



Information for head teachers and health care workers about the nasal flu vaccine and 'viral shedding'

Public Health England (PHE) has been made aware of a number of instances where parents who have not given consent for their child to receive the live attenuated influenza vaccine (LAIV or *children's flu vaccine nasal spray*) are also not allowing their child to be present in school – either on the day of immunisation or in some cases for days or weeks afterwards.

These concerns appear to relate to two misunderstandings:

- As the flu vaccine is squirted out of the applicator as a fine mist, that the school's rooms will be filled with flu vaccine virus which could infect others.
- That children who receive the vaccine will actively 'shed' live flu virus for several days or even weeks after vaccination, thus putting others at risk of infection, particularly those with weakened immune systems.

The nasal influenza vaccine uses a live attenuated (weakened) influenza virus which protects against influenza infection in those who receive it. LAIV does not cause clinical influenza in those immunised and is offered to children because it works much better than the inactivated influenza vaccines, has a good safety record and is easier to administer. Millions of doses of LAIV have been given in the USA over the past 11 years and it has a good safety profile. Although this is the first year that the vaccine is being widely offered in UK schools, more than 2 million doses of LAIV were given to younger children and to school age children in several pilot areas during the 2013/14 and 2014/15 flu seasons. A small number of respiratory illnesses (including wheeze) were reported in the contacts of vaccinated children. Most of these events were self-limiting and some of them may have been coincidental.

Specific information on potential exposure during administration, and from recently vaccinated children, is outlined below.

In summary, this vaccine has a good safety record and unvaccinated contacts are not at risk of becoming seriously ill with the flu vaccine virus, either through being in the same room where flu vaccine has been given or by being in contact with a recently vaccinated individual. Excluding children from school during the period when LAIV is being offered or in the following weeks is therefore not considered necessary. The only exception to this would be the tiny number of children who are extremely immunocompromised (for example those who have just had a bone marrow transplant). These children are normally advised not to attend school anyway because of the definite and much higher risk of being in contact with other infections that spread in schools.

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Exposure to vaccine virus during administration

- Administration of the vaccine is via a nasal applicator which delivers just 0.1ml (around 1/50th of a teaspoon) of fluid into each nostril. There is not a 'mist' of vaccine virus in the air when children are being vaccinated and others in the room should not be at risk of "catching" the vaccine virus. The room or school in which administration of nasal influenza vaccine has taken place does not require any special cleaning afterwards.
- The concern that a vaccine mist fills the room with live virus may have come from images of the vaccine being squirted into the air (which are widely available on the internet) and the US name of the vaccine (i.e. FluMist® Quadrivalent). These images are intended to show how gently the vaccine comes out when inserted into the nose but the vaccine does not create an external mist of vaccine – almost all the fluid is immediately absorbed into the child's nose (this explains why visible dripping from the nose is unusual).
- Healthcare workers administering LAIV may, theoretically, be exposed to the vaccine virus if it is accidentally released outside of the child's nose. In the US, where there has been extensive use of the vaccine over many years, no transmission of the vaccine virus to healthcare workers has been reported to date. Health care workers who are immunocompromised and those who are pregnant can safely administer the vaccine. As a precautionary measure, however, very severely immunocompromised healthcare workers should not administer LAIV.

Shedding of vaccine virus

- Although vaccinated children are known to shed virus a few days after vaccination, the vaccine virus that is shed is less able to spread from person to person than the natural infection. The amount of virus shed is normally below the levels needed to pass on infection (transmit) to others and the virus does not survive for long outside of the body. This is in contrast to natural flu infection, which spreads easily during the flu season. In schools using vaccine, therefore, the overall risk of influenza transmission is massively reduced by having a large number of children vaccinated.
- Despite the overall low risk of transmission, some parents of children with immune problems have been concerned about their child being exposed to vaccinated children in the two weeks following vaccination. In the US, where there has been extensive use of LAIV for many years, serious illness amongst immunocompromised contacts who are inadvertently exposed to vaccine virus has never been observed. Expert doctors at Great Ormond Street Hospital, who deal with many children with very serious immune problems, do not recommend keeping such children off school purely because of vaccination.
- A tiny number of children who are extremely severely immunocompromised e.g. immediately after a bone marrow transplant, would not be attending school anyway because the risk from all the other infections that children pass to each other at school would be too great. It is important that all children with immune problems should themselves be vaccinated, usually with an injected (inactivated) vaccine. Similarly, healthy children who have family contacts who are very severely immunocompromised should be given the inactivated influenza vaccines.

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