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Bristol Childrens Vaccine Centre



Universal Immunisation against Influenza - the pros

Adam Finn
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St Malo 22nd June 2017



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Interests statement

- Chair, WHO Euro TAG - ex officio WHO SAGE
- Member UK DoH JCVI & subcommittees (Pneumo, HPV, Varicella)
- Research projects funded by Pfizer & GSK
- Current vaccine-related consultancy funded by industry concern HepB and pertussis vaccines - income is paid to employers
- No other benefits (travel, hotels, registration etc.) from industry
- No pharma shares or IP

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Flu - why the fuss?

- Significant annual epidemics with morbidity and resources usage especially in the young and the elderly and mortality in the elderly



Risk of global pandemics and related Armageddon scenarios

See @cambridgeWG

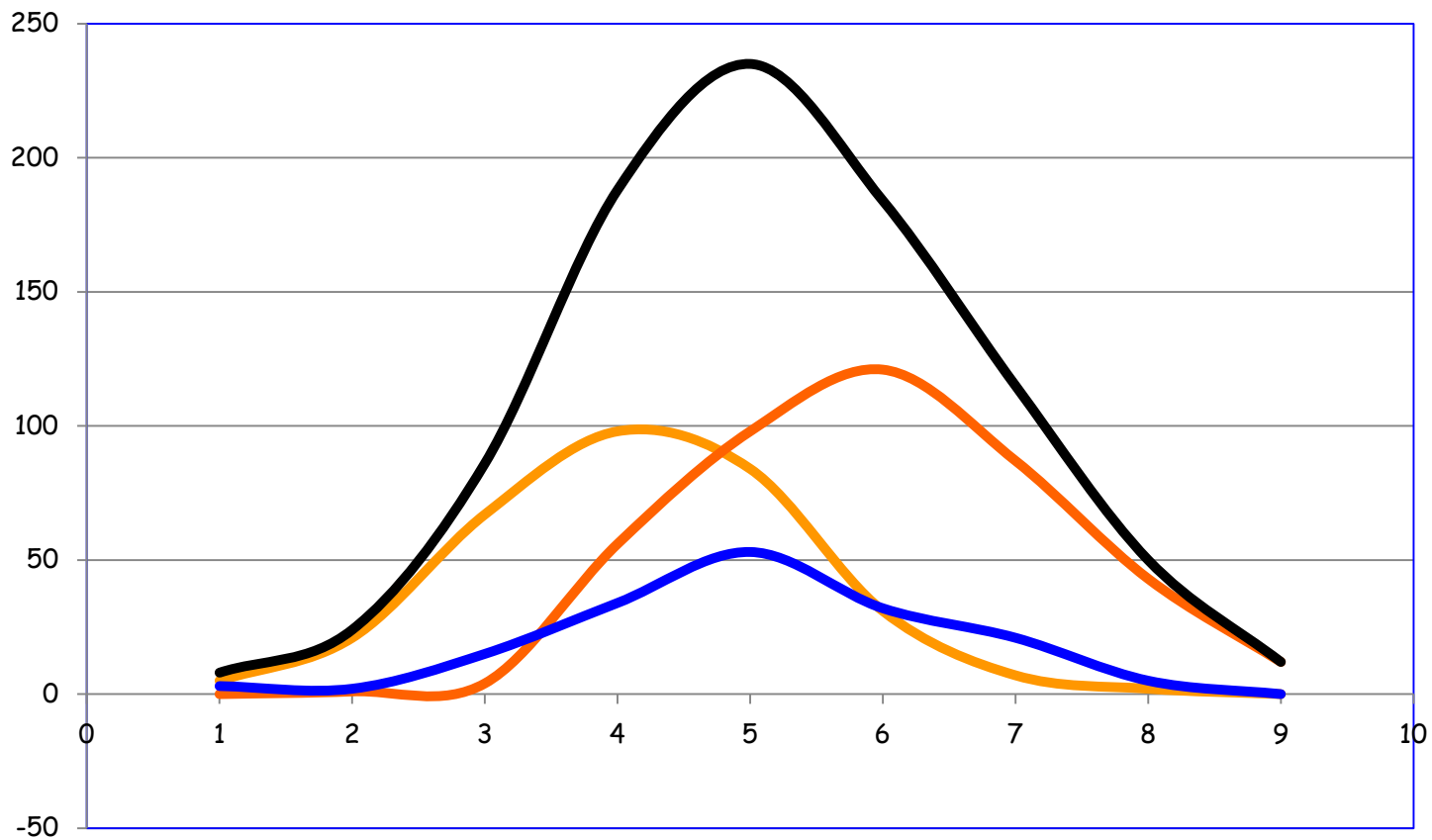
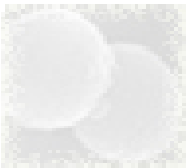
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Peak times..



- RSV
- Rota
- Flu
- All 3

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Old idea - direct protection



- Immunise the elderly
- Immunise high risk groups, including pregnant women
- Stop them getting sick and dying



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Europe - universal flu Recommendations for kids

- Austria - IIV - 7m to 15y RbnF
- Finland 6m-3y - IIV & LAIV **funded**
- Latvia IIV 6m-2y **funded**
- Malta - IIV 6m-5y RbnF
- Poland IIV 13m-19y RbnF
- Slovakia IIV 6m-12y **funded**
- Slovenia IIV 6m-2y RbnF
- UK 2y-7y LAIV **funded**
- LAIV in Germany Sweden Norway

<http://vaccine-schedule.ecdc.europa.eu/Pages/Scheduler.aspx>

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New idea - indirect protection

- Immunise children universally
- Block transmission of flu
- Protect not only those at high risk but also much larger low risk group...



