A large part of management of the spread of disease lies in educating the population at risk. Use of condoms, testing and counselling of affected individuals and families, voluntary male circumcision, use of ARVs for prevention, and the use of disposable needles in hospital settings are all precautions that can prevent the spread of the virus.

Influenza A and Influenza B

Incidence and Geographical Distribution

Of the three types of Influenza virus, A, B and C, types A and B circulate and cause outbreaks and epidemics. Type C is detected much less frequently and usually causes mild symptoms.

Influenza type A viruses are categorized based on the combinations of two different proteins: the hemagglutinin (H) and the neuraminidase (N), located on the surface of the virus. The currently circulating type A viruses are H1N1 and H3N2 subtypes. Type A viruses cause pandemics. Currently circulating type B viruses are of two main groups: B/Yamagata and B/Victoria lineages.

Influenza A and B are outbreak-driven, and thus there is no prevalence pattern. In temperate climates, the seasonal outbreaks occur mainly during winters, while in the tropical regions, influenza may occur throughout the year. Influenza is termed an “unpredictable threat.”
In 1997, WHO launched a global web-based tool for influenza virological surveillance where data from National Influenza Centers (NICs) of the Global Influenza Surveillance and Response System (GISRS) and other national influenza reference laboratories collaborating with GISRS are used to track the spread of influenza virus. The tool monitors the evolution of influenza viruses and provides recommendations in laboratory diagnostics, vaccines, antiviral susceptibility and risk assessment. It also serves as a global alert mechanism for the emergence of influenza viruses with pandemic potential.

The ongoing COVID-19 pandemic has an impact on influenza. The pandemic has influenced to varying extents health-seeking behaviors, staffing/routines in sentinel sites, as well as testing priorities and capacities in Member States. The various hygiene and social distancing measures implemented by Member States to reduce SARS-CoV-2 virus transmission have also contributed in reducing influenza virus transmission.

According to a WHO update from October 11 to October 24, 2021, the GISRS laboratories tested more than 307,999 specimens globally. Of these, 2199 were positive for influenza viruses, of which 875 (39.8%) were typed as influenza A and 1,324 (60.2%) as influenza B.

Risk Factors

Anyone can contract influenza but those most at risk are pregnant women, children between six to 59 months of age, the elderly, people suffering from asthma, healthcare workers exposed to the virus and immunologically compromised individuals.

Influenza virus spreads easily. When an infected person sneezes or coughs, droplets containing the virus spread through air. The infection is most easily spread in crowded areas.

Etiology and Symptoms

Influenza manifests itself as sudden onset of fever, dry cough, headache, muscle and joint pain, malaise, sore throat and a runny nose. The cough can be severe and can last for more than two weeks. Most people tend to recover from symptoms within a week without requiring medical attention, but influenza can be fatal for the elderly or children under the age of 5.

Socioeconomic Burden

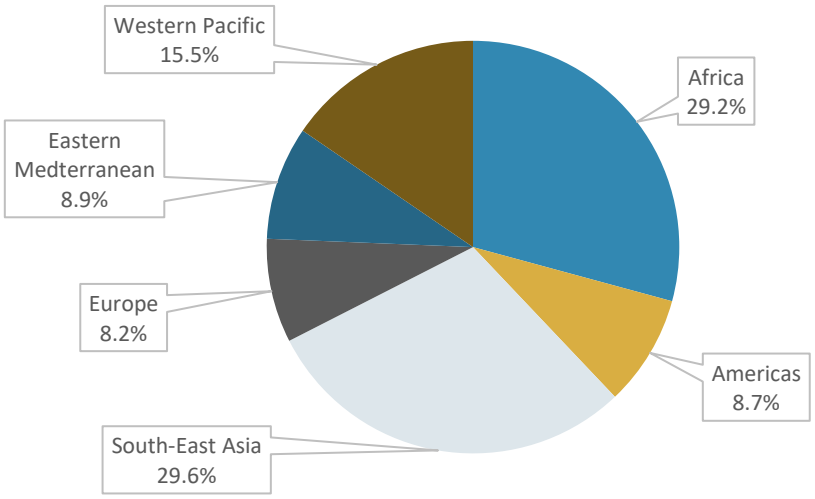
Influenza can lead to hospitalization and even death. This largely occurs in the high-risk groups.

