Influenza

Public Education

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Cite as: Influenza: Public Education. Brisbane (AU): Exon Publications; 2024. Published on 12 Jul 2024.
DOI: https://doi.org/10.36255/influenza-public-education

ABSTRACT

Influenza, commonly known as the flu, is a highly contagious respiratory infection caused by influenza viruses. This article provides an overview of influenza, covering its strains, risk factors, prevalence, signs and symptoms, spread, diagnosis, pathophysiology, treatment, and preventive measures. Written in simple terms, this article is designed to be an accessible resource for the public, helping them navigate the complexities of this common yet potentially severe illness.

Keywords: Diagnosis of influenza; How common is influenza; Influenza a; Influenza b; Influenza c; Influenza d; Introduction to influenza; Pathophysiology of influenza; Preventive measures of influenza; Risk factors for influenza;

Signs and symptoms of influenza; Spread of influenza; The strains of influenza; Treatment of influenza

INTRODUCTION TO INFLUENZA

Influenza, or the flu, is an acute respiratory illness caused by influenza viruses that infect the nose, throat, and sometimes the lungs. It is characterized by sudden onset of fever, cough, sore throat, muscle aches, fatigue, and other symptoms. Influenza can range from mild to severe and can lead to serious health complications, especially in high-risk groups. The flu season typically occurs during the fall (autumn) and winter months (1-3).

THE STRAINS OF INFLUENZA

Influenza viruses are divided into four types: A, B, C, and D. Types A and B are responsible for the annual flu epidemics that affect millions of people worldwide.

Influenza A

Influenza A viruses are found in many animal species, including humans, birds, pigs, and horses. They are known for their ability to cause pandemics due to their potential to undergo significant genetic changes. These viruses are further classified into subtypes based on the proteins on their surface: hemagglutinin (H) and neuraminidase (N). Common subtypes include H1N1 and H3N2.

Influenza B

Influenza B viruses primarily infect humans and are less likely to cause pandemics compared to influenza A. They are categorized into two lineages: B/Yamagata and B/Victoria. While they generally cause milder disease than influenza A, they can still lead to severe illness and complications.

Influenza C

Influenza C viruses cause mild respiratory illnesses and are not known to cause epidemics. They are less common and typically result in symptoms similar to those of the common cold.

Influenza D

Influenza D viruses primarily affect cattle and are not known to infect humans. They are of interest mainly in veterinary medicine.

RISK FACTORS FOR INFLUENZA

Several factors can increase the risk of contracting influenza. Age is a significant factor, with young children under five years old, particularly those under two, and adults over 65 being at higher risk. Individuals with chronic medical conditions such as asthma, diabetes, heart disease, and weakened immune systems are also more susceptible to severe influenza. Pregnant women and

residents of long-term care facilities are at increased risk as well.

Healthcare workers and caregivers are at higher risk due to their close contact with infected individuals. Lifestyle factors, such as smoking and high levels of stress, can also weaken the immune system, making individuals more vulnerable to the flu. Additionally, the flu can spread more easily in crowded places, increasing the risk for those living in such environments.

HOW COMMON IS INFLUENZA?

Influenza is a common illness, with millions of cases occurring globally each year. In the United States, it is estimated that 9 million to 45 million people get the flu annually, resulting in hundreds of thousands of hospitalizations and tens of thousands of deaths. The prevalence of influenza varies from year to year, influenced by factors such as the effectiveness of the annual flu vaccine and the specific strains in circulation.

Seasonal flu epidemics occur yearly, primarily during the fall (autumn) and winter months. The World Health Organization (WHO) monitors influenza activity globally and provides updates on the prevalence and impact of the flu. Despite its common occurrence, influenza remains a significant public health concern due to its potential to cause severe illness and death, particularly in high-risk populations.

SIGNS AND SYMPTOMS OF INFLUENZA

The signs and symptoms of influenza typically appear suddenly and can range from mild to severe. Common symptoms include fever, chills, cough, sore throat, runny or stuffy nose, muscle or body aches, headaches, and fatigue. Some individuals, especially children, may also experience vomiting and diarrhea, though these symptoms are more common in gastroenteritis, often referred to as the "stomach flu," which is not related to influenza.

Fever is often high, ranging from 100°F (37.77°C) to 104°F (40°C), and is usually accompanied by chills and sweating. The cough associated with influenza is often dry and persistent, and sore throat and nasal congestion can cause discomfort and difficulty breathing. Muscle aches, particularly in the back, arms, and legs, can be severe and debilitating.

Fatigue and weakness can last for several weeks, even after other symptoms have resolved. In severe cases, influenza can lead to complications such as pneumonia, bronchitis, sinus infections, and worsening of chronic medical conditions.

SPREAD OF INFLUENZA

Influenza spreads primarily through respiratory droplets when an infected person coughs, sneezes, or talks. These droplets can land in the mouths or noses of people nearby or be inhaled into the lungs. The virus can also spread by

touching surfaces or objects contaminated with the virus and then touching the mouth, nose, or eyes.