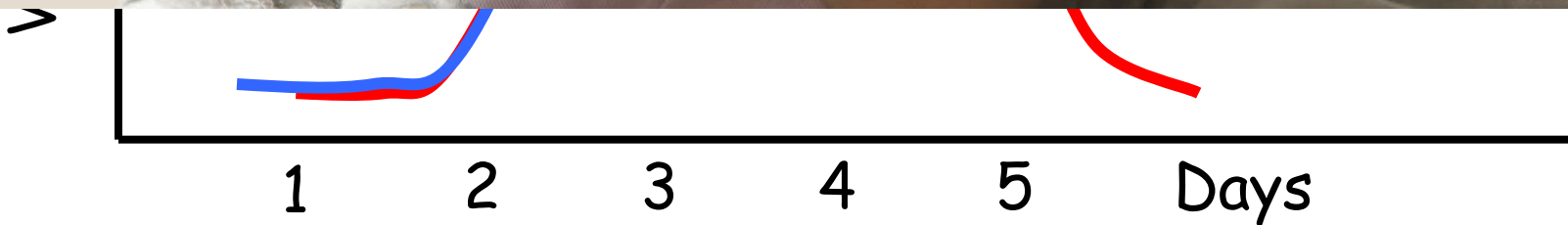
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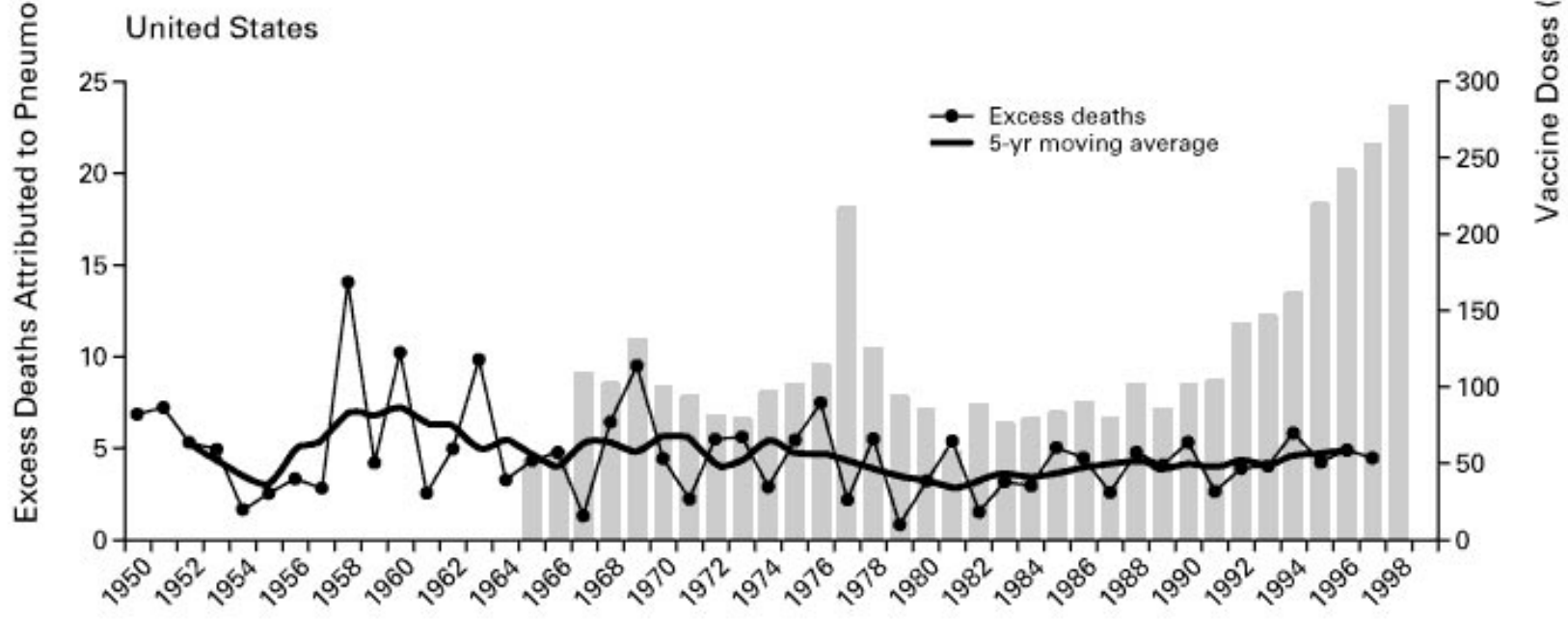
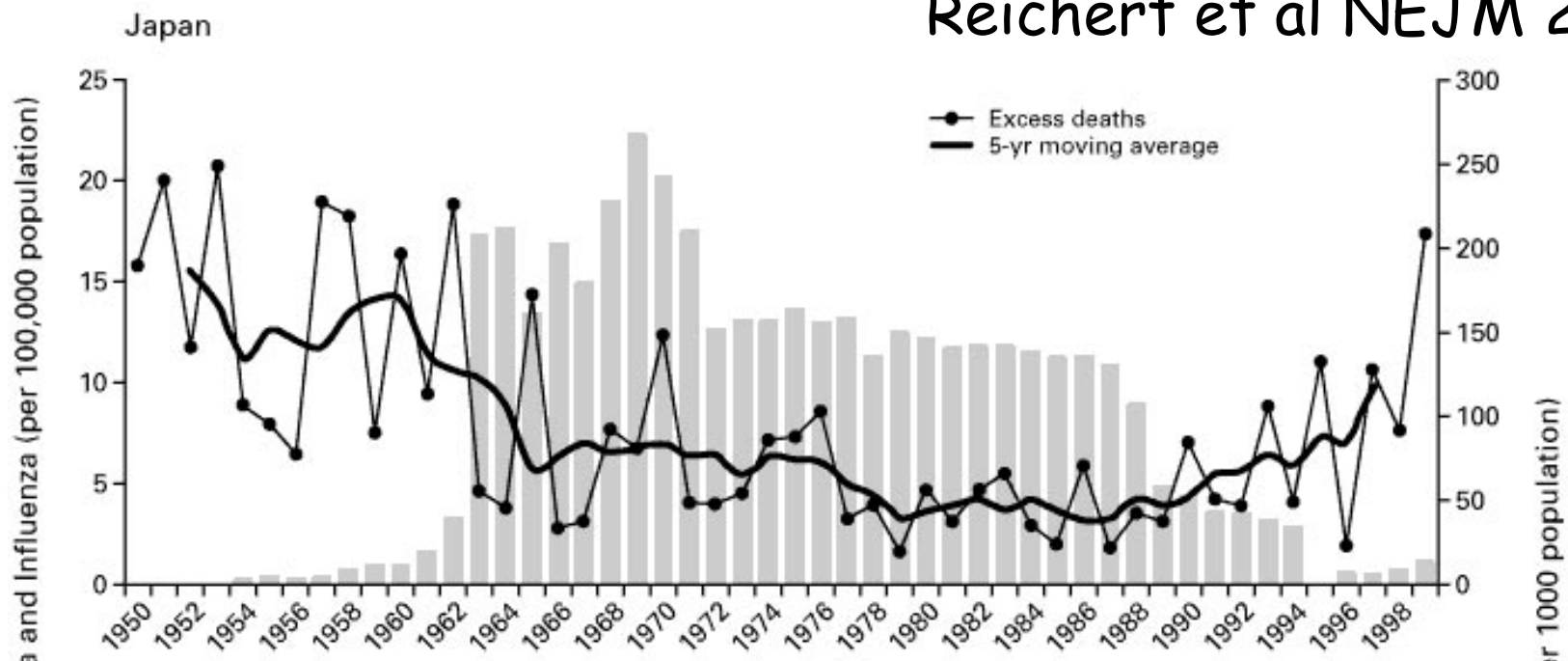
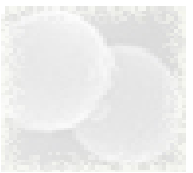
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Infectiousness