Annual influenza epidemics have resulted in about 3 million to 5 million cases of severe illness, and 290,000 to 650,000 deaths. In developed countries, influenza has largely caused deaths in those 65 and older.

A multi-country study led by the U.S. CDC analyzed surveillance data from 1982 to 2012 in a research paper published in 2016. According to the findings, influenza was associated with 10% of the respiratory-related hospitalizations in children under 18. Influenza was found to be the cause of approximately 374,000 hospitalizations in children under one year of age, of which 228,000 occurred in babies less than six months of age and 870,000 hospitalizations in children less than five years of age, annually. Hospitalization rates were found to be three times higher in developing countries than in developed countries.

The burden is more severe when the disease assumes pandemic proportions. The most recent influenza outbreak of pandemic proportions was in 2009, also known as the swine flu, caused by the H1N1 virus subtype. The CDC estimated that the pandemic was responsible for the deaths of 151,700 and 575,400 people within the first year of virus circulation.

Figure 12
Estimated Number of Deaths Due to 2009 Pandemic Influenza A H1N1, by Region, August 2009-August 2010
(%)



Source: BCC Research

The group calculated Years of Life Lost (YLLs) to document the effect of the 2009 pandemic influenza A H1N1 that affected young people more, in comparison with seasonal influenza.

Table 12
Years of Life Lost (YLLs), Pandemic Influenza A, H1N1, by Region, 2009
(Number)

Region	YLLs
Africa	2,278,800
Americas	1,050,600
South-East Asia	2,725,300
Europe	927,600
Eastern Mediterranean	862,500
Western Pacific	1,862,200
Global	9,707,000

Source: BCC Research

Diagnosis

Influenza is difficult to diagnose based on symptoms alone, as they vary with the age and health of the individual. However, not all cases require a diagnostic test as clinicians assess the symptoms and make treatment decisions accordingly.

Respiratory samples such as nasopharyngeal or nasal swab, and nasal wash or aspirate, are used in techniques such as viral culture, serology, rapid antigen testing, reverse transcription polymerase chain reaction (RT-PCR), immunofluorescence assays and rapid molecular assays. These tests are most helpful in cases of a respiratory illness outbreak to establish the cause of the outbreak and make mass treatment decisions accordingly.

The sensitivity and specificity of the currently available commercial rapid influenza diagnostic tests (RIDTs) are much lower than viral culture and RT-PCR techniques. Innovations in influenza diagnostics will be aimed at improving on those parameters.

Treatment

Influenza can be treated with antiviral drugs that need to be administered within 48 hours of the onset of the symptoms. WHO-recommended drugs include:

- Inhibitors of the influenza neuraminidase protein (oseltamivir and zanamivir, as well as peramivir and laninamivir).

- M2 proton channel blockers adamantanes (amantadine and rimantadine), which are now limited in effectiveness.

The most effective way to manage the disease is vaccination. The WHO recommends annual vaccination for pregnant women; children between 6 months and 5 years of age; those 65 and older; individuals with chronic medical conditions; and healthcare workers exposed to the virus.

Rotavirus

Incidence and Geographical Distribution

Rotavirus belongs to the family of Reoviridae. The virus causes acute gastroenteritis in infants and young children that leads to profuse watery diarrhea, projectile vomiting and fever. Rotavirus is found worldwide. More than 25 million outpatient visits and 2 million hospitalizations are attributed to rotavirus infection globally each year.

In 2008, according to WHO estimates, 453,000 child deaths occurred due to rotavirus gastroenteritis worldwide. According to estimates dated 2017, India, Nigeria and Democratic Republic of Congo accounted for 53% of all rotavirus-related deaths in children. The morbidity of the disease warranted a vaccine that was introduced in 2006. In 2009, WHO recommended two vaccines: RotaTeq from Merck and Rotarix from GlaxoSmithKline.