Live Attenuated Influenza Vaccine (LAIV)

The UK experience - England

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Spanish Association of Paediatrics, Toledo, 23 April 2016
# UK routine immunisation schedule for children

<table>
<thead>
<tr>
<th>Age</th>
<th>Vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 months</td>
<td>DTaP/IPV/Hib; MenB; PCV; Rotavirus</td>
</tr>
<tr>
<td>3 months</td>
<td>DTaP/IPV/Hib; MenC; Rotavirus</td>
</tr>
<tr>
<td>4 months</td>
<td>DTaP/IPV/Hib; MenB; PCV</td>
</tr>
<tr>
<td>12–13 months</td>
<td>Hib/MenC; MenB; PCV; MMR1</td>
</tr>
<tr>
<td>2–6 years (and at risk ≥6 months)</td>
<td><strong>Influenza</strong></td>
</tr>
<tr>
<td>3.5 years</td>
<td>DTaP/IPV; MMR2</td>
</tr>
<tr>
<td>12–13 years (girls only)</td>
<td>HPV</td>
</tr>
<tr>
<td>13–14 years</td>
<td>Td/IPV</td>
</tr>
<tr>
<td>14–15 years</td>
<td>MenACWY</td>
</tr>
<tr>
<td>19–25 years (university entrants)</td>
<td>MenACWY</td>
</tr>
</tbody>
</table>


DTaP, diphtheria, tetanus, pertussis vaccine; Hib, *Haemophilus influenzae* type B vaccine; HPV, human papilloma virus; IPV, inactivated polio vaccine; MenACWY, meningococcal group A, C, W-135 and Y conjugate vaccine; MenB, meningitis B; MenC, meningitis C; MMR, measles, mumps and rubella; Td, tetanus, diphtheria vaccine; PCV, pneumococcal conjugate vaccine.
Epidemiology: pandemics

A(H1N1)
1918: ‘Spanish Flu’
40 million (severe)\(^1,2\)

A(H2N2)
1957: ‘Asian Flu’
1 million (moderate)\(^1\)

A(H3N2)
1968: ‘Hong Kong Flu’
4 million (severe)\(^1\)

A(H1N1)
2009 ‘H1N1 Swine Flu’
~18,000* pig/bird/man\(^3,4\)

*2009: affected younger ages; greater impact in terms of ‘years lost’

Burden of influenza in England and Wales

- 779,000–1,164,000 GP consultations
- 19,000–31,200 hospital admissions
- 18,500–24,800 deaths attributable to influenza
- Influenza infections affect up to almost 10% of children aged birth to 14 years in England in an average season
- Influenza: the most common cause of lower respiratory illness in children aged 6 months to 12 years presenting to GPs, even in non-epidemic years
  - significant risk of secondary bacterial infection

Influenza immunisation for children
UK considerations
Rationale for vaccinating children

- Children are recognised as playing a key role in the transmission of influenza virus\(^1\)

- Targeting children with influenza vaccine would:
  - Not only reduce infection in immunised children themselves (direct programme impact)
  - But also reduce influenza-related disease in other age groups, including elderly people, and individuals in high-risk groups (indirect programme impact)\(^2,3\)

Joint Committee on Vaccinations and Immunisations (JCVI), April 2012

• Discussed potential extension of the influenza vaccination programme to children:
  – ↓impact of flu by directly averting many cases in children
  – ↓many cases of severe flu and flu-related deaths in older adults and people with clinical risk factors

• Review of the (then unpublished) HPA/LSHTM study:
  – Cost effectiveness of the vaccination programme
  – Range of possible extensions

• Followed NICE criteria

• Chosen vaccine: the Live Attenuated Influenza Vaccine (LAIV)

• Vaccine adverse effects not considered in cost effectiveness analysis
  – Reasonable, “given the safety profile of chosen vaccine”


HPA, Health Protection Agency; LSHTM, London School of Hygiene & Tropical Medicine; NICE, National Institute for Health and Care Excellence.
Increasing vaccine uptake to 50% is cost saving – cost effective\(^1\)

Mathematical model exploring the effect of increasing the annual paediatric uptake rate of LAIV in children aged 2–18 years