Influenza is highly contagious, and individuals can spread the virus even before they show symptoms and up to a week after becoming sick. Children and people with weakened immune systems may be contagious for longer periods. Crowded places such as schools, workplaces, and public transportation are common settings for the spread of influenza.

Preventing the spread of influenza involves practicing good hygiene, such as washing hands frequently with soap and water, using hand sanitizer, covering coughs and sneezes with a tissue or elbow, and avoiding close contact with sick individuals. Staying home when experiencing flu symptoms can help reduce the spread of the virus to others.

DIAGNOSIS OF INFLUENZA

Diagnosing influenza typically involves a clinical evaluation based on the patient's symptoms and medical history. During flu season, healthcare providers often diagnose influenza based on the presence of characteristic symptoms such as fever, cough, and muscle aches.

Laboratory tests can confirm the diagnosis and identify the specific strain of the virus. Rapid influenza diagnostic tests (RIDTs) can detect the virus in respiratory secretions within 10-15 minutes, though their accuracy can vary. More sensitive tests, such as reverse transcription-polymerase chain reaction (RT-PCR) tests, can provide more accurate results and identify the specific type and subtype of influenza virus.

In some cases, additional tests such as chest X-rays or blood tests may be performed to rule out other conditions or complications.

PATHOPHYSIOLOGY OF INFLUENZA

The pathophysiology of influenza involves the virus infecting the epithelial cells of the respiratory tract. The virus enters the cells through the binding of its hemagglutinin protein to sialic acid receptors on the cell surface. Once inside the cell, the virus replicates and produces new viral particles, which are released to infect neighboring cells.

The immune response to the infection involves the activation of various immune cells and the release of cytokines and other inflammatory mediators. This immune response is responsible for many of the symptoms of influenza, such as fever and muscle aches. In severe cases, the immune response can become overactive, leading to excessive inflammation and damage to the respiratory tract.

Influenza can also affect other organ systems, leading to complications such as pneumonia, myocarditis (inflammation of the heart), and encephalitis (inflammation of the brain). The virus can exacerbate underlying medical conditions, such as asthma and chronic obstructive pulmonary disease (COPD), leading to severe respiratory distress.

TREATMENT OF INFLUENZA

Supportive care, focusing on managing symptoms, is the most common approach. This includes getting plenty of rest, staying hydrated, and using over-the-counter medications such as acetaminophen (Tylenol) or ibuprofen (Advil) to reduce fever and relieve muscle aches. Cough suppressants and decongestants can help alleviate respiratory symptoms.

In some cases, antiviral medications may be prescribed to reduce the severity and duration of the illness. Common antiviral drugs include oseltamivir (Tamiflu), zanamivir (Relenza), and baloxavir marboxil (Xofluza). These medications work by inhibiting viral replication, helping to reduce the spread of the virus within the body.

In severe cases, hospitalization may be required for intravenous fluids, oxygen therapy, and mechanical ventilation. Antibiotics may be prescribed if a secondary bacterial infection, such as pneumonia, develops.

PREVENTIVE MEASURES OF INFLUENZA

Preventing influenza involves a combination of vaccination, good hygiene practices, and public health measures. The annual flu vaccine is the most effective way to prevent influenza.

Good hygiene practices, such as frequent hand washing, using hand sanitizer, covering coughs and sneezes, and avoiding close contact with sick individuals, can help

reduce the spread of the virus. Cleaning and disinfecting commonly touched surfaces, such as doorknobs, light switches, and countertops, can also prevent the spread of influenza.

Public health measures, such as flu surveillance, vaccination campaigns, and infection control practices in healthcare settings, are essential for preventing and controlling influenza outbreaks.

CONCLUSION

Influenza is a common but potentially severe respiratory illness that affects millions of people worldwide each year. Understanding the strains, risk factors, symptoms, spread, diagnosis, treatment, and preventive measures of influenza is crucial for managing the disease effectively. With appropriate vaccination, good hygiene practices, and timely medical care, the impact of influenza can be minimized.

NOTICE TO THE USER

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REFERENCES

1. Grohskopf LA, Sokolow LZ, Broder KR, et al. Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices - United States, 2020-21 Influenza Season. MMWR Recomm Rep. 2020 Aug 21;69(8):1-24. https://doi.org/10.15585/mmwr.rr6908a1

2. Uyeki TM, Bernstein HH, Bradley JS, et al. Clinical Practice Guidelines by the Infectious Diseases Society of America: 2018 Update on Diagnosis, Treatment, Chemoprophylaxis, and Institutional Outbreak Management of Seasonal Influenza. Clin Infect Dis. 2019 Mar 5;68(6). https://doi.org/10.1093/cid/ciy866

3. Paules C, Subbarao K. Influenza. Lancet. 2017 Dec 2;390(10114):697-708. https://doi.org/10.1016/S0140-6736(17)30129-0