



Seasonal Influenza 2010-2011?

An interim Risk Assessment for Europe

**HPA – WHO Regional Office for Europe – ECDC
Teleconference Jan 26th 2011**

http://www.ecdc.europa.eu/en/publications/Publications/110125_RA_Seasonal_Influenza_EU-EEA_2010-2011.pdf



Declaration of Interest Statements

**We have no relevant commercial
interests**



Why do a risk assessment?

**Flu has the capacity to surprise
Especially after a pandemic**

Flu has the Capacity to Surprise

- 2005-6 Avian Flu A(H5N1)
- 2006-7 A 'normal' year
- 2007-8 Oseltamivir resistance
- 2008-9 A bad A(H3N2) winter
- 2009-10 The pandemic season
- 2010-2011 The 'new' seasonal flu dominated by A(H1N1) 2009



So what has happened?



What has happened?

All Europe

A(H1N1) + B viruses predominating

Accelerating transmission

West to East spread

UK

- The impact was first on higher level (intensive) care services. They coped - but pressures were well above the pandemic peak. In the UK $1.4/10^5$ prevalent cases, in Ireland $1.1/10^5$
- Community consultations rose above pandemic levels
- Young adults (under 65 years) dying - mostly in clinical risk group but also some healthy individuals (20%)
- Increase in two invasive bacterial infections and all cause all age mortality – again not seen in the pandemic

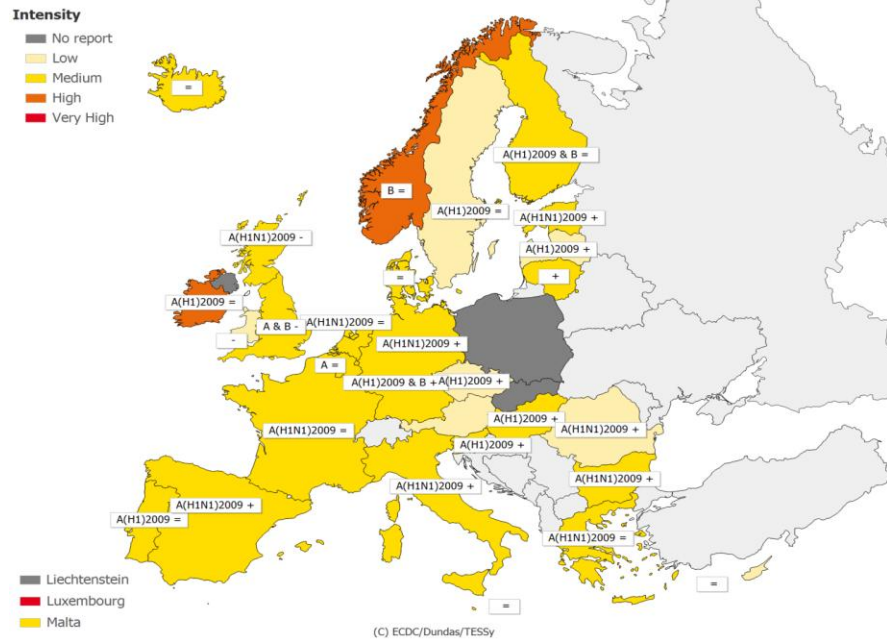
Swine flu: hospitals 'gridlocked'

The NHS is in “gridlock”, with hospitals across the country being forced to declare that they have reached the highest level of emergency because of flu and other winter viruses.



