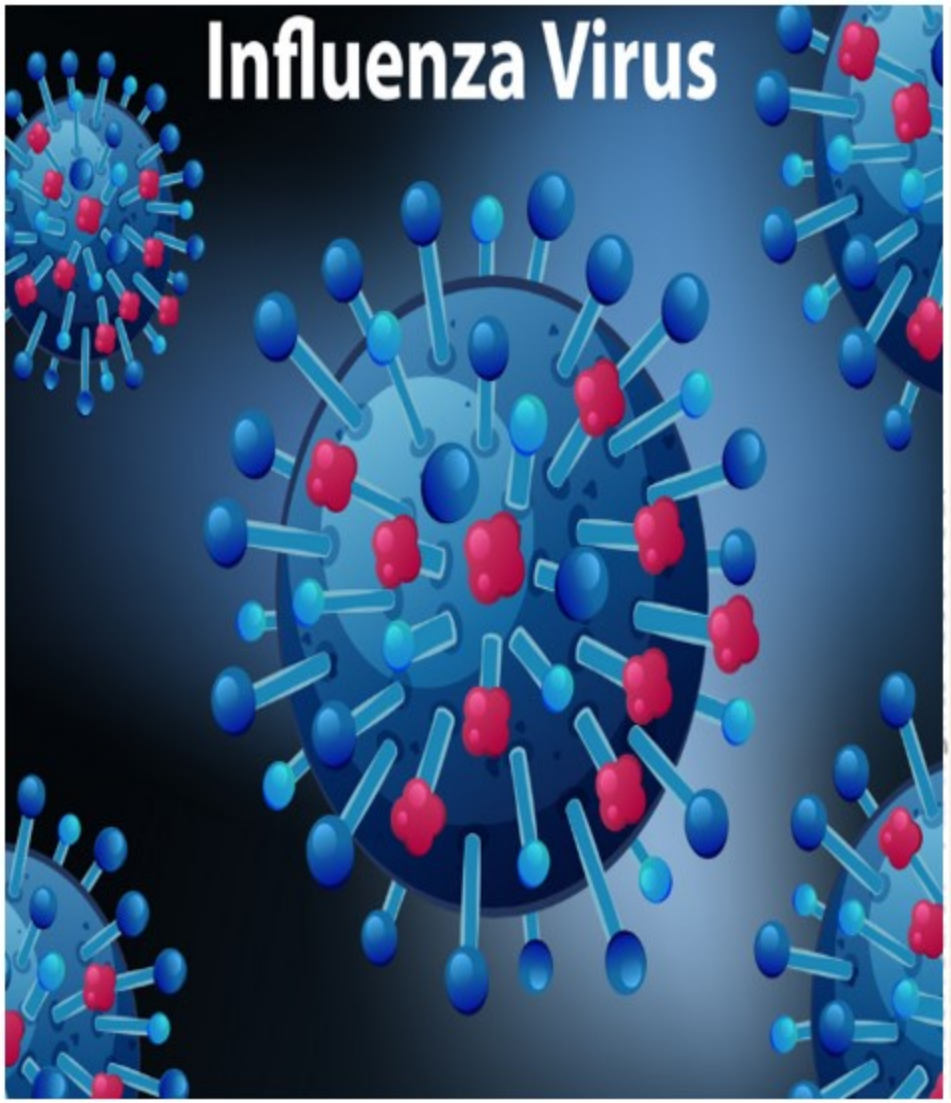
- Airborne diseases are illnesses spread by tiny pathogens in the air.
- Airborne diseases include any that are caused via transmission through the air.
- The relevant pathogens may be viruses, bacteria, or fungi, and they may be spread through breathing, talking, coughing, sneezing, raising of dust, spraying of liquids, toilet flushing or any activities which generates aerosol particles or droplets.

COMMON AIRBORNE DISEASES

- **Influenza**: The seasonal "flu" virus spreads easily from person to person. There are many strains of the flu, and it continually changes to adapt to the human immune system.
- **The common cold**: The condition called "a cold" is usually caused by a rhinovirus. There are many rhinoviruses, and the strains change to make it easier to infect humans.