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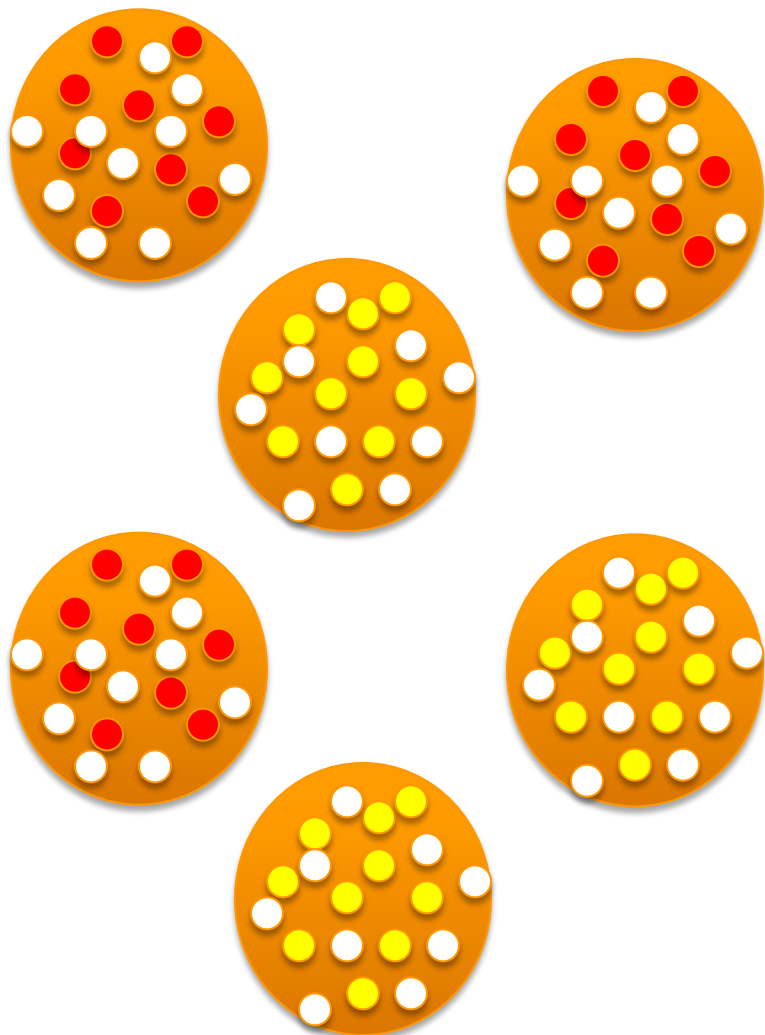
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Cluster randomised study