<http://www.telegraph.co.uk/health/swine-flu/8262215/Swine-flu-hospitals-gridlocked.html>

Influenza Intensity Week 02 2011 from WISO or Euroflu – updates at [EU / EEA Influenza Activity Maps](#)



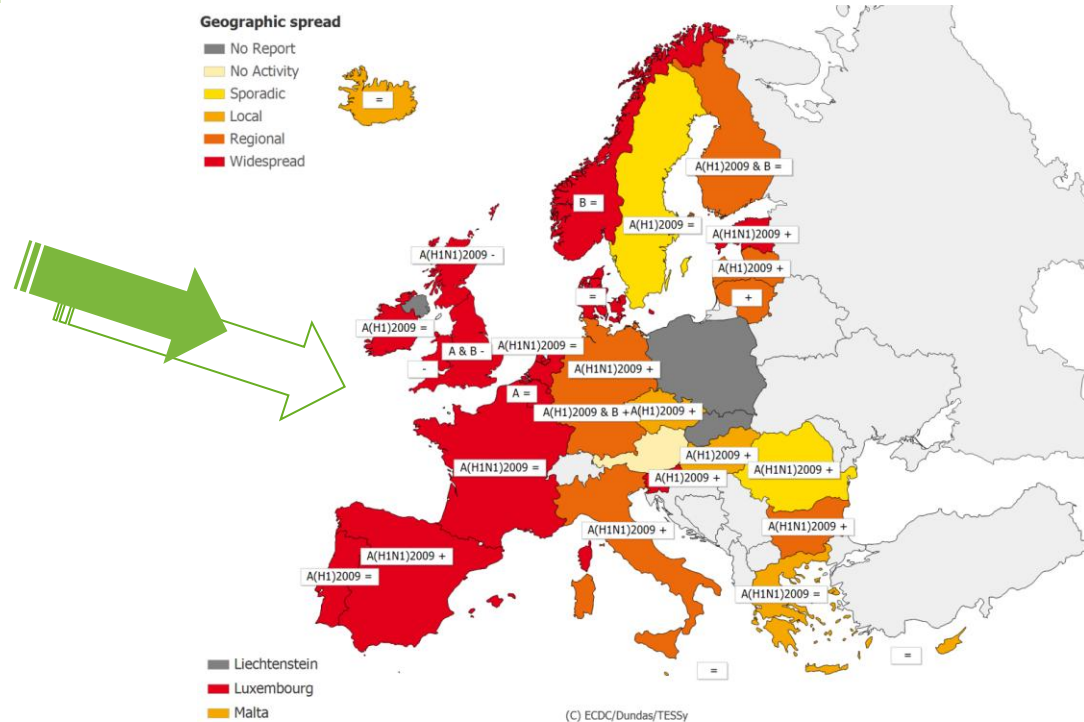
* A type/subtype is reported as dominant when > 40 % of all samples are positive for the type/subtype.

Legend:

Low	No influenza activity or influenza at baseline levels	-	Decreasing clinical activity
Medium	Usual levels of influenza activity	+	Increasing clinical activity
High	Higher than usual levels of influenza activity	=	Stable clinical activity
Very high	Particularly severe levels of influenza activity	A	Type A
		A & B	Type A and B
		A(H1)2009	Type A, Subtype (H1)2009
		A(H1)2009 & B	Type B and Type A, Subtype (H1)2009
		A(H1N1)2009	Type A, Subtype (H1N1)2009
		B	Type B

Influenza Geographic Spread Week 02 2011 from WISO or Euroflu – updates at [EU / EEA Influenza](#)

Activity Maps



* A type/subtype is reported as dominant when at least ten samples have been detected as influenza positive in the country and of those > 40 % are positive for the type/subtype.

Legend:

No activity	No evidence of influenza virus activity (clinical activity remains at baseline levels)	-	Decreasing clinical activity
Sporadic	Isolated cases of laboratory confirmed influenza infection	+	Increasing clinical activity
Local outbreak	Increased influenza activity in local areas (e.g. a city) within a region, or outbreaks in two or more institutions (e.g. schools) within a region (laboratory confirmed)	=	Stable clinical activity
Regional activity	Influenza activity above baseline levels in one or more regions with a population comprising less than 50% of the country's total population (laboratory confirmed)	A	Type A
Widespread	Influenza activity above baseline levels in one or more regions with a population comprising 50% or more of the country's population (laboratory confirmed)	A & B	Type A and B
		A(H1)2009	Type A, Subtype (H1)2009
		A(H1)2009 & B	Type B and Type A, Subtype (H1)2009
		A(H1N1)2009	Type A, Subtype (H1N1)2009
		B	Type B