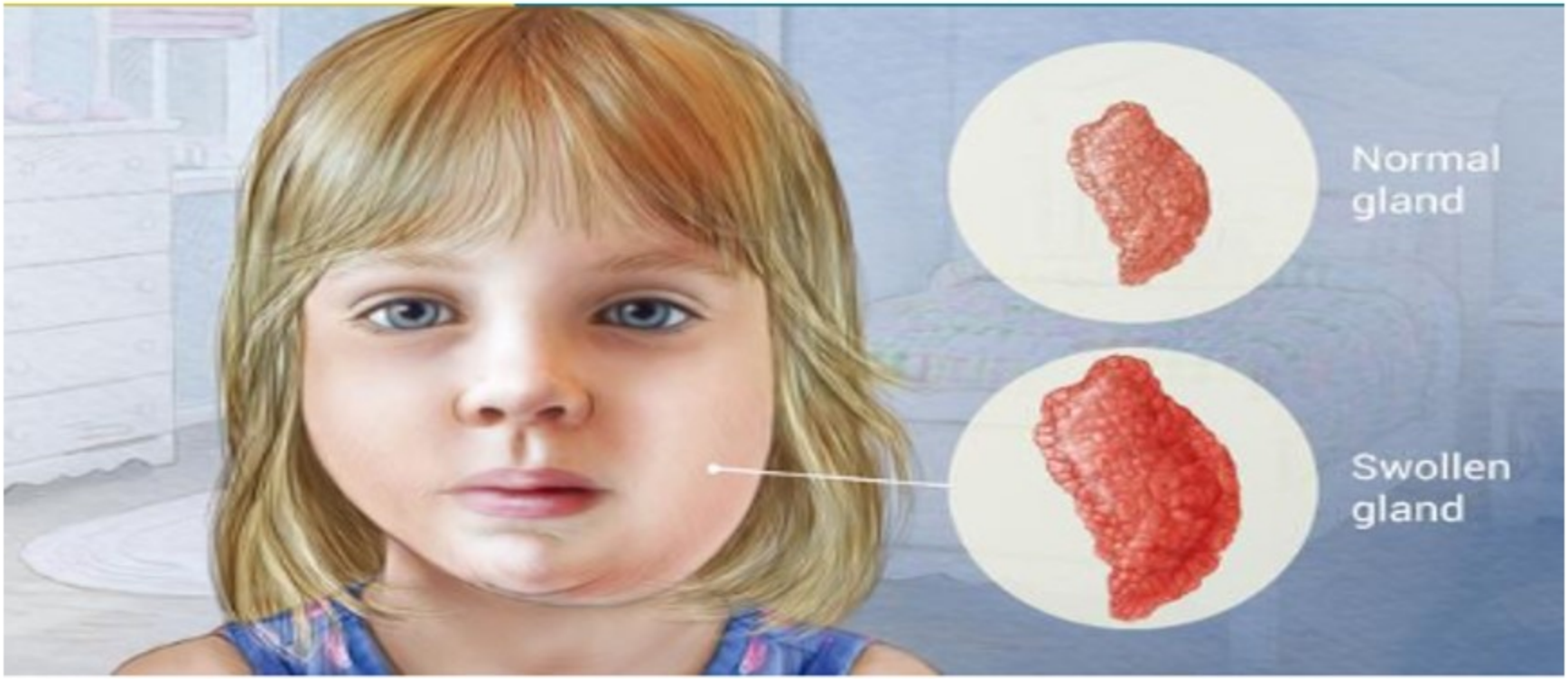
- **Varicella zoster**: This virus causes chickenpox and spreads easily among young children.
  - The rash is typically widespread on the body and made up of small red spots that turn into itchy blisters, which scab over in time.
  - Chickenpox is spread for about 48 hours before a rash shows, which is how it infects others so successfully. It is usually spread through the air or by touching the rash.

