

# Vaccines against influenza. WHO position paper November 2012

## Summary

*This position paper is concerned mainly with vaccines and vaccination against seasonal (epidemic) influenza.*

Influenza A and B viruses are globally important human respiratory pathogens causing epidemics, usually during the winter season, and out-of-season sporadic cases and outbreaks. Influenza A viruses may also cause worldwide pandemics. Subtypes of influenza A- viruses are determined by either haemagglutinin (HA) or neuraminidase (NA) activity. Minor mutations causing small changes (“antigenic drift”) in the HA gene enable the virus to evade immune recognition, resulting in seasonal influenza outbreaks during inter-pandemic years. The annual attack rate of influenza is estimated at 5–10% in adults and 20–30% in children.

Influenza is typically characterized by fever, cough, sore throat, runny nose, headache, muscle and joint pain and malaise. In young children, impaired respiration, dehydration, altered mental status, and irritability signify serious disease. Secondary bacterial pneumonia is a frequent complication of influenza, particularly in risk groups. Etiology-specific diagnosis of influenza requires laboratory confirmation.

Risk groups for severe influenza include pregnant women, children aged <5 years, the elderly, and individuals with underlying health conditions such as HIV/AIDS, asthma, or chronic heart or lung diseases. Infected healthcare workers may transmit influenza virus to individuals at risk of severe disease.

Currently available vaccines for the control of seasonal influenza are safe and efficacious and have the potential to prevent significant annual morbidity and mortality. Their antigenic composition is revised twice annually to ensure optimal vaccine efficacy against prevailing strains for the northern and southern hemispheres.

Seasonal influenza vaccines include two influenza A-strains and one influenza B-strain. Both trivalent inactivated influenza vaccines (TIVs) for intramuscular injection and trivalent live attenuated influenza vaccines (LAIVs) for intranasal application are available. TIVs include formulations containing an adjuvant or an increased antigen concentration for use mainly in the elderly, and in some countries an intradermally administered TIV is licensed. Recently, a quadrivalent LAIV (2 A- and 2 B-strains) became available.

TIVs are the only vaccines licensed for children aged 6 - 24 months, for persons aged  $\geq 50$  years, and for pregnant women. Non-pregnant individuals aged 2 - 49 years may receive either TIV or LAIV.

When the vaccine strains closely match the circulating influenza viruses, efficacy rates of TIV and LAIV against laboratory-confirmed influenza in healthy individuals <65 years of age typically range from 70% to 90%, whereas efficacy is at best modest in individuals aged  $\geq 65$  years, and in those with underlying medical conditions.

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*WHO position and recommendations:* Internationally available vaccines for the control of seasonal influenza are safe and efficacious and have the potential to prevent significant annual morbidity and mortality.

Country-specific information about risk groups, disease burden and cost-effectiveness are important to aid national policy makers and health programme planners in making informed decisions about target groups and timing for vaccination.

For countries considering the initiation or expansion of programmes for seasonal influenza vaccination, WHO recommends that pregnant women should have the highest priority. Additional risk groups to be considered for vaccination, in no particular order of priority, are children aged 6–59 months, the elderly, individuals with specific chronic medical conditions, and health-care workers.

Countries with existing influenza vaccination programmes targeting any of these additional groups should continue to do so and incorporate immunization of pregnant women into such programmes.

Children <6 months of age should be protected against influenza through vaccination during pregnancy and vaccination of close contacts. Because of their high burden of severe disease, children 6 - 23 months of age are a target group for influenza immunization. Compared with younger children, those 2 - 5 years of age are at lower risk, but respond better to vaccination with TIV and in particular with LAIV.

Persons  $\geq 65$  years of age have the highest risk of mortality from influenza, and are an important target for vaccination, although the vaccines are in general less effective in elderly people. Vaccination of health-care workers should be considered as part of a broader infection control policy for health-care facilities.

Influenza vaccination is recommended every year, particularly for high risk groups. TIV is administered intramuscularly (except for intradermal formulations). Children aged 6 through 35 months should receive a pediatric dose and previously unvaccinated children aged <9 years should receive 2 injections administered at least 4 weeks apart. A single dose of the vaccine is appropriate for children aged  $\geq 9$  years and healthy adults. LAIV is given as nasal spray, one dose only, but children aged 2- 8 years should normally receive 2 doses, at least 4 weeks apart.

Successful introduction of influenza vaccines to healthy younger populations, including pregnant women and young children, will require effective educational programmes and communication. For pregnant women year-round availability of the most recent influenza vaccines is essential.

Influenza surveillance platforms are critical for monitoring and communicating the impact of introducing seasonal influenza vaccination. Strengthening of seasonal influenza programmes will assist in programmatic preparedness for pandemic vaccine introduction.

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