Main Questions of ECDC's Risk Assessment



- A. What are the main features, risks to human health and likely course of the 2010/2011 influenza season in Europe
- B. How likely is it that the initial experience in the first affected countries will be replicated in other EU/EEA countries in terms of a) the pattern of infection and b) the impact on the health services?
- C. What possible countermeasures and actions do the scientific and public health data and analyses support being taken by authorities?

Answers to Main Questions

- A. What are the main features, risks to human health and likely course of the 2010/2011 influenza season in Europe – *younger patients than normal, some stress on intensive care in particular*
- B. How likely is it that the initial experience in the first affected countries will be replicated in other EU/EEA countries in terms of a) the pattern of infection and b) the impact on the health services? – *it seems the pattern is likely to replicate - but unclear whether the volume will be as high as in the UK*

C: What possible countermeasures and actions do the scientific and public health data and analyses support being taken by authorities?

- Continued vaccination of all those recommended for vaccination following national guidelines but especially clinical risk groups, including pregnant women, especially. Noting there may be vaccine availability, logistical and administrative issues that will make this difficult in some settings.
- Use of antiviral treatment in those presenting with severe influenza-like illness, pending virological confirmation, and in those with risk factors with milder disease.
- Alerting higher level healthcare services of potential increased numbers of influenza patients this winter, potentially already in the next few weeks.
- Advising clinicians to be vigilant to the possibility of severe illness due to bacterial co-infection with influenza, including invasive group A streptococcal, pneumococcal and meningococcal infection, and to be aware of the possibility of such bacterial co-infection in people with flu-like illness.
- Use or creation of clinical networks for surveillance, evaluation and sharing of clinical experience.

More Specific Questions

1. Why have a number of community and hospital indicators of influenza activity risen to levels higher than that seen in the 2009 pandemic despite the same virus (A(H1N1)2009) being seen to be the main driver in both? *Good Question – perfect storm effect? Compression of 6 months into 2 months?*
2. Can changes in the viral mix be anticipated later this season? *Its possible it happened in Australia and Chile with A(H3N2) epidemic following A(H1N1) in 2010*
3. Has there been any change in the virology of the A(H1N1)2009 virus? *Not yet and good matches to vaccine strain*
4. Has there been any emergence of antiviral resistance? *Not yet but needs careful monitoring*
5. What is likely to be the effectiveness of influenza vaccines and antivirals? *High and certainly worth applying*

More Specific Questions

5. Is the observation of increased incidence of two types of invasive bacterial infections in the UK likely to be related to influenza?

Unclear but suggestive

6. Is an observed rise in all-cause/all-age mortality observed in a number of the Western European countries likely to be related to influenza?

Flu will contribute but certainly not be the only 'driver'