Close up diagram for influenza virus



Chicken pox

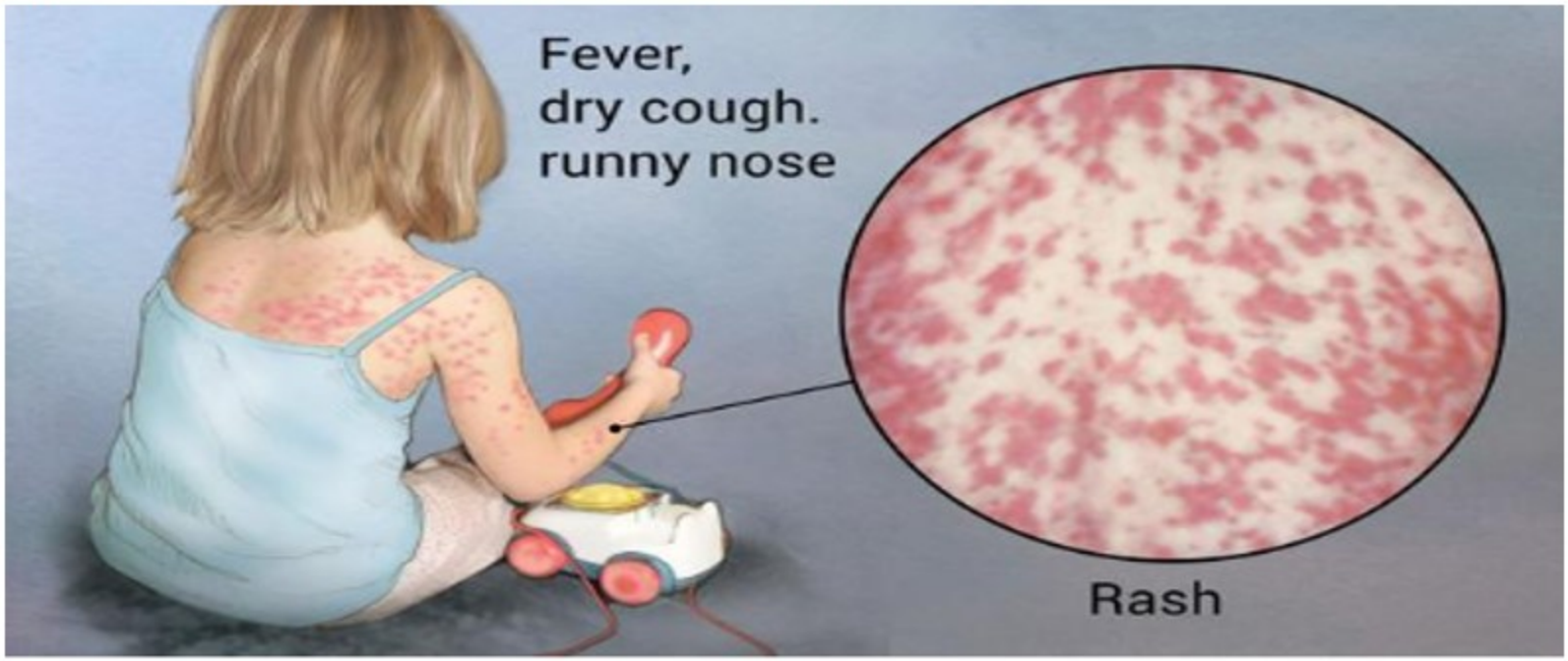
- **Mumps**: This virus affects the glands just below the ears, causing swelling and, in some cases, loss of hearing. Vaccination is considered important to prevent the disease.



A viral infection that affects the salivary glands that's easily preventable by a vaccine.

Source:-www.mayoclinic.org

- **Measles**: This illness is caused by contact with a person who has the measles virus, or by inhaling particles from their sneezes or cough. As with mumps, vaccination is essential for preventing the spread of this disease.



A viral infection that's serious for small children but is easily preventable by a vaccine.