<table>
<thead>
<tr>
<th>Scenario</th>
<th>QALYs lost (millions)</th>
<th>Cost (millions)</th>
<th>Incremental QALYs (millions)</th>
<th>Incremental cost (millions)</th>
<th>ICER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current policy</td>
<td>7.73</td>
<td>£18,304</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAIV uptake rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10%</td>
<td>5.56</td>
<td>£17,818</td>
<td>2.17</td>
<td>–£486</td>
<td>Cost saving</td>
</tr>
<tr>
<td>30%</td>
<td>2.26</td>
<td>£18,040</td>
<td>5.46</td>
<td>–£264</td>
<td>Cost saving</td>
</tr>
<tr>
<td>50%</td>
<td>1.07</td>
<td>£19,973</td>
<td>6.65</td>
<td>£1,669</td>
<td>£251</td>
</tr>
<tr>
<td>70%</td>
<td>0.60</td>
<td>£22,511</td>
<td>7.13</td>
<td>£4,207</td>
<td>£590</td>
</tr>
<tr>
<td>90%</td>
<td>0.39</td>
<td>£25,275</td>
<td>7.33</td>
<td>£6,971</td>
<td>£951</td>
</tr>
</tbody>
</table>

ICER; incremental cost-effectiveness ratio; LAIV, live attenuated influenza vaccine; QALY, quality-adjusted life year.

JCVI choice of vaccine: LAIV

- Significantly more effective than inactivated flu vaccines currently used
- Licensed for use in children aged 2–17 years
  - Suitable for use in a programme to vaccinate children
- Identified contraindications and precautions would need to be managed in the design of the programme
- Central procurement would be the most practicable approach to securing the quantities that would be required
  - “it would take some time to set up and agree contacts for the supply, storage and distribution of the very large quantities of vaccine that would be needed”
- Application for market authorisation of adjuvanted inactivated Fluad paediatric® (Novartis) has been withdrawn
  - No alternative vaccine

Types of influenza vaccine approved in the EU

<table>
<thead>
<tr>
<th>TIV</th>
<th>LAIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trivalent inactivated influenza vaccine, intramuscular</td>
<td>Live attenuated influenza vaccine, intranasal</td>
</tr>
<tr>
<td>HA is the only standardised component; other antigens may be present(^1,2^*)</td>
<td>Attenuated vaccine with multiple antigens(^3,4^*)</td>
</tr>
</tbody>
</table>

HA: haemagglutinin; M1, M2: matrix proteins; NA: neuraminidase; NP: nucleoprotein.


2. Fluvirin [Summary of Product Characteristics]. Novartis Vaccines and Diagnostics Ltd.
3. FLUENZ [Summary of Product Characteristics]. AstraZeneca Ltd.
**LAIV**

**Attenuated virus**: disease-causing properties removed so as not to cause illness\(^1\)

**Cold-adapted**: replicates efficiently only in the cooler areas of the nasopharynx\(^1\)

**Temperature-sensitive**: does not replicate efficiently in warmer areas of the lower respiratory tract where influenza viruses typically replicate\(^1\)

JCVI choice of vaccine: LAIV


JCVI, Joint Committee on Vaccinations and Immunisations; LAIV, live attenuated influenza vaccine.
JCVI, April 2012 – children not previously vaccinated

• Not previously vaccinated (*naïve*) children under 9 years normally receive two doses of any flu vaccine:
  – Evidence of the effectiveness of a single dose of the LAIV in these children
  – Additional resources and increased complexity of implementation to provide two doses
• JCVI advised: one dose only to ‘*naïve*’ children under 9 years

Children aged 2–17 years in the ‘groups at risk’

• Consideration should be given to the preferential use of the LAIV in the current programme for children in most clinical risk groups (except severe asthma and some with immunosuppression)
  – in their case, naïve children received two doses, 1 month apart

Influenza vaccination campaign: a stepwise approach to implementation

2013/14¹
- GPs: all children aged 2 and 3 years
- GPs: all children from 6 months of age in ‘at-risk groups’
  - £7.60 (€11.00) per child vaccinated in the above groups
  - Vaccine supplied by the government
- Pilots in primary schools

2014/15¹
- As above but:
  - GPs: extended to all children aged 4 years
  - Pilots extended further to secondary schools

2015/16²
- GPs: all children aged 2–4 years
- Local NHS to commission from local providers (including GPs) but predominantly school services: children aged 5–6 years