- ★ Isolated Hutterite communities in Canada
- ★ 950 children aged 3-15y in 50 communities
- ★ Randomised to TIV or HepA vaccines
- ★ 2300 unimmunised people studied for flu
- ★ 3.1% of unimmunised people in immunised communities got PCR+ flu vs 7.6% in unimmunised communities (61% effective)

Loeb et al 2010 JAMA

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"New" vaccine - LAIV



- Nasal spray - high acceptability
- Efficacious in young children (but only licensed for >2y)

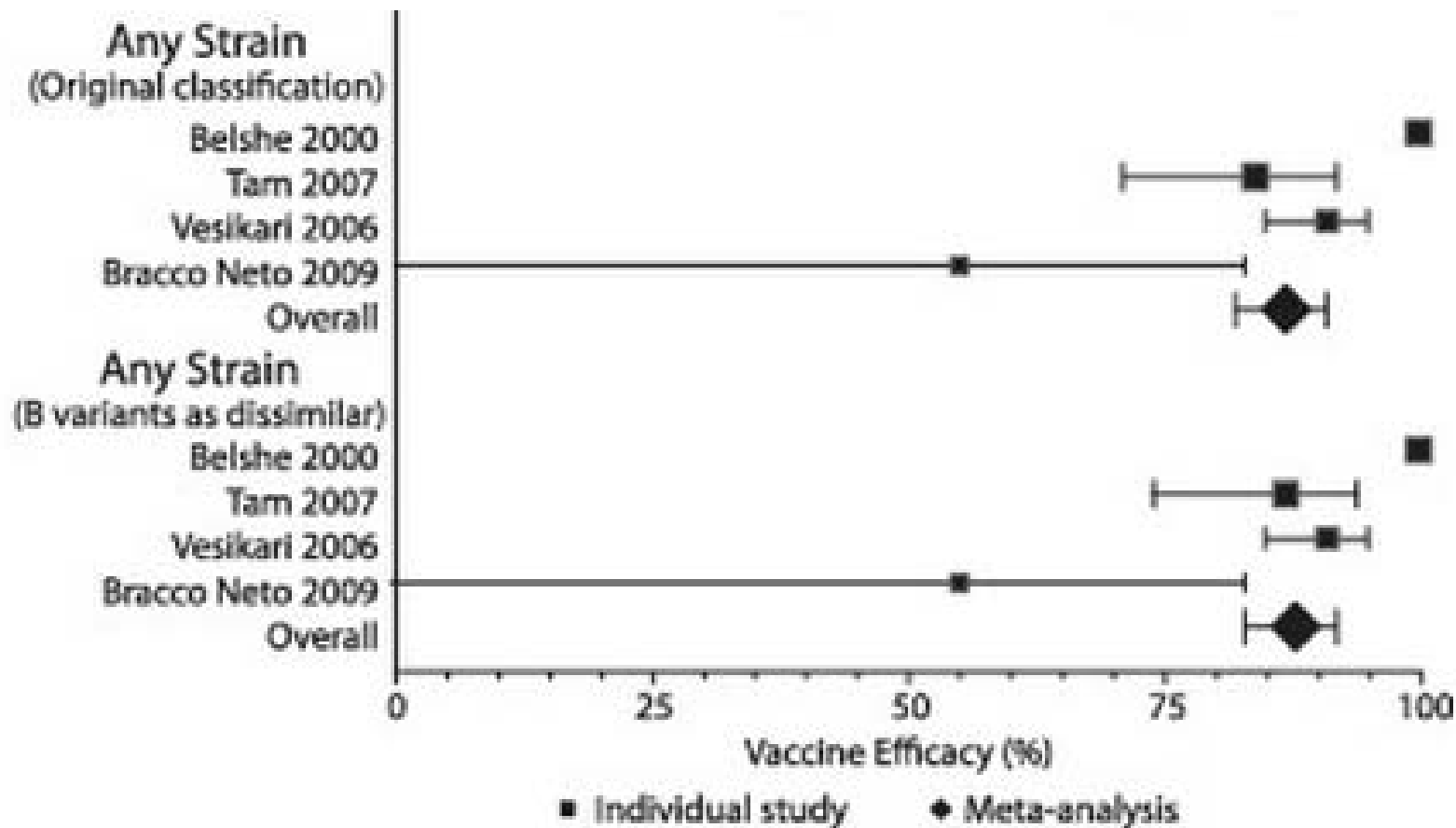
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Efficacy of LAIV Relative to Placebo



Ambrose et al., *Vaccine*, 30:886-892, 2012.



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UK - universal LAIV

- 2013-14 Introduced for 2 year olds - changed to 2-3 year olds (1 dose each). Primary school children (5-10 yo in pilot areas)
- 2014-15 2-4 year olds 1 dose. More pilots including secondary schools (11+)
- 2015-16 2-7 year olds.
- 2016-17 2-7 year olds.
- 2017-18 2-7 year olds.