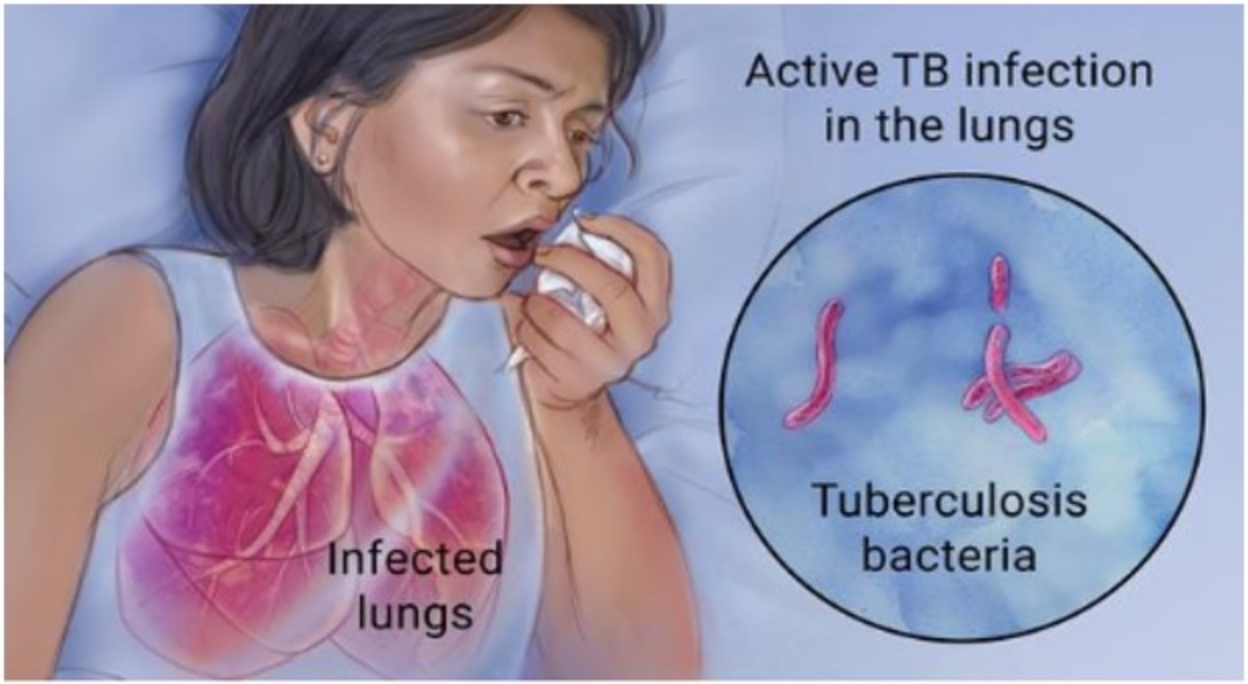
Source:-www.mayoclinic.org

- **Whooping cough (pertussis)**: This is a contagious, bacterial illness that causes the airways to swell. The hacking cough that results, is persistent and generally treated with antibiotics early on to prevent damage.

A highly contagious respiratory tract infection that is easily preventable by vaccine.

Source:-
www.mayoclinic.org

- **Tuberculosis** (**TB**) is an infectious disease usually caused by the bacterium *Mycobacterium tuberculosis* (MTB).
- Tuberculosis generally affects the lungs, but can also affect other parts of the body.



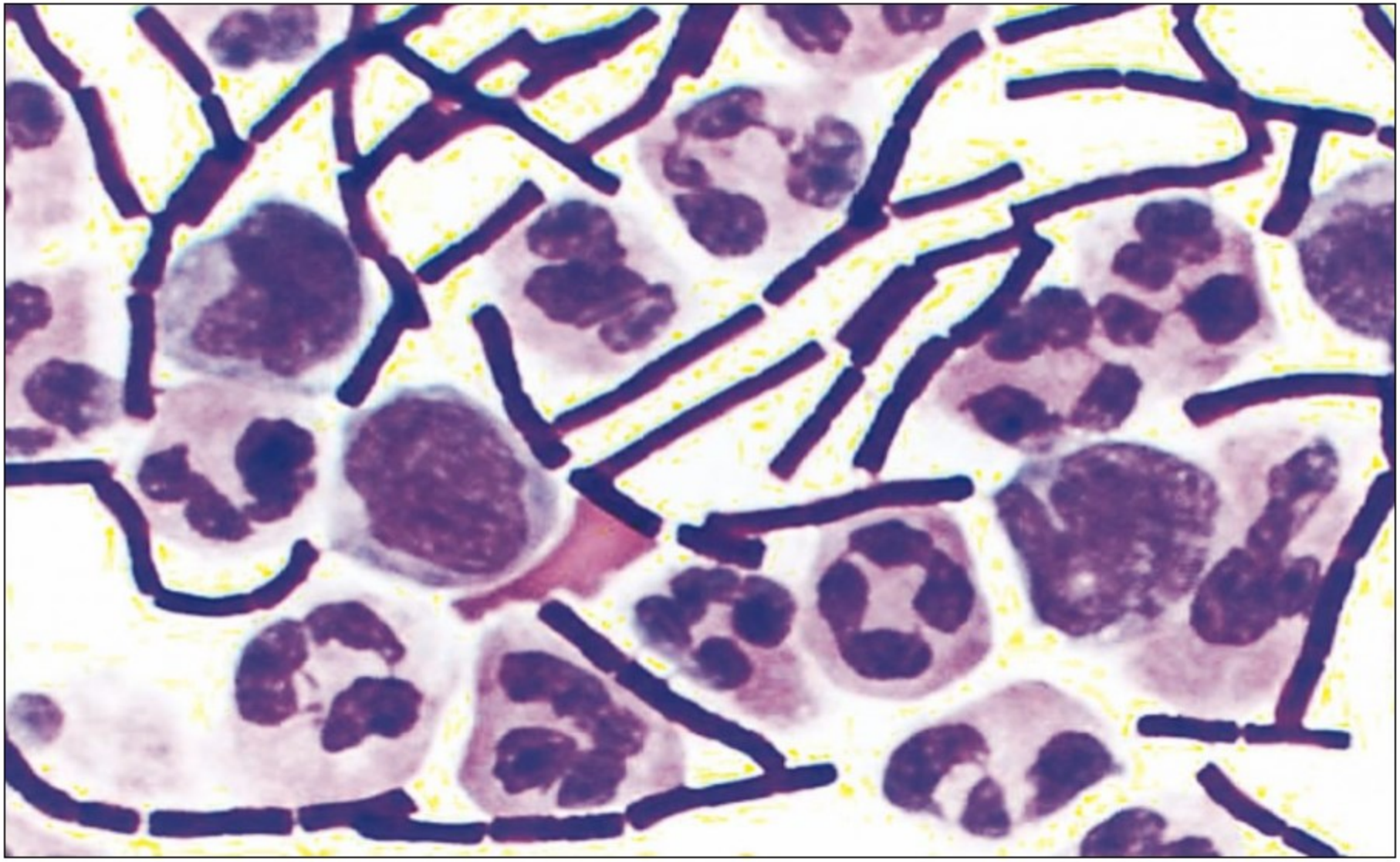
A potentially serious infectious bacterial disease that mainly affects the lungs.