Note quite different virology in N. America

Conclusions on this season's influenza



Not like the previous seasonal influenza

A mix of A(H1N1)2009 and B viruses

Severe pathology associated with the influenza A(H1N1) 2009

Clinical risk groups experiencing most of the disease

Some young healthy adults and children also affected

Considerable vulnerability in the community – immunisation gaps

Hence considerable potential health gain from continuing immunisation

Evidence that A(H1N1)2009 containing vaccines work well, and quickly

Antivirals also of value

Worth considering if higher level care services are ready for a surge



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Vulnerabilities

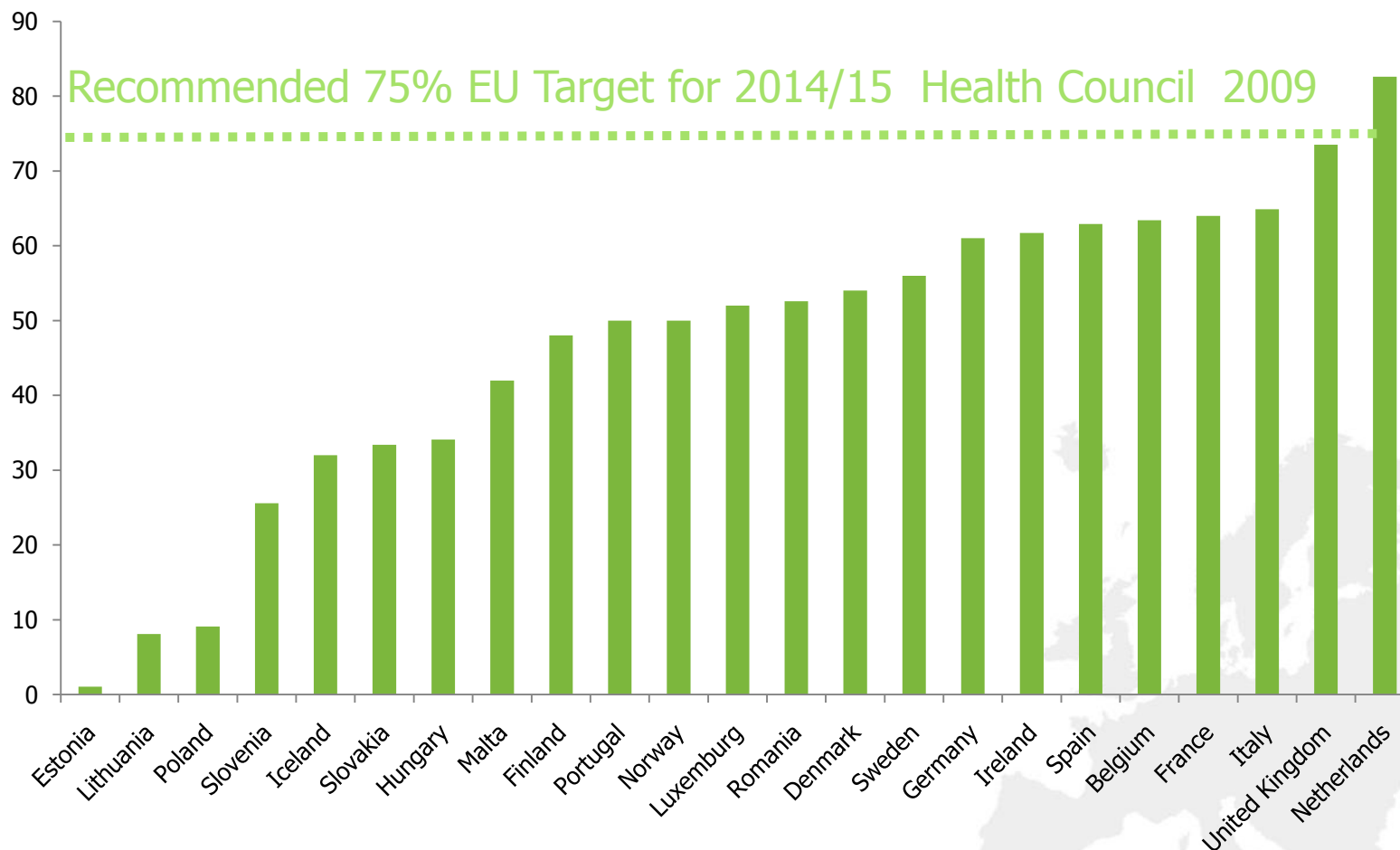
Gaps in Vaccination – Seasonal vaccination



Vaccination coverage for seasonal influenza vaccine in older people (65 years and above) in EU and EEA countries



Latest seasonal available in spring 2009 - For Season 2007/8



Data available in spring 2008. Not available from: Austria, Cyprus, Czech Republic, Greece, Latvia