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2015-16 results (H1N1 & B year)



	Crude vaccine efficacy (VE) (95% CI)	VE adjusted for age, sex, month, area and surveillance scheme
Influenza A (H1N1)	54.1 (43 - 63.1)	54.5 (41.6 - 64.5)
Influenza B	62.4 (47.7 - 73)	54.2 (33.1 - 68.6)

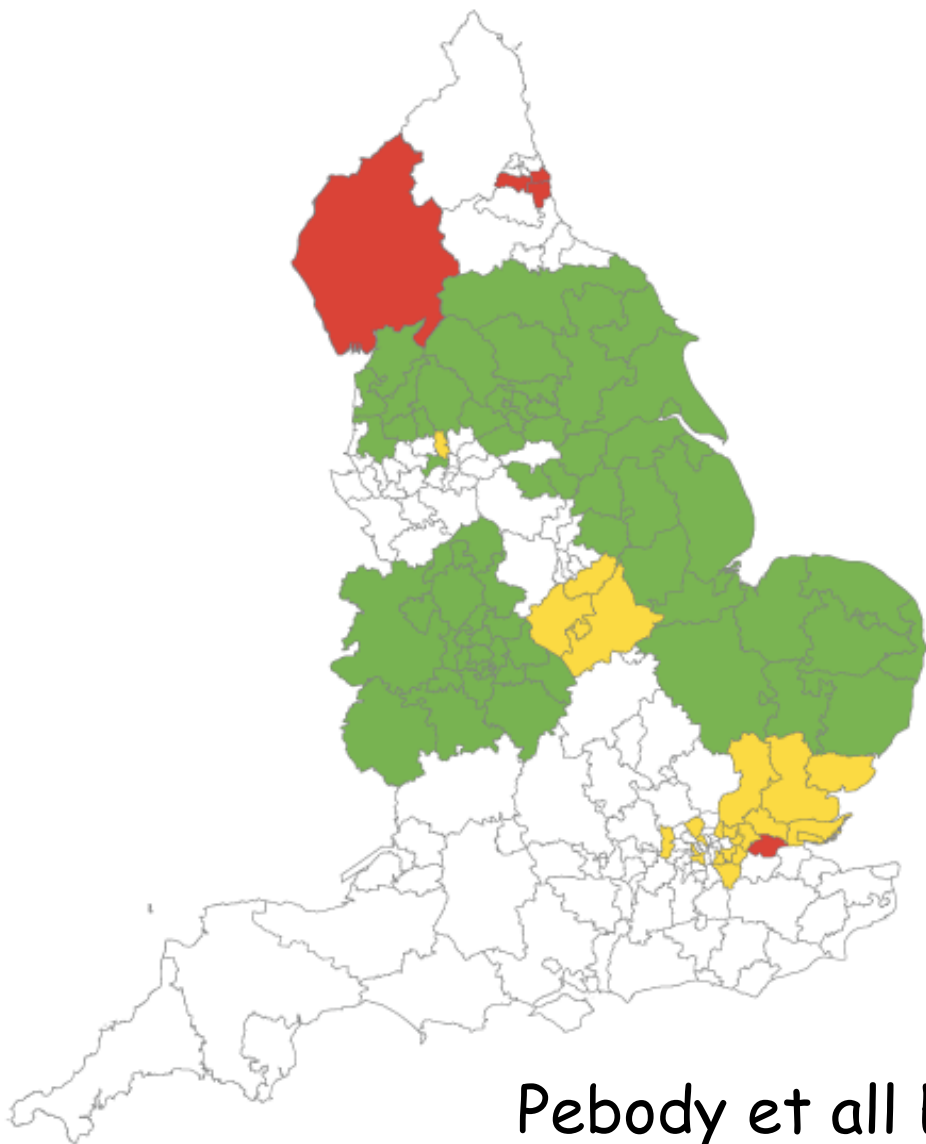
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School pilot schemes 2014-15 England



- 2014-15 (year 2)
- Large seasonal epidemic
- Mostly H3N2 then B
- Both significantly drifted from vaccine strains