Source:-
www.medicalnewstoday.com

- Most infections do not have symptoms, in which case it is known as latent tuberculosis.
  - About 10% of latent infections progress to active disease which, if left untreated, kills about half of those infected.
- The classic symptoms of active TB are a chronic cough with blood containing sputum, fever, night sweats, and weight loss.

RARE AIRBORNE DISEASES

- **Anthrax**: This is a bacterial disease that infects the body when a person inhales anthrax spores.
  - It causes nausea and flu symptoms.
  - Inhaled anthrax is difficult to diagnose because it resembles other diseases such as flu. Anthrax is treated with antibiotics to stop it worsening.

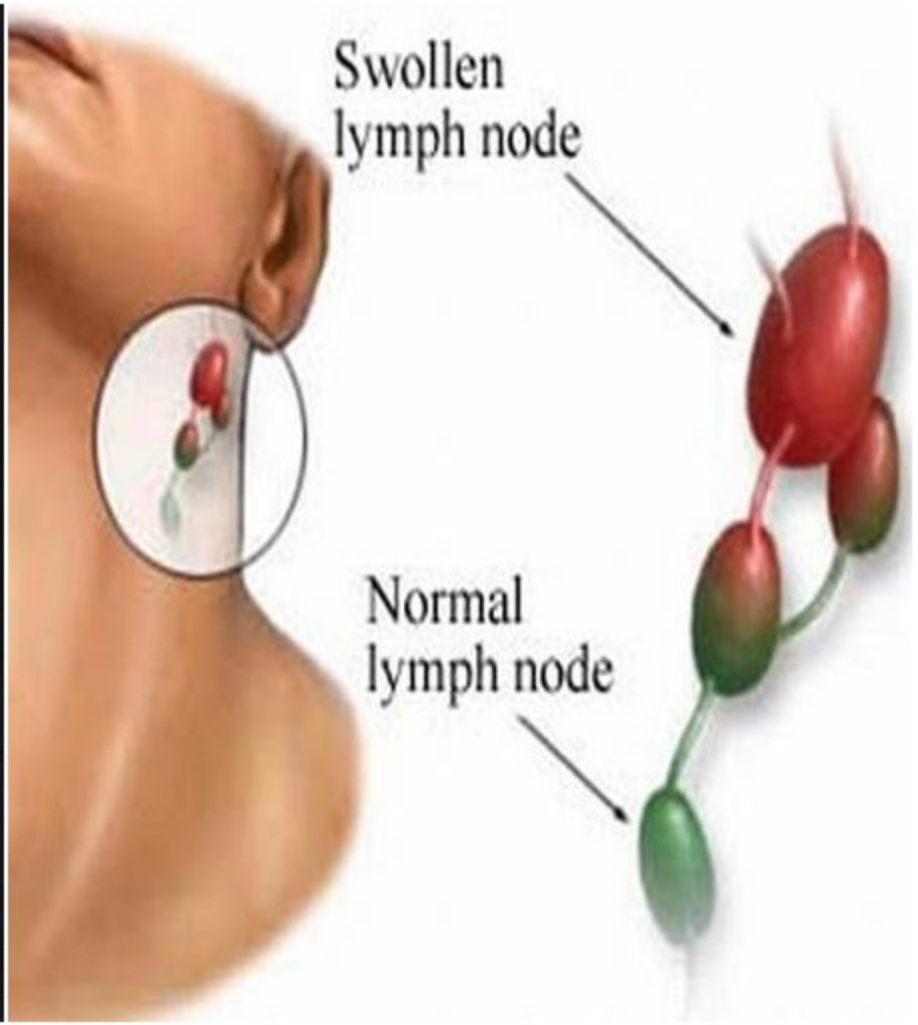


Rod-shaped gram-positive Bacillus anthracis (anthrax) bacteria in a cerebrospinal fluid sample stand out from round white blood cells.
Source:- www.healthline.com

Diphtheria

- A rare bacterial disease, diphtheria damages the respiratory system and attacks the heart, kidneys, and nerves.
  - Its rarity may be due to widespread vaccination. Diphtheria can be treated with antibiotics.

