Effectiveness of LAIV in children in the UK

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On behalf of UK Flu VE network

WHO LAIV meeting, September 2016
Roll-out of Childhood Live Attenuated Influenza Vaccination (LAIV) Programme

UK

- 2-3 year olds
- 2-4 year olds
- 2-4 year olds and year 1 & 2

Pilots (England)

- 4-11 year olds
- 5-11 year olds and year 7 & 8
- 4-11 year olds

- 2013-14 season
- Recommended a single dose of LAIV intranasal
- Selected geographical pilot areas
- Offered through GPs and schools
- 2014-15 season
- Selected geographical pilot areas
- Delivered through GPs and schools
- 2015-16 season
- Selected geographical pilot areas
- Delivered through schools, GPs and/or pharmacies

- To offer vaccination to all healthy children 2-16 years old

Ultimate objectives
Uptake in school-age LAIV pilot areas in 13/14, 14/15 and 15/16

<table>
<thead>
<tr>
<th>Year</th>
<th>Uptake</th>
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<tbody>
<tr>
<td>13/14</td>
<td>56%</td>
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<tr>
<td>14/15</td>
<td>53.2%</td>
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<tr>
<td>15/16</td>
<td>57.9%</td>
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Blue – primary only pilot area; Green – secondary pilot only area; Red – primary & secondary area
2013/14: low intensity activity dominated by A/H1N1pdm09

2014/15: moderate intensity dominated by drifted A/H3N2 & B

2015/16: moderate intensity dominated by A/H1N1pdm09 (mainly 6B1) & B
Annual estimation of flu VE in the UK

**Network:** ~200 GP practices across 5 sentinel networks in England, Scotland, Wales and Northern Ireland

**Study population:** patients consulting in primary care with an acute influenza-like illness consented to be swabbed

**Dates:** October – April each influenza season

**Design:** Test negative design

- compare odds of vaccination in RT-PCR confirmed influenza cases and RT-PCR negative controls

**Vaccination status:** at least one dose of influenza vaccine 14 or more days after onset of respiratory illness. Information collected on route of administration (injected, intranasal)

**End of season analysis:** including age-specific analysis in 2-17 year olds
Adjusted VE estimates by type of vaccine in 2-17 year olds, UK, October 2015–May 2016

*Adjusted for age-group, month of sample, pilot area, surveillance scheme
Pooled VE estimates by type of vaccine in 2-17 yr olds, 13/14 to 15/16

* Adjusted for age-group, month of sample, pilot area, surveillance scheme

Eurosurv – 2016
Methods – to measure overall and indirect impact

Compared disease incidence in targeted and non-targeted age-groups in pilot and non-pilot control areas for range of endpoints (GP consultations, hospitalisations etc)

Recruited additional swabbing GP practices, emergency departments and hospitals in pilot areas;

Calculated cumulative incidence and positivity rates in pilot and control areas based upon place of residence/catchment population
Ratios* and 95% CI for cumulative influenza indicator activity in LAIV pilot vs non-pilot areas, 2013/14

*Risk ratios calculated for rates with negative binomial regression. Odds ratios calculated for proportions with logistic regression, correcting for overdispersion.
Impact of vaccinating primary and/or secondary school age children on range of primary care indicators, 14-15

*Risk ratios calculated for rates with negative binomial regression. Odds ratios calculated for proportions with logistic regression, correcting for overdispersion.

Red – primary pilot area; Green – secondary pilot only area Blue – control area

Pebody Eurosurveillance 2015
School-age LAIV programme in 2015/16, uptake in countries of UK

**England**: 5 non-randomly selected pilot sites where 7-11 year olds offered vaccine;

**Wales**: no additional primary school age cohorts offered vaccine;

**Scotland and Northern Ireland**: all children of primary school age offered vaccine
Peak GP consultation rates in 2015/16 by UK country

Scotland

Northern Ireland

England

Wales
Weekly ILI consultation rates across UK countries, 2015-16
Key findings

United Kingdom now starting fourth season of roll-out of paediatric LAIV programme

Uptake of LAIV programme in roll-out of ~40-50% in England; higher in Scotland and Northern Ireland;

Evidence of overall significant LAIV VE – unlike in USA;
- In 15/16, LAIV VE was good against flu B; lower against A/H1N1pdm09 compared to IIV – a similar picture to Canada and Finland; also protection vs drifted A/H3N2 strain

Evidence of impact (indirect & overall) of primary-school age vaccination with these levels of uptake and effectiveness:
- Consistent, decreases in disease incidence and influenza positivity in primary school age pilot vs control areas in targeted and non-targeted groups and by country;
- Less clear impact for more severe end-points

JCVI reviewed the programme in light of US observations – and strongly endorsed preferential use of LAIV in childhood programme with extension to 7 yr olds in 16/17

Also recommended on-going enhanced surveillance and further studies to better understand US findings and implications for UK LAIV programme
UK Flu VE team

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