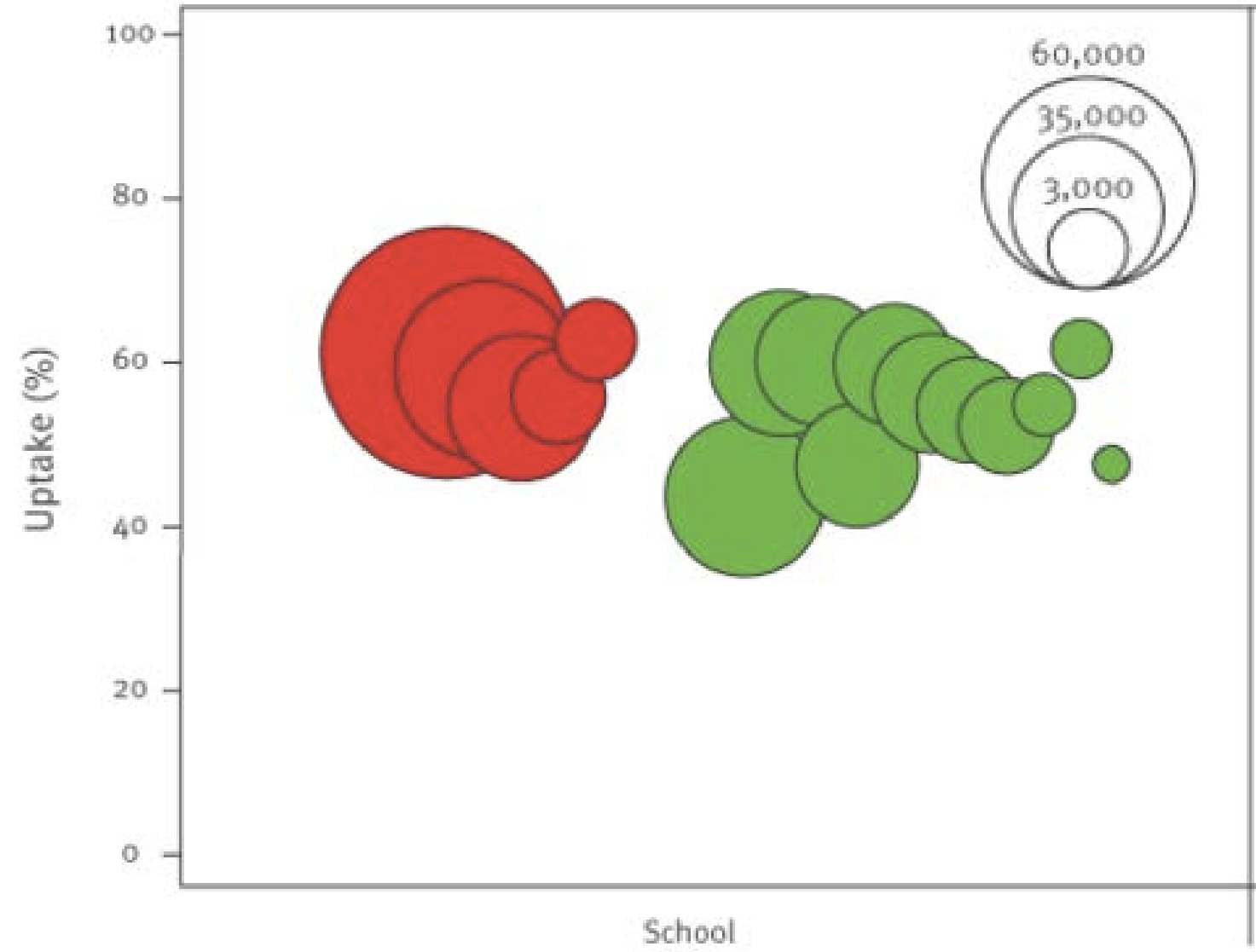
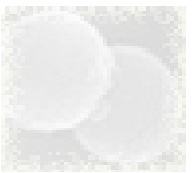
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Coverage in schools



Pebody et al. Eurosurveillance Oct 2015

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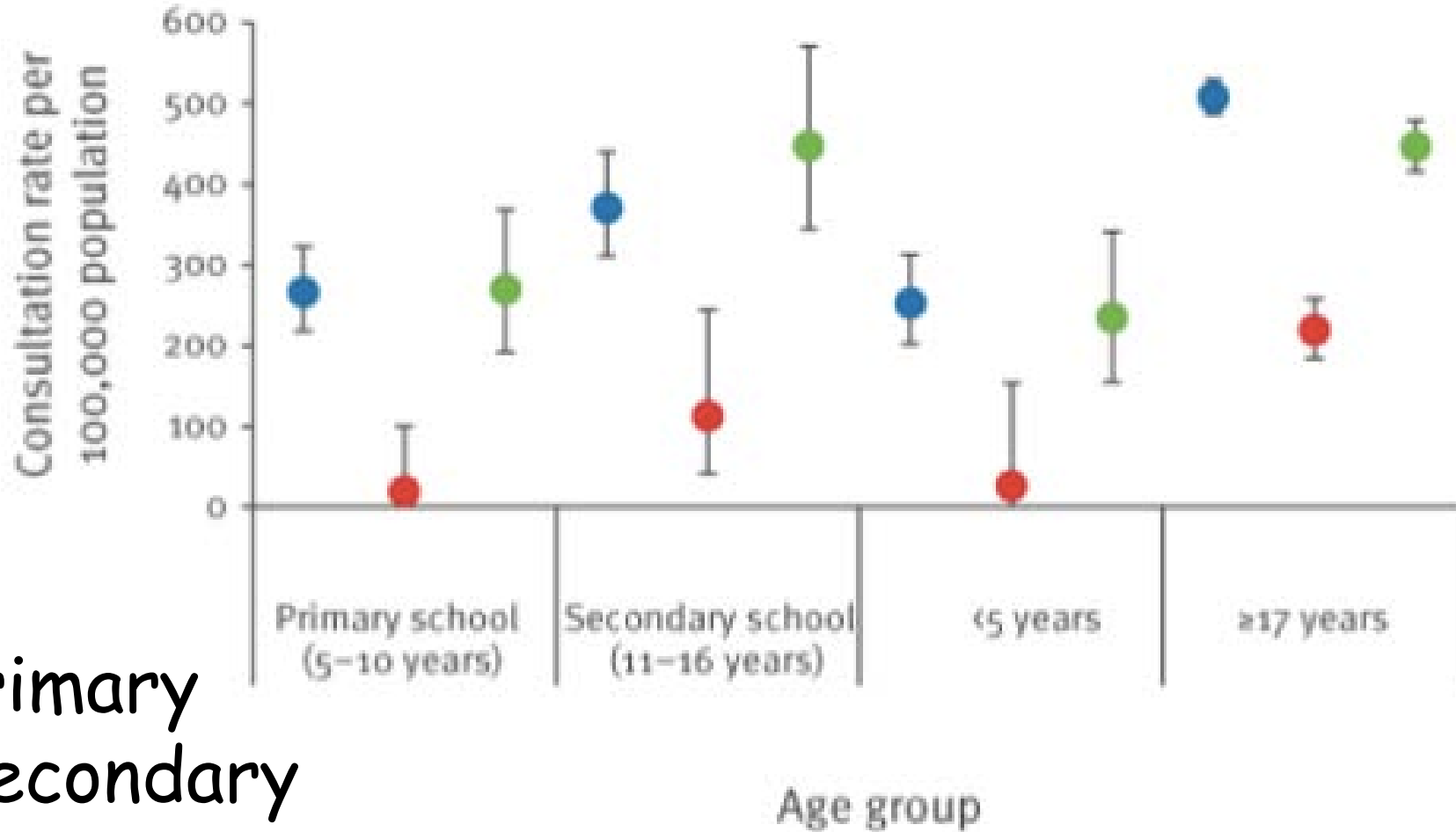
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GP diagnosed ILI