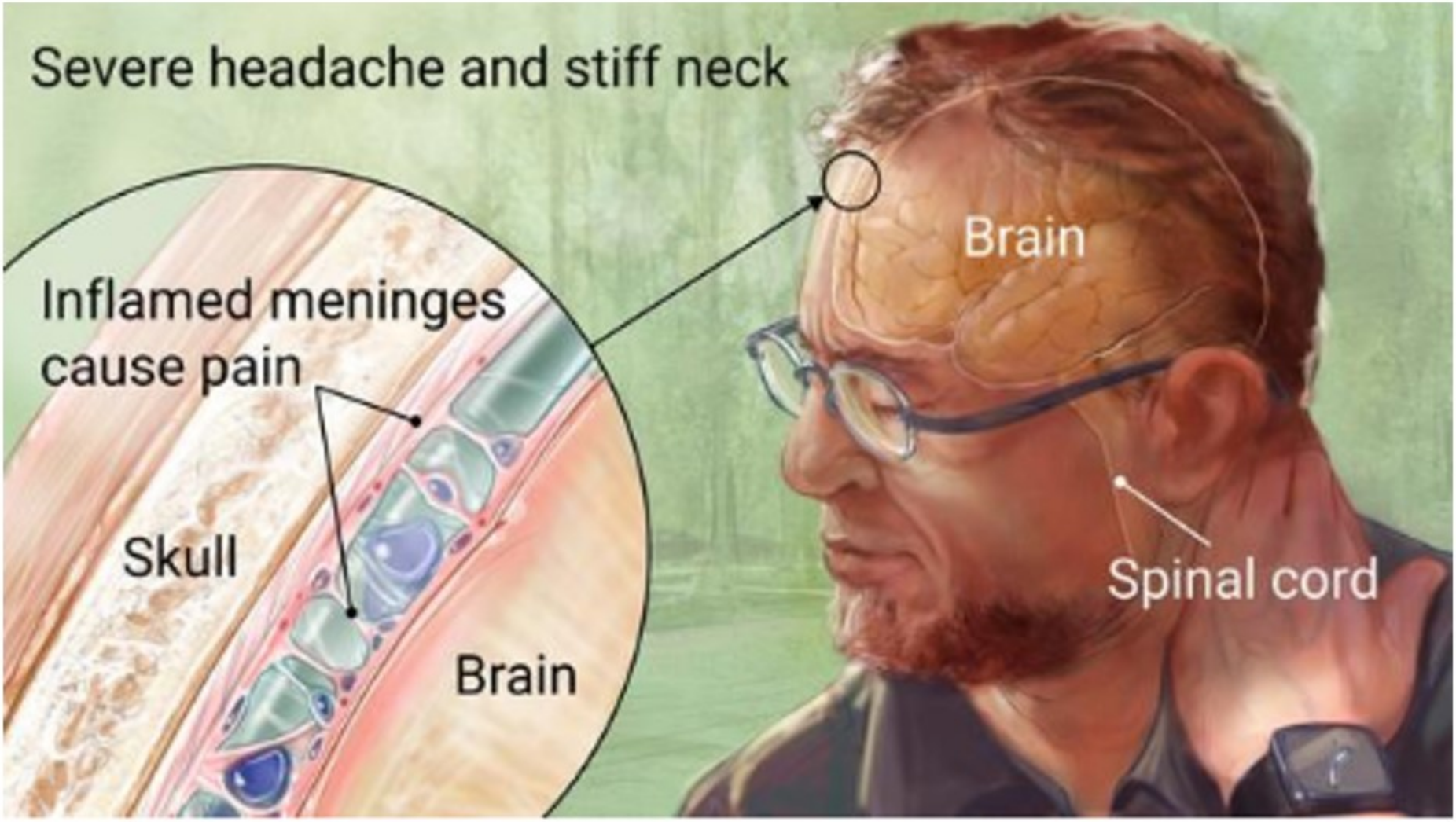
Diptheria (*bull neck)*



Source:- www.mayoclinic.org

Meningitis

- Meningitis swells the membranes around the brain and spinal cord.
- It is a bacterial or viral infection, but is also caused by an injury or fungal infection.
  - Common symptoms include:
  - a persistent headache,
  - fever, and skin rash.



Inflammation of brain and spinal cord membranes, typically caused by an infection.

Source:- www.mayoclinic.org

TRANSMISSION

- Airborne transmission of disease depends on several physical variables endemic to the infectious particle.
- Environmental factors influence the efficacy of airborne disease transmission.

- The most evident environmental conditions are temperature and relative humidity, mean of sunshine daily hours.
- These are the main factors affecting the spread, duration and infectiousness of droplets containing infectious particles.

COMMON FACTORS AFFECTING TRANSMISSION

- Climate and living area.
- Rainfall
- latitude, altitude
  - Agents to take in account when assessing the possibility of spread of any airborne infection

- Socioeconomics and living conditions
  - Dwelling is an important aspect. In cities the spread of diseases is faster than in rural areas and outskirts.
  - Urban areas are generally more favourable for higher airborne fungal spore.

- Nearness to large sources of water as rivers and lakes can be a cause of some outbreaks of airborne diseases.
- Poor sewage systems are usually found in poor countries, especially in the rural areas, and can determine the proliferation of infectious bacteria.

PREVENTION

- **Hygiene and sanitary habits**
  - Wearing a hospital mask in public
  - covering sneezes and coughs with an elbow or tissue
  - Regular hand-washing

- **Ventilation and air management**
  - increasing ventilation to help exchange air between the inside and outside of a building.
  - Cleaning the air with a filter- mechanical air filters, UV purification, HEPA filters, and ion generators.

What is bird flu?

- Bird flu, also called avian influenza, is a viral infection that can infect not only birds, but also humans and other animals.
