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## Influenza (seasonal)

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### Introduction

Influenza is an acute viral infection of the respiratory tract. In healthy individuals influenza is usually self-limiting, with recovery within one to two weeks [1, 2].

Influenza viruses belong to the *Orthomyxoviridae* family. They are enveloped viruses, with segmented RNA genomes [3]. Influenza virus type A is responsible for most epidemics, type B generally causes regional outbreaks and type C is associated with bronchitis and the common cold [4].

### Epidemiology

#### **Global epidemiology**

Influenza occurs throughout the world. In temperate regions of the Northern hemisphere most influenza activity is from November to March and in the Southern Hemisphere, from April to September. In the tropics, the virus can circulate throughout the year.

Up to date information on seasonal flu activity around the world is available from the World Health Organization at <http://www.who.int/csr/disease/influenza/update/en/> or the [Global Health Atlas](#). Data on flu activity in Europe is available from the [European Influenza Surveillance Scheme](#).

#### **Influenza in travellers from the United Kingdom**



Influenza occurs throughout the United Kingdom during the 'flu season'. The peak time for influenza activity in the UK is usually between the months of December and March, although cases may also occur outside this period.

There is limited data on the effect of foreign travel on cases of influenza reported in the UK as travel history is not routinely collected for seasonal flu cases. The main indicator of a travel-related case would be the isolation of an influenza virus that was not known to be currently circulating in the UK (although many countries will have the same circulating viruses) or the isolation of a novel virus subtype.

## Risk for travellers

As influenza occurs worldwide, causing a highly contagious respiratory illness with high morbidity and mortality [3], risk of exposure during travel depends on time of year, destination and duration of travel.

In temperate climates, travellers may be at risk out of season during their summer months, especially if travelling in large groups that include tourists from regions of the world where influenza viruses are currently circulating [5].

Crowded conditions accelerate the spread of infection, such as during the Hajj or Umrah pilgrimages, cruise travel, or travelling with large commercial tours. Influenza has been described as the most frequent vaccine preventable infection among Swiss travellers to tropical and subtropical countries [6].

## Transmission

The influenza virus is easily spread from person to person via respiratory droplets produced by coughing and sneezing. Crowded, enclosed environments facilitate transmission. Hand contamination via mucosal membrane contact is another potential route of infection [1, 4].

## Signs and symptoms

Classic symptoms of influenza include; fever, chills, headache, cough, extreme fatigue, sore throat, blocked nose and muscular pain [1, 4].

Rates of infection are highest in infants, children and adolescents. In the elderly, the very young and those with serious medical issues, particularly cardiac disease, chronic respiratory conditions and immunosuppression, influenza can result in pneumonia and severe complications of the underlying condition that can be fatal. Other potential complications of severe influenza are encephalitis and meningitis [1, 5].



## Treatment

In the UK there are licensed antiviral drugs available which can, in certain circumstances, be used to prevent or treat influenza [1].

According to UK guidance, during influenza season the antiviral drugs amantadine, oseltamivir (Tamiflu) and zanamivir (Relenza) can be used to treat influenza-like illness in those considered to be at risk of developing complications, provided they can start treatment within 48 hours of symptoms [1,7].

## Prevention

Vaccination against influenza is the most effective way of preventing illness [6]. Therefore, all travellers at risk from complications of influenza should be vaccinated. Healthy individuals travelling to tropical and subtropical regions can also consider vaccination [6]. In addition to vaccination, travellers should try to avoid crowded, enclosed spaces and close contact with individuals with respiratory infections [4].

Hand washing and cough hygiene (maintaining distance, covering mouth and/or nose with disposable tissues when coughing and sneezing, discarding tissues frequently, and washing hands after an episode of coughing) should be practised. Avoiding travel while unwell with influenza will help to limit transmission [5].

Oseltamivir can be prescribed for the prevention of influenza in "at risk" groups, provided certain criteria are met, but is not usually recommended for travellers [1].

## Vaccine information

In the UK, influenza vaccines are prepared using virus strains recommended by the WHO. They do not offer protection against highly pathogenic H5N1 avian influenza.

Current vaccines are trivalent: containing two subtypes of influenza A and one of influenza B virus, that are grown in embryonated hen's eggs. All influenza vaccines currently used in the UK are inactivated, cannot cause influenza and are thought to be equivalent in efficacy and adverse reactions [1].

The vaccine is administered by intramuscular injection, either in the upper arm or anterolateral thigh. Individuals with bleeding disorders should be given the vaccine by deep subcutaneous injection to minimise the risk of bleeding.