RCGP ILI



- Primary
- Secondary
- None

Pebody et al. Eurosurveillance Oct 2015

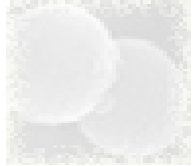
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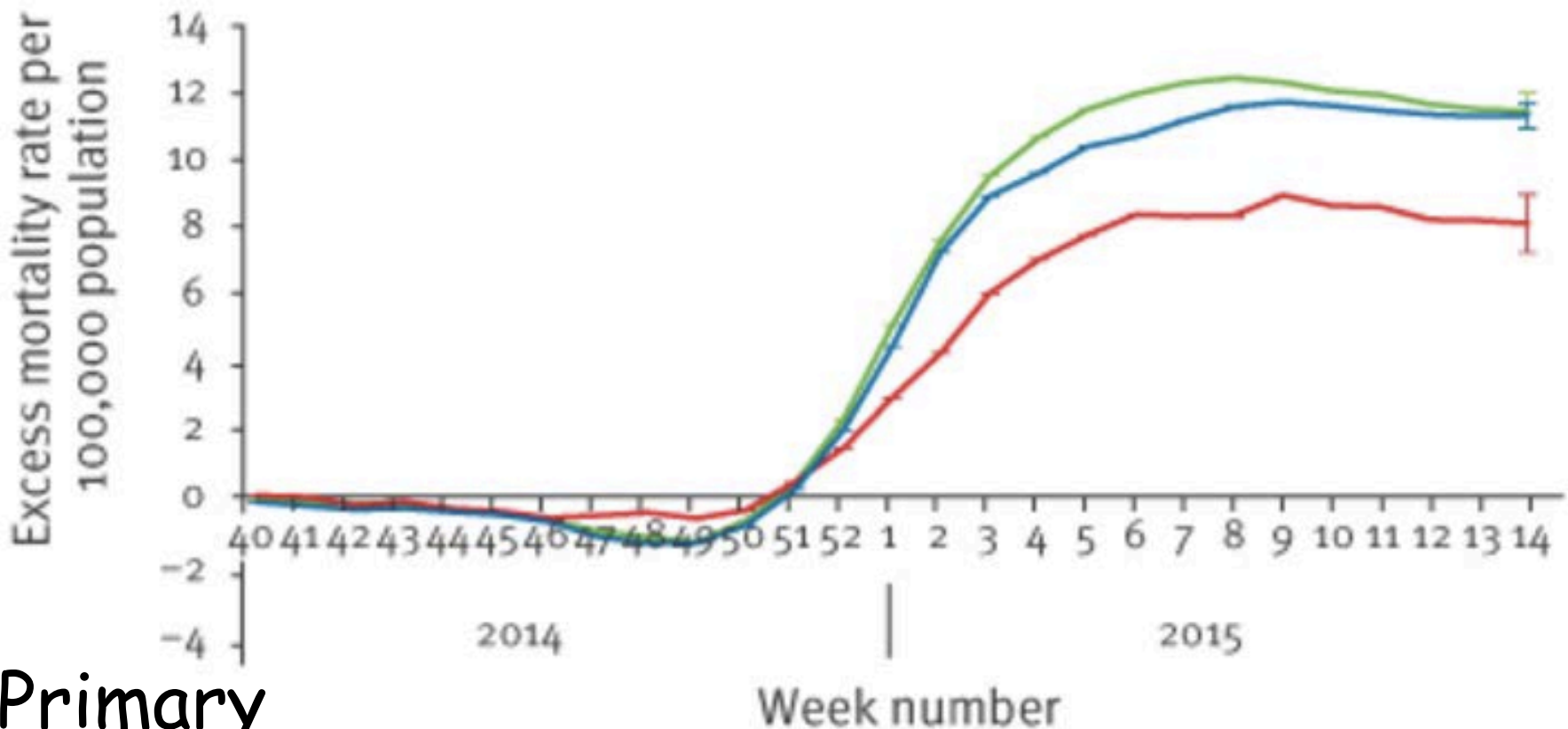
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Excess respiratory mortality



