Seasonal influenza vaccines are the most effective way to prevent influenza disease, with safe and effective vaccines available and used for more than 60 years. As influenza constantly evolves and changes over time and our immunity to influenza wanes, annual vaccination is recommended to protect against influenza.

Influenza vaccines

The most commonly used influenza vaccines are injected inactivated influenza vaccines. These come in a trivalent (3 strains; TIV) and quadrivalent (4 strains; QIV) design. For the QIV formulation there are also high-dose versions that are primarily designed for use in people 65 years or over. There are other types of influenza vaccine; adjuvanted, live-attenuated (LAIV) and more recently recombinant influenza vaccines.

Generally, influenza vaccines should be kept at 2–8°C and exposure to light should be avoided, whilst freezing must be avoided. Influenza vaccines are generally administered by needle, injected into the deltoid muscle. The exception are LAIVs which are administered intranasally. Specific details for each vaccine's use and management can be found on the WHO website as well as those of specific manufacturers and national regulators

Safety

Inactivated influenza vaccines, such as TIV and QIV, have an excellent safety profile and are well tolerated by recipients of all ages, including people with underlying health conditions and pregnant women. Mild reactions are frequent but lasting no more than 1 to 2 days. The most commonly reported reactions in both adults and children are mild pain at the injection site (60–80% of recipients), low grade fever (2–10%), malaise, headache, muscle pain, and fatigue. Although there have been concerns that egg-based inactivated influenza vaccines could trigger anaphylaxis in people who are allergic to eggs, such reactions have not been documented.

Live-attenuated influenza vaccines (LAIVs) have generally been well tolerated in healthy children and adults, but when symptoms do occur, like inactivated influenza vaccines, they are self-limiting and mild. Most commonly reported reactions are mild nasal congestion or runny

nose, sore throat and low-grade fever. There was no difference in the rate of serious adverse reactions to LAIV, TIV or placebo in children or adults. Specific contraindications and precautions vary between jurisdictions and are set by the local national regulatory authorities for the use of LAIVs in different populations, with some high-income countries not recommending their use for children and adults that suffer from a range of chronic pulmonary or cardiovascular conditions.

Duration of protection and repeat vaccination

To ensure optimal vaccine effectiveness against prevailing strains in both the northern and southern hemispheres, the composition of influenza vaccines is revised twice a year and adjusted to the strains of circulating influenza viruses, as obtained by the WHO Global Influenza Surveillance and Response System (GISRS).

Vaccination in the current and prior seasons afforded better protection than not being vaccinated or being vaccinated in the prior season only. The degree of protection afforded by current and prior vaccination varies from year to year, reflecting variations in circulating influenza viruses and their antigenic similarity to the vaccine formulation.

Efficacy and effectiveness of influenza vaccination

In general, there is considerable variation in the efficacy and effectiveness of influenza vaccines in different seasons and population groups. This can be for a variety of reasons, such as strain mismatch, variation in study design and immunity of different groups. However, based on the available evidence, influenza vaccines have been shown to be efficacious and effective in healthy adults, but effect estimates vary by season and how well the vaccines match the currently circulating influenza strains. To better understand the efficacy, the pooled efficacy of TIV formulations against clinical disease in adults aged 18–65 years across 12 seasons in randomized controlled trials was 59% (95% CI: 51–67%) (1). For other recommended groups (i.e. older adults (>65years), pregnant women, people with chronic illnesses and children), while influenza vaccines have evidence of being efficacious and effective, the range can vary greatly. It is important to note that for pregnant women, influenza vaccines not only prevent influenza infection in this vulnerable group but also their offspring through the transfer of maternal antibodies. This is important as none of the influenza vaccines are licensed for use in children 6 months of age.

Reviews have found that influenza vaccination is either cost-saving or has an acceptable cost-effectiveness ration. From a societal and employer perspective, especially for high-income

countries, influenza vaccination may be cost-effective for health workers and older adults. There is limited evidence from low- and middle-income countries, but the reduced burden of influenza on stretched health systems through the use of influenza vaccination may have greater impact than in well-resourced settings.

For further information and guidance on influenza vaccination, please refer to the latest SAGE guidance
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(1) Efficacy and effectiveness of influenza vaccines: a systematic review and meta-analysis. Osterholm MT, Kelley NS, Sommer A et al. Lancet Infect Dis. 2012; 12(1):36-44

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