Influenza vaccine uptake data

- **Vaccine uptake information** is reported by Public Health England for the following groups:
  - People aged 65 years and over
  - People aged under 65 years with specific clinical conditions
  - All pregnant women
  - All children aged 2, 3 and 4 years
  - Healthcare workers with direct patient contact
  - Carers
  - Children at school aged 5 and 6 years

- Uptake data collected via the web-based ImmForm system

- Over 90% of GP practices reporting weekly – electronically via *ImmForm* [https://www.gov.uk/government/collections/immform](https://www.gov.uk/government/collections/immform)
Influenza vaccine uptake:
2013/14 and 2014/15

<table>
<thead>
<tr>
<th>England</th>
<th>2-year-olds</th>
<th>3-year-olds</th>
<th>4-year-olds</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013/14¹</td>
<td>42.6%</td>
<td>39.6%</td>
<td>NR</td>
</tr>
<tr>
<td>2014/15²</td>
<td>38.5%</td>
<td>41.3%</td>
<td>32.9%</td>
</tr>
</tbody>
</table>

Pilots

<table>
<thead>
<tr>
<th></th>
<th>Setting</th>
<th>Age group</th>
<th>Uptake</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013/14³</td>
<td>Primary school</td>
<td>5–10 years</td>
<td>36–72%</td>
</tr>
<tr>
<td>2014/15⁴</td>
<td>Primary and secondary schools</td>
<td>5–13 years</td>
<td>53%</td>
</tr>
</tbody>
</table>

Modelling suggests that reaching levels of 30% vaccine coverage in children would start to produce substantial benefits⁵

4. Joint Committee on Vaccination and Immunisation. Minutes of the meeting held on Wednesday 3 June 2015. Available at: https://www.gov.uk/government/groups/joint-committee-on-vaccination-and-immunisation#minutes (last accessed 5 August 2015).
The school pilots

• Testing a variety of delivery methods
• Mostly in primary schools
• Some working through general practice and community pharmacists
• Determine the best approach to implement efficiently and sustainably the programme for school-aged children, without putting pressure on essential services

England’s geographical pilot regions

Primary school (age 5–10 years)
- Cumbria, Northumberland, Tyne and Wear
- Greater Manchester
- Essex
- Leicestershire and Lincolnshire
- Shropshire and Staffordshire
- London (Newham and Havering)

Secondary school (age 11–13 years)
- Greater Manchester
- Lancashire
- North Yorkshire and Humber
- Sheffield, Rotherham, Doncaster and Bassetlaw
- West Yorkshire
- Arden, Herefordshire and Worcestershire
- Birmingham, Solihull and The Black Country
- East Anglia and Essex
- Leicestershire and Lincolnshire
- Shropshire and Staffordshire
- London (Newham and Havering) (children aged 11 years only); all special schools across London

England regional school pilots (age 5–10 years)\(^1\)

<table>
<thead>
<tr>
<th>Site</th>
<th>Cohort</th>
<th>Vaccinated</th>
<th>% uptake</th>
<th>Model</th>
<th>Provider</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bury</td>
<td>16,280</td>
<td>10,340</td>
<td>63.5</td>
<td>School-based</td>
<td>Private</td>
</tr>
<tr>
<td>Cumbria</td>
<td>36,360</td>
<td>13,010</td>
<td>35.8</td>
<td>Community</td>
<td>Pharmacy/GP</td>
</tr>
<tr>
<td>Gateshead</td>
<td>14,895</td>
<td>7,784</td>
<td>52.3</td>
<td>School-based</td>
<td>School nursing service</td>
</tr>
<tr>
<td>Havering</td>
<td>20,545</td>
<td>13,102</td>
<td>63.8</td>
<td>School-based</td>
<td>Trust immunisation team</td>
</tr>
<tr>
<td>Leicester</td>
<td>55,014</td>
<td>28,444</td>
<td>51.7</td>
<td>School-based</td>
<td>Trust immunisation team</td>
</tr>
<tr>
<td>Newham</td>
<td>31,658</td>
<td>14,425</td>
<td>45.6</td>
<td>School-based</td>
<td>Trust immunisation team</td>
</tr>
<tr>
<td>SE Essex*</td>
<td>24,723</td>
<td>17,687</td>
<td>71.5</td>
<td>School-based</td>
<td>Trust immunisation team</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>199,475</strong></td>
<td><strong>104,792</strong></td>
<td><strong>52.5</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*SE Essex additionally piloted self-administration by 10-year-old pupils and vaccination by healthcare support workers.