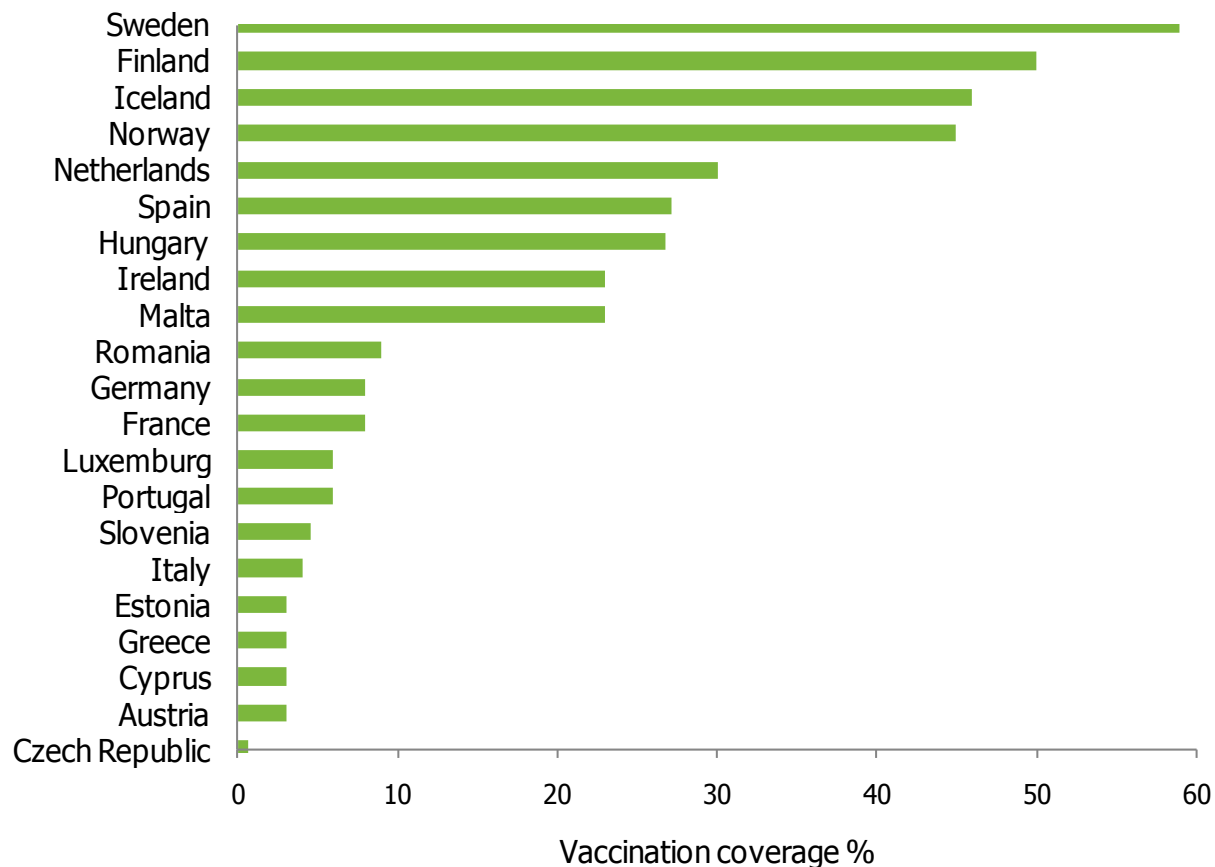
Vulnerabilities

Gaps in Vaccination and protection – Pandemic vaccination

Pandemic vaccination 2009

Population coverage in 21 EU/EEA countries

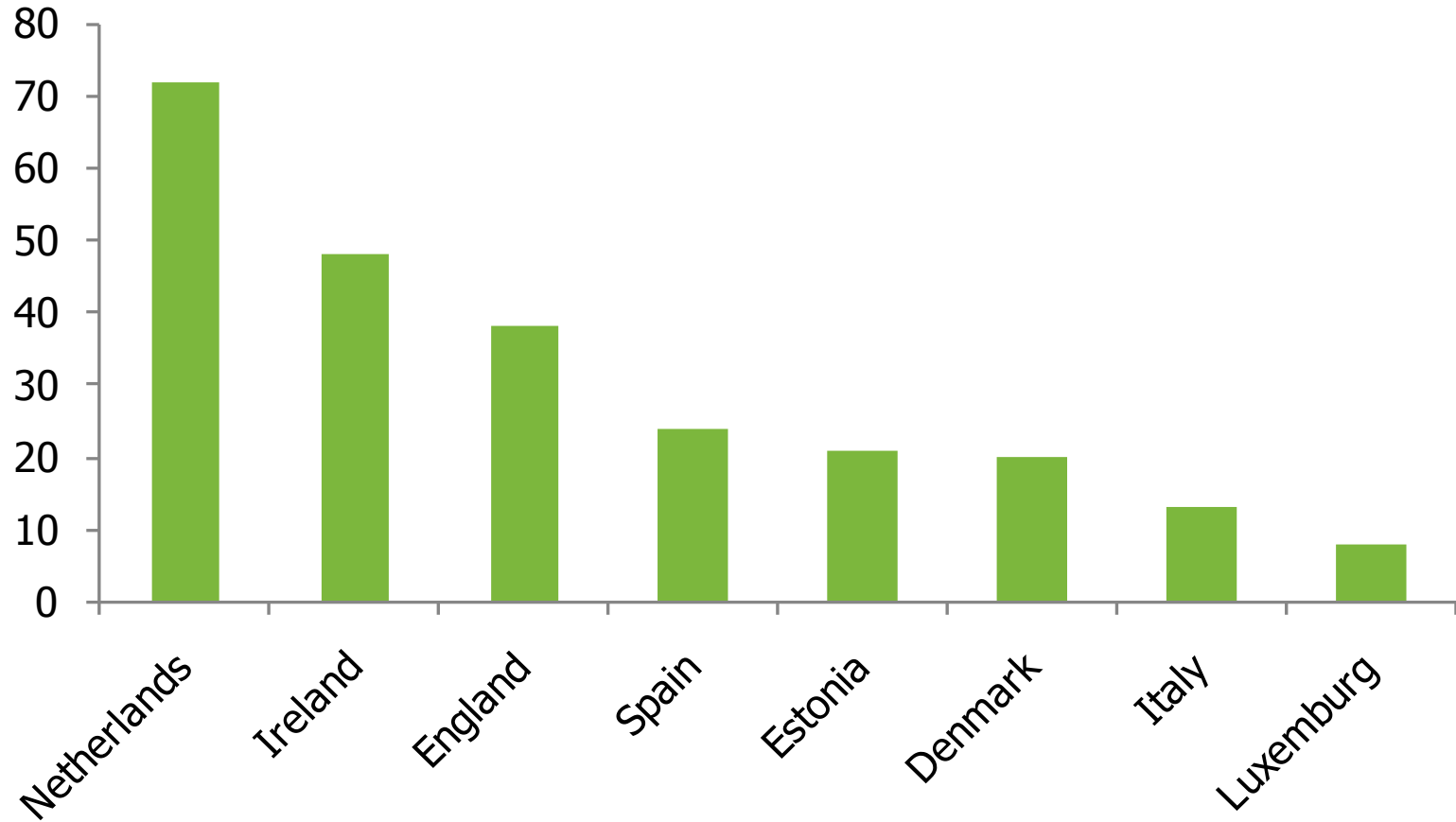
Source: VENICE Survey 2010



Pandemic vaccination 2009

Clinical Risk Group coverage in 8 EU/EEA countries

Source: VENICE Survey 2010





Vaccine effectiveness – A(H1N1)2009

Encouraging Results

High observed vaccine effectiveness

Effectiveness of antivirals

