

“Is there risk of viral transmission? Can patients receiving FluMist give someone else the flu?”

- Although vaccinated children are known to shed virus a few days after vaccination, the vaccine virus that is shed is less likely 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 body⁶³
- In schools using the vaccine, the overall risk of in a transmission is massively reduced by having a large number of children vaccinated²
- To cause illness in others, a live vaccine would first need to replicate within the vaccinated person, then revert back to wild-type in a before being transmitted to another person. No evidence of reversion has been observed in the recovered vaccine strains that have been tested^{3,1}

1. Trivalent nasal spray suspension in a vaccine (live attenuated, nasal). Summary of Product Characteristics. Aug; 2024 2. Public Health England. Information for head teachers and health care workers about the nasal flu vaccine and 'viral shedding.' Department of Health and Social Care, National Health Service. 2015. Accessed October 2, 2024. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/551877/PHE_factsheet_for_HCW_and_headteachers_on_LAIV_-_concerns_about_viral_shedding.pdf

3. Ambrose CS, Yi T, Walker RE, Connor EM. Duration of protection provided by live attenuated in a vaccine in children. *Pediatr Infect Dis J*. 2008;27(8):744-748. doi:10.1097/INF.0b013e318174e0f8

LAIV & Shedding

- “Shedding” = the ability to detect virus in respiratory secretions via invasive specimen collection techniques (nasal wash or nasal swab). “Transmission” = the spreading of virus from person to person.
- **Shedding doesn’t mean transmission.**
- A single open-label dose of LAIV3 was administered intranasally to 344 recipients in 3 age cohorts: 5-49 years of age.¹
 - Overall, 29% of participants shed vaccine virus with lower rates in adults compared to children.
 - After vaccination, vaccine virus was shed by 44% of recipients aged 5-8 years, 27% of recipients aged 9-17 years, and 17% of recipients aged 18-49 years.
 - Shedding occurred on **Days 1–11 after vaccination.**
 - Shedding incidence **peaked on Day 2**, and maximum observed titers were **highest on Days 2–3** (<5, <4, and <3 log₁₀ TCID₅₀/mL, respectively, by age group).
- **Several events must occur for a person recently vaccinated with LAIV to effectively transmit virus and for that virus to result in a clinical infection:**²
 - The vaccine recipient must shed the attenuated vaccine virus
 - The amount of virus shed must be of sufficient quantity to result in secondary infection
 - Once acquired, the attenuated virus must lose its temperature-sensitive phenotype to allow replication in the lower airways
 - The attenuated virus must revert to wild type and produce disease.
- **FluMist is genetically stable with at least 5 attenuating genetic points in each strain**³
- **No reversion to wild-type has been seen in any clinical trials**³

LAIV & Risk of transmission: Bystander Risk

- LAIV3 should be administered directly into the nose of the vaccine recipient.
- With proper administration, there is minimal risk that people in the vicinity of vaccination would be inadvertently exposed to LAIV3.³
 - It is theoretically possible, however, that if LAIV3 were administered improperly (ie, not delivered into the nostrils), very close bystanders could be inadvertently exposed to LAIV3.
 - Study results demonstrated that when the LAIV3 sprayer is actuated in an area devoid of drafts, persons outside a radius of 76 cm (approximately 3 feet) from the sprayer nozzle would not have direct contact with the spray plume.
 - At a distance of more than 3 feet, aerosolized droplets would be dispersed in the air and would be subject to inactivation due to desiccation, which would further reduce risk of infection.
 - (Droplets from circulation by the frequency of air exchanges that is typical of heating, ventilating, and air conditioning systems.)
 - In the scenario where an individual not seeking vaccination is positioned in the middle of the spray plume of an inadvertently dispensed half-dose of vaccine, the estimated virion exposure would approximate the lowest median infectious dose for healthy adults, but would be higher than the median infectious dose for healthy children.
 - Administering LAIV3 in a segregated area of the physician's office, workplace, clinic, or pharmacy reduces this unlikely risk of inadvertent exposure.

¹. Fluenz nasal spray suspension, influenza vaccine (live attenuated, nasal). Summary of product characteristics. https://www.ema.europa.eu/en/documents/product-information/fluenz-epar-product-information_en.pdf

². FLUMIST. Prescribing information. <https://www.azpicentral.com/pi.html?product=flumist>

³. In House Data, AstraZeneca. Inadvertent exposure to FluMist. June 1, 2003.

⁴. Kroger A, Bahta L, Long S, et al. General best practice guidelines for immunization. Best practices guidance of the Advisory Committee on Immunization Practices (ACIP). <https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/downloads/general-recs.pdf>