England’s geographical pilot regions: average coverage rates in 2014–2015\textsuperscript{1–3}

Uptake >50%
Uptake ~30%
Uptake <30%

School
School Special
Pharmacy
Community

Delivery method

- Primary school pilot (age 5–11 years)
- Secondary school pilot (age 11–13 years)
- Primary and secondary school pilot

Experience from the pilots in primary schools (age 5–10 years)

2 administrators plus 2 nurses per 100 children
1 additional nurse for every additional 100 children
Significant administrative burden
Utilise staff in existing posts
Temporary staff contracts problematic
Self-administration by children aged 10 years:
    Well received by pupils (65% self-administered)
    More time-consuming than nurse administration
80% of vaccines given in the community and not by GPs:
    Given by pharmacies instead
    Contracting with multiple pharmacy providers is time-consuming
    Vaccine distribution to multiple providers introduces potential for increased wastage
Impact data England

Number of children in the Pilots 2014/2015

Primary schools: 197,000
• All offered the vaccine (5-10 y)
• Flu virus bigger spreaders

Secondary schools: 185,000
• Offered only to 11-13 y (two cohorts)
• Flu virus moderate spreaders
## Impact of the 2014/15 school pilots

### Number of influenza cases in non-pilot areas vs pilot areas

<table>
<thead>
<tr>
<th>School</th>
<th>Influenza swab-negative</th>
<th>Influenza B cases</th>
<th>Influenza A(H1N1) cases</th>
<th>Influenza A(H3N2) cases</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Non-pilot</td>
<td>725 (65.8)</td>
<td>91 (8.3)</td>
<td>28 (2.5)</td>
<td>253 (22.9)</td>
</tr>
<tr>
<td>Pilot</td>
<td>1,272 (71.1)</td>
<td>91 (5.1)</td>
<td>32 (1.8)</td>
<td>368 (20.6)</td>
</tr>
<tr>
<td>Missing information</td>
<td>32</td>
<td>2</td>
<td>0</td>
<td>8</td>
</tr>
</tbody>
</table>

- Significantly lower influenza positivity in areas where school-aged children were vaccinated compared with non-pilot areas (p=0.002)

### JCVI, August 2015

- The Committee was encouraged by the evidence emerging from the UK childhood influenza programmes, which indicated that LAIV appeared to offer protection with some herd protection in primary school pilots in England, despite moderate levels of uptake

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2. Joint Committee on Vaccination and Immunisation. Minutes of the meeting held on Wednesday 3 June 2015. Available at: https://www.gov.uk/government/groups/joint-committee-on-vaccination-and-immunisation#minutes (last accessed 5 August 2015).
Impact of the programme – season 2014-2015
Reduction in surveillance indictors in primary school pilot areas compared with non-pilot areas

GP consultation – Influenza-like illness

<table>
<thead>
<tr>
<th>Age group</th>
<th>Pilot</th>
<th>Non-pilot</th>
<th>Statistically significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary school (5–10 y)</td>
<td>94%</td>
<td>92%</td>
<td></td>
</tr>
<tr>
<td>&lt;5 y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥17 y</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sentinel nasal swab positivity

<table>
<thead>
<tr>
<th>Age group</th>
<th>Pilot</th>
<th>Non-pilot</th>
<th>Statistically significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary school (5–10 y)</td>
<td>75%</td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>&lt;5 y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥17 y</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Influenza swab positivity in hospitals

<table>
<thead>
<tr>
<th>Age group</th>
<th>Pilot</th>
<th>Non-pilot</th>
<th>Statistically significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary school (5–10 y)</td>
<td>42%</td>
<td>24%</td>
<td></td>
</tr>
<tr>
<td>&lt;5 y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥17 y</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ILI, influenza-like illness; GP, general practitioner


≥17 y ➔ age 17 and over (includes the over 65s)
– does not differentiate between <65 & >65 years
Impact of the programme – season 2014-2015
Reduction in surveillance indicators in primary school pilot areas compared with non-pilot areas