Respiratory

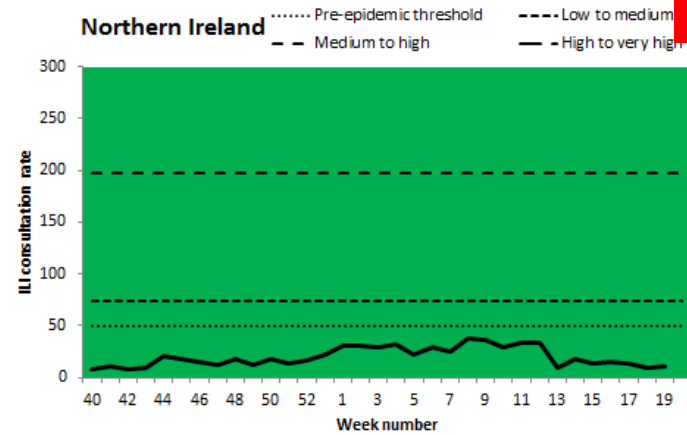
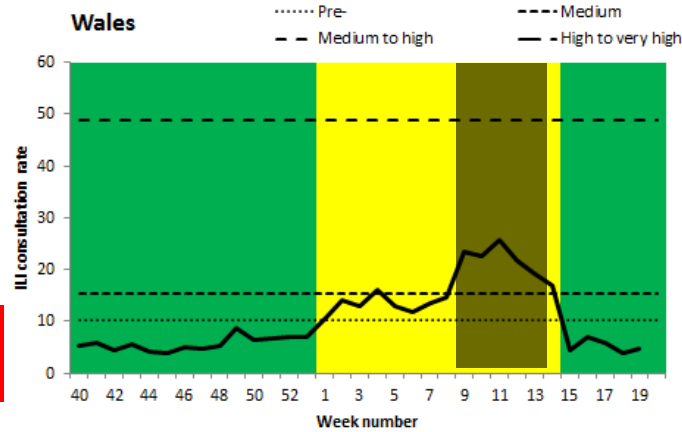
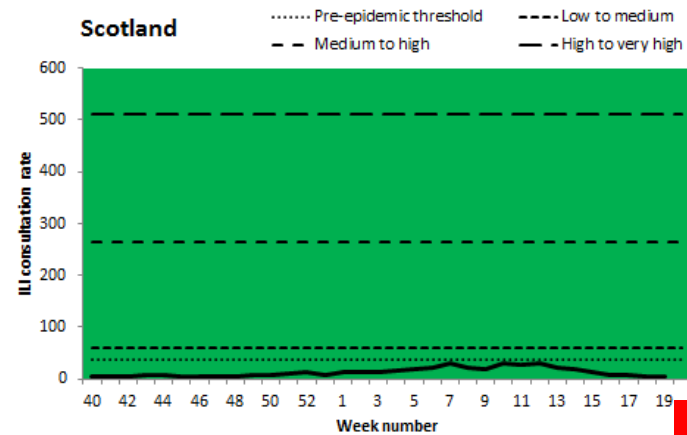
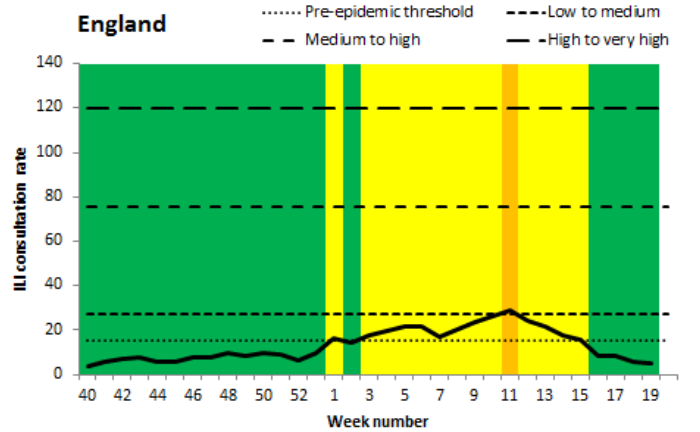


-  Primary
-  Secondary
-  None

Pebody et al Eurosurveillance Oct 2015

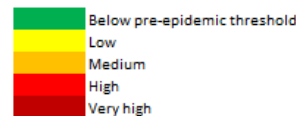
Weekly ILI consultation rates across UK countries, 2015-16

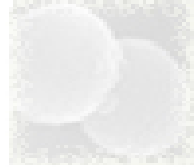
7+ pilot areas only



All 7-11

No 7+



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Disease	Transmission	R ₀
Measles	Airborne	12–18
Diphtheria	Saliva	6–7
Smallpox	Airborne droplet	5–7
Polio	Fecal-oral route	5–7
Rubella	Airborne droplet	5–7
Mumps	Airborne droplet	4–7
HIV/AIDS	Sexual contact	2–5
Pertussis	Airborne droplet	5.5 ^[2]
SARS	Airborne droplet	2–5 ^[3]
Influenza (1918 pandemic strain)	Airborne droplet	2–3 ^[4]
Ebola (2014 Ebola outbreak)	Bodily fluids	1.5-2.5 ^[5]

H1N1 now
1.4

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NHS

5 reasons to vaccinate your child against flu

- There's now a safe and effective nasal spray vaccine to protect children aged two years and older against flu
- The vaccine is easy to give and painless and has been used safely in other countries for a number of years
- Flu can be a nasty illness that can lead to a stay in hospital, especially for children with other medical conditions like heart disease and diabetes
- If your child gets flu they won't be able to go to school/nursery for several days and will need to be cared for at home. You may have to take time off to look after them
- Protecting your child can stop the flu spreading to other children he/she may come into contact with, and to the rest of the family, in particular to grandparents, who may be at particular risk from flu.

What should I do?

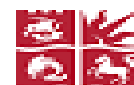
If your child is two, three or four years of age, your GP will contact you to arrange a vaccination appointment. If you haven't heard by the middle of October contact your surgery to request an appointment.

For more information visit: www.nhs.uk/child-flu



Flu **i**mmunisation 2014/15

Helping to protect everyone, every winter



University of
BRISTOL