Currently available vaccines give 70% to 80% protection against the influenza virus strains matched with those in the vaccine. Protection is thought to last for approximately one year, although this may be less for the elderly. After vaccination, antibody levels take 10 to 14 days to provide protective immunity [1].

Three types of vaccine are currently available in the UK:



- "Split virion, inactivated" or "disrupted virus" vaccines containing virus components prepared by treating whole viruses with detergents or organic solvents.
- "Surface antigen, inactivated" vaccines containing highly purified haemagglutinin and neuraminidase antigens.
- "Surface antigen, inactivated, virosome" vaccines containing highly purified haemagglutinin and neuraminidase antigens prepared from disrupted virus particles reconstituted into virosomes with phospholipids [1].

Live attenuated influenza vaccines are not available in the UK but are used in other countries such as Canada and the US [5].

## Indications for use of vaccine

The aim of the UK's influenza programme is to protect those most vulnerable to serious illness or death if they develop influenza [1]. Influenza vaccine becomes available annually in the UK in September [1] and is offered to:

All those aged 65 years and older

All those aged six months and older in the clinical risk groups listed below:

- Chronic respiratory disease, including asthma
- Chronic heart disease
- Chronic renal disease
- Chronic liver disease
- Diabetes requiring insulin or oral hypoglycaemic drugs
- Immunosuppression due to either disease or treatment

Poultry workers are also offered vaccine in the UK [8].

In the UK, the vaccine is not routinely recommended for travellers unless they are in an "at risk" category. Health professionals should carefully assess a traveller's risk of influenza [5].

Travellers intending to work in the poultry industry abroad should be offered vaccine. The use of seasonal flu vaccine would reduce opportunities for avian influenza strains to mix with human strains.



## Availability of vaccine

The influenza vaccine formulation is changed annually to provide protection against the predicted strains of influenza viruses that will circulate in a given season. Information on epidemiological trends and circulating influenza viruses are gathered by the World Health Organization (WHO). This information is then used to ensure the closest possible match between prevalent influenza viruses and influenza vaccines [7].

In the UK, influenza vaccines are prepared in advance of the Northern Hemisphere winter season using virus strains recommended by the WHO [9].

## Vaccine schedules

Refer to the manufacturer's Specific Product Characteristics for detailed vaccine information

Age	Dose
Children aged 6 to 35 months	0.25ml or 0.5ml repeated after 4 to 6 weeks, if the child is receiving the vaccine for the first time.
Children aged between 3 to 12 years	0.5 ml, repeated after 4 to 6 weeks, if the child is receiving the vaccine for the first time.
Adults and children over 13 years	A single injection of 0.5ml annually.

## Contraindications

Very few individuals are unable to receive the influenza vaccine. The vaccine should not be given to anyone with a confirmed anaphylactic reaction to a previous dose of the vaccine, or to any component of the vaccine or to hen's eggs [1].

As with all vaccines, anyone with a moderate to severe acute febrile illness should delay vaccination until they have recovered.

## Adverse events

Transient reactions such as soreness, swelling or redness at the site of injection can occur. Fever, malaise and other systemic symptoms are also reported [5].

Anaphylaxis, angioedema, bronchospasm and urticaria can rarely occur, usually due to hypersensitivity to egg protein [1]. It is essential to establish that the individual receiving the vaccine does not have any history of severe egg allergy or hypersensitivity prior to administration.

Convulsions, neuralgia, paraesthesiae and transient thrombocytopenia have been rarely reported [1]. Guillain-Barré syndrome (GBS) has occurred with an estimated



incidence of one case of GBS per million people vaccinated with influenza vaccine [1, 5]. However, a causal relationship has not been established.

## References

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8. Department of Health. Influenza. Flu vaccine for poultry workers. TSO: London. 2007. Available at: [http://www.dh.gov.uk/prod\\_consum\\_dh/idcplg?IdcService=SS\\_GET\\_PAGE&ssDocName=DH\\_078905](http://www.dh.gov.uk/prod_consum_dh/idcplg?IdcService=SS_GET_PAGE&ssDocName=DH_078905)
9. World Health Organisation. Recommendations for influenza vaccines. WHO: Geneva. 2008. Available at: <http://www.who.int/csr/disease/influenza/vaccinerecommendations/en/index.html>

## Reading list

Department of Health. Pandemic flu: A national framework for responding to an influenza pandemic. TSO. London. 2007.

## Links

[Department of Health – Policy and guidance, Health and social care topics: Flu.](#)

[Health Protection Agency - Seasonal Influenza.](#)

[World Health Organization – Influenza](#)