Relative Risk Reduction

<table>
<thead>
<tr>
<th>Influenza confirmed admission</th>
<th>Influenza confirmed ICU/HDU admission</th>
<th>Emergency Department respiratory attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age group</strong></td>
<td><strong>Rate per 100,000 population</strong></td>
<td><strong>Proportion of respiratory attendances (%)</strong></td>
</tr>
<tr>
<td>Primary school (5–10 y)</td>
<td>93%</td>
<td>74%</td>
</tr>
<tr>
<td>&lt;5 y</td>
<td>62%</td>
<td>65%</td>
</tr>
<tr>
<td>≥17 y</td>
<td>34%</td>
<td>21%</td>
</tr>
</tbody>
</table>

**Reduction:**
- 93% in primary school (5–10 y)
- 62% in <5 y
- 34% in ≥17 y

**Emergency Department respiratory attendance**
- 76% reduction in <5 y
- 61% reduction in primary school (5–10 y)
- 46% reduction in ≥17 y

ED, emergency department; ILI, influenza-like illness; GP, general practitioner; USISS, UK Severe Influenza Sentinel Surveillance System

≥17 y → age 17 and over (includes the over 65s)
- does not differentiate between <65 & >65 years
Number of primary school age children needed to be vaccinated to prevent selected surveillance indicators in the pilot population

<table>
<thead>
<tr>
<th></th>
<th>Non pilot</th>
<th>Confirmed influenza hospitalisation</th>
<th>Confirmed influenza ICU/HDU admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP ILI consultation</td>
<td>468 cases/100,000</td>
<td>21 cases/100,000</td>
<td>3 cases/100,000</td>
</tr>
</tbody>
</table>

Vaccination of primary school children (5-10 years)

56.8% coverage (196,994 / 346,962)

<table>
<thead>
<tr>
<th></th>
<th>Pilot</th>
<th>Confirmed influenza hospitalisation</th>
<th>Confirmed influenza ICU/HDU admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP ILI consultation</td>
<td>190 cases/100,000</td>
<td>7 cases/100,000</td>
<td>1 case/100,000</td>
</tr>
</tbody>
</table>

Number of children needed to be vaccinated to prevent 1 case

- Non pilot: 16
- Pilot: 317
- Total: 2205

GP, general practitioner, ILI, influenza-like illness, ICU, intensive care unit, HDU, high dependency unit

Significant reduction in respiratory excess mortality in primary school pilot areas (2014-2015 season)

Secondary schools impact:
- less seen
- because less impact?
- only 11-13 y vaccinated?

Excess mortality rate per 100,000 population

2014-2015 season

- Uptake levels were similar or higher compared with the previous season

- Significant reduction in incidence for a range of surveillance indicators, both in children and adults, in pilot areas vaccinating primary school age children (aged 5-10 years) compared to non-pilot areas:
  - GP ILI consultations (94%↓, p=0.018), Emergency Department Respiratory attendances (74%↓, p=0.035), Confirmed Influenza hospital admissions (93%↓, p=0.012)

- Indirect impact in children <5 years was over and above any direct impact expected by vaccinating these children across the whole England, in pilot areas where primary school children were vaccinated with LAIV
  Consistent with 2013–2014 findings and support the on-going roll out of the national LAIV programme for children of primary school age

- Vaccinating secondary school age children needs further consideration – perhaps extension to all cohorts
Lower effectiveness of the 2014–2015 influenza vaccine\textsuperscript{1}
UK end-of-season results (September 2015)

- Overall adjusted VE against \textbf{all strains: 34.3\%} (95\% CI 17.8–47.5)
  - VE against A(H3N2) strain: \textbf{29.3\%} (95\% CI: 8.6–45.3)
  - VE against B strain: \textbf{46.3\%} (95\% CI: 13.9–66.5)
- For those aged under 18 years receiving \textbf{QLAIV}
  - VE against A(H3N2) strain: \textbf{35.0\%} (95\% CI: –29.9–67.5)
  - VE against B strain: \textbf{100\%} (95\% CI: 17.0–100.0)

“Although the VE against influenza A(H3N2) infection was low, there was still evidence of significant protection, together with moderate, significant protection against drifted circulating influenza B viruses. \textbf{LAIV provided non-significant positive protection against influenza A, with significant protection against B.}”

CI, confidence interval; LAIV, live attenuated influenza vaccine; QLAIV, quadrivalent live attenuated influenza vaccine; VE, vaccine effectiveness.