- H5N1 is the most common form of bird flu
- According to the World Health Organization , H5N1 was first discovered in humans in 1997 and has killed nearly 60 percent of those infected.
- Currently, the virus isn't known to spread via human-to-human contact.

Causes bird flu

- H5N1 occurs naturally in wild waterfowl, but it can spread easily to domestic poultry.
- The disease is transmitted to humans through contact with infected bird faeces, nasal secretions, or secretions from the mouth or eyes.
- The first infection occurred in Hong Kong in 1997.
- The outbreak was linked to handling infected poultry.

How Infected Backyard Poultry Could Spread Bird Flu to People

Human Infections with Bird Flu Viruses Rare But Possible

1 Direct Contact

(Most Common)

Infection can occur without touching poultry.

2 Contaminated Surfaces

3 Bird Flu Virus in the Air (in Droplets or Dust)

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

www.cdc.gov/flu/avianflu/avian-in-humans.htm

Symptoms of bird flu

You may have an H5N1 infection if you experience typical flu-like symptoms such as:

- cough
- diarrhoea
- respiratory difficulties
- fever (over 100.4°F or 38°C)
- headache
- muscle aches
- malaise
- runny nose
- sore throat

Treatment for Bird Flu

- Different types of bird flu can cause different symptoms. As a result, treatments may vary.
- In most cases, treatment with antiviral medication such as oseltamivir (Tamiflu) or zanamivir (Relenza) can help reduce the severity of the disease.
- However, the medication must be taken within 48 hours after symptoms first appear.

Swine Flu (H1N1)

- Swine flu, also known as the H1N1 virus, is a relatively new strain of an influenza virus that causes symptoms similar to the regular flu.
- Swine flu made headlines in 2009 when it was first discovered in humans and became a pandemic.
- The World Health Organization (WHO) declared the H1N1 pandemic over in August 2010.

Swine Flu

Swine flu is a respiratory disease which infects pigs but also people, typically those who have been in contact with pigs.

Symptoms in humans

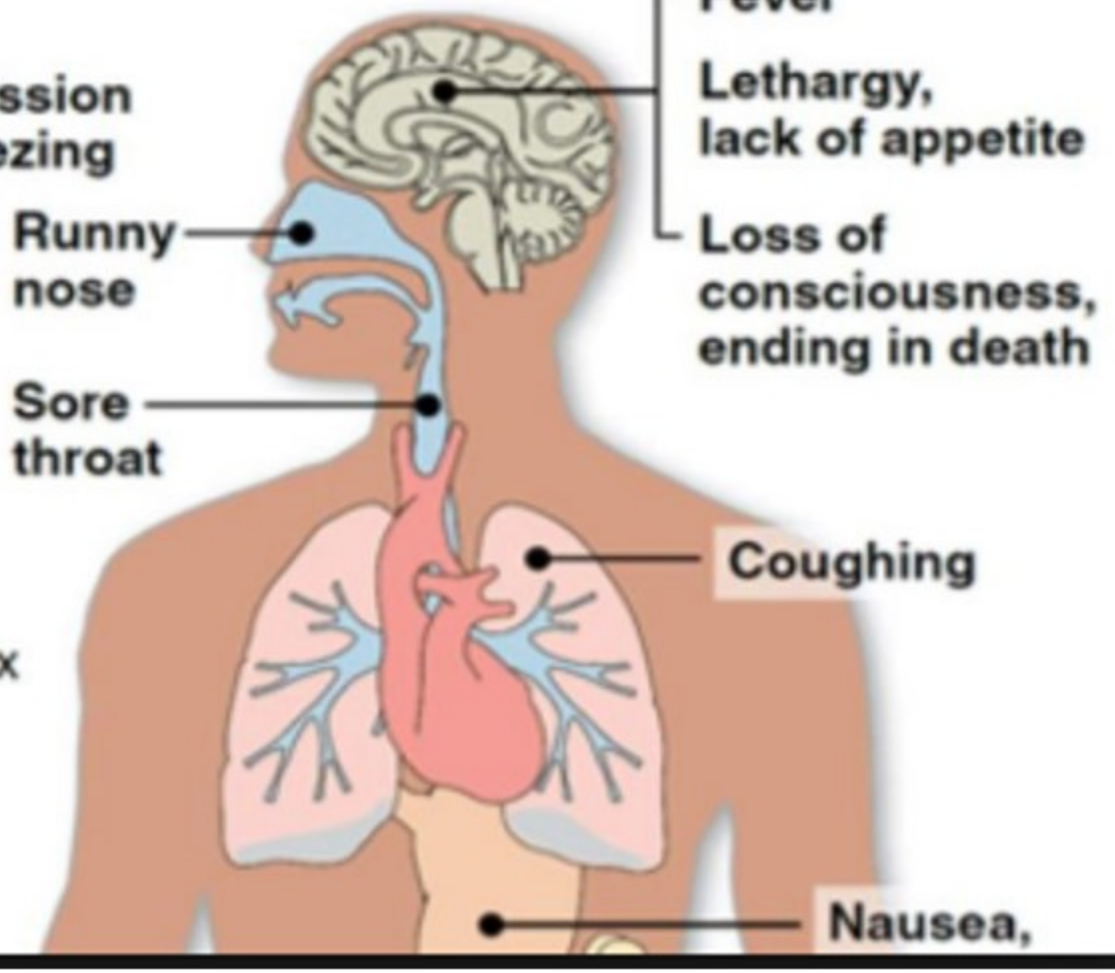
Person-to-person transmission is through coughing, sneezing

The virus

Influenza A subtypes:
H1N1, H1N2, H3N1, H3N2, H2N3

New "reassortant" virus
Forms when genes from different viruses begin to mix

When flu spreads
person-to-person, rather than from animals to humans, it can continue to



Source; www.the-star.co.ke

Causes of Swine Flu

- Swine flu is caused by a strain of influenza virus that usually only infects pigs.
- Swine flu is very contagious. The disease is spread through saliva and mucus particles.
- People may spread it by:
  - sneezing
  - coughing
  - touching a germ-covered surface and then touching their eyes or nose

Symptoms of Swine Flu

The symptoms of swine flu are very much like those of regular influenza. They include:

- chills
- fever
- coughing
- sore throat
- runny or stuffy nose
- body aches
- fatigue
- diarrhoea
- nausea and vomiting

Treatment of Swine Flu

- H1N1 flu is a virus just like any other strain of flu, but it does appear to respond to the antiviral medications Tamiflu and Relenza.
- These medications do not cure the illness, but they may shorten the duration, make symptoms less severe, or help you avoid it altogether.
- treatment for most people mainly consists of comfort measures and treating symptoms as they occur.


Thank You