\textsuperscript{1}Pebody RG, et al. \textit{Euro Surveill.} 2015; 20(36):pii=30013
Summary

- Children are recognised as playing a key role in the transmission of influenza virus
  - Targeting children with influenza vaccine reduces the number of cases in children directly and offers herd protection to others
- LAIV chosen by the UK JCVI for children as a more effective vaccine than the inactivated influenza vaccines
- The programme has had a significant impact by reducing GP consultations, emergency room visits, and hospitalisations
- Over the coming years, the programme will be extended to children of older age groups

JCVI, Joint Committee on Vaccinations and Immunisations; LAIV, live attenuated influenza vaccine
Any questions?
Back-up slides if specifically asked about contraindications, asthma, shedding and transmission, Egg allergy or porcine gelatine for the influenza program vaccine.
Contraindications and precautions\(^1,2\)

- **Age less than 2 years and 18 years & over**
- **Pregnancy & Lactation**
- **Hypersensitivity** to the active substances, to any of the excipients, to gentamicin, to eggs or to egg proteins, or previous dose of this vaccine
- Children and adolescents who are **clinically immunodeficient** due to conditions or immunosuppressive therapy. Examples: acute & chronic leukaemias; lymphoma; HIV infection not receiving stable antiretroviral therapy (*OK if they do – consult treating Physician*); cellular immune deficiencies; high doses of corticosteroids [prednisolone (or its equivalent), orally or rectally, at a daily dose of 2mg/kg/day for at least one week, or 1mg/kg/day for one month] [DoH\(^2\): Prednisolone ≥20mg per day or children <20kg => ≥1mg/Kg body weight, taken for ≥1 month]

  Not contraindicated if: receiving topical steroids, low dose systemic steroids, or as a replacement therapy, e.g. for adrenal insufficiency
- Receiving salicylate therapy (aspirin) – association with Reye’s syndrome with salicylates & wild-type influenza infection
- Within 48h following cessation of use of influenza antiviral agents
- LAIV effectiveness may be ↓ if influenza antiviral agents used within 2/52

1. Fluenz Tetra SmPC.section 4.3 and 4.4.
Severe asthma, recommendations UK influenza vaccination program

• *Influenza: The Green Book:*
  
  QLAIV is not recommended for children with:
  
  • who are currently taking or have been prescribed oral steroids in the last 14 days
  
  • who are currently taking a high dose inhaled steroid – Budesonide >800 mcg/day or equivalent* (e.g. Fluticasone >500 mcgs/day)
    ➔ other than on the advice of a specialist

Defer vaccination if:

• Active wheezing at the time of vaccination or previous 72 h (until at least 72 hours after wheezing has stopped)

• Increased use of bronchodilators in the previous 72 h
  ➔ use TIV if still a problem after waiting for 72h

Shedding and transmission

• QLAIV: potential for transmission

• 1 to 2 weeks following vaccination
(vaccine virus recovery peak incidence: 2 to 3 days post vaccination)

• Most at risk: the severely immunocompromised
  e.g. bone marrow transplant patients requiring isolation
  ➔ close contacts (such as household members)
  should receive an inactivated influenza vaccine

Egg Allergy - JCVI 4 February 2015

• QLAIV Ovalbumin content: ≤ 0.12 mcgs/ml

• QLAIV can be safely administered to children with an egg allergy

EXCEPT:
  – past severe anaphylaxis to egg requiring intensive care (refer to a Specialist)
Egg allergy

The SNIFPLE study

- Prospective, multicentre, open-label, phase IV intervention study involving 11 secondary/tertiary centres in the UK
- LAIV administered to 282 children with egg allergy*
  - 67% had a diagnosis of asthma/recurrent wheezing

Key findings

- No systemic allergic reactions (upper 95% CI for population, 1.3%).
- Mild self-limiting symptoms, which might have been due an IgE-mediated allergic reaction, were reported by 8 (0.3%) children
- LAIV appears to be safe for use in children with egg allergy
- LAIV was well tolerated in children with a diagnosis of asthma or recurrent wheeze

*Defined as positive food challenge result to egg within the last 12 months performed under medical supervision.

Concerns about porcine gelatine

“With all this concern about porcine gelatine in the nasal flu vaccine, does it actually contain any DNA from pigs?”

- No, as shown by very sensitive scientific tests
- The gelatine is so degraded that the original source cannot be identified
- Broad acceptance from faith groups for the use of porcine gelatine in non-oral medicines
  - There is still some uncertainty amongst some groups
  - Vaccine not compulsory – cannot request an alternative vaccine (except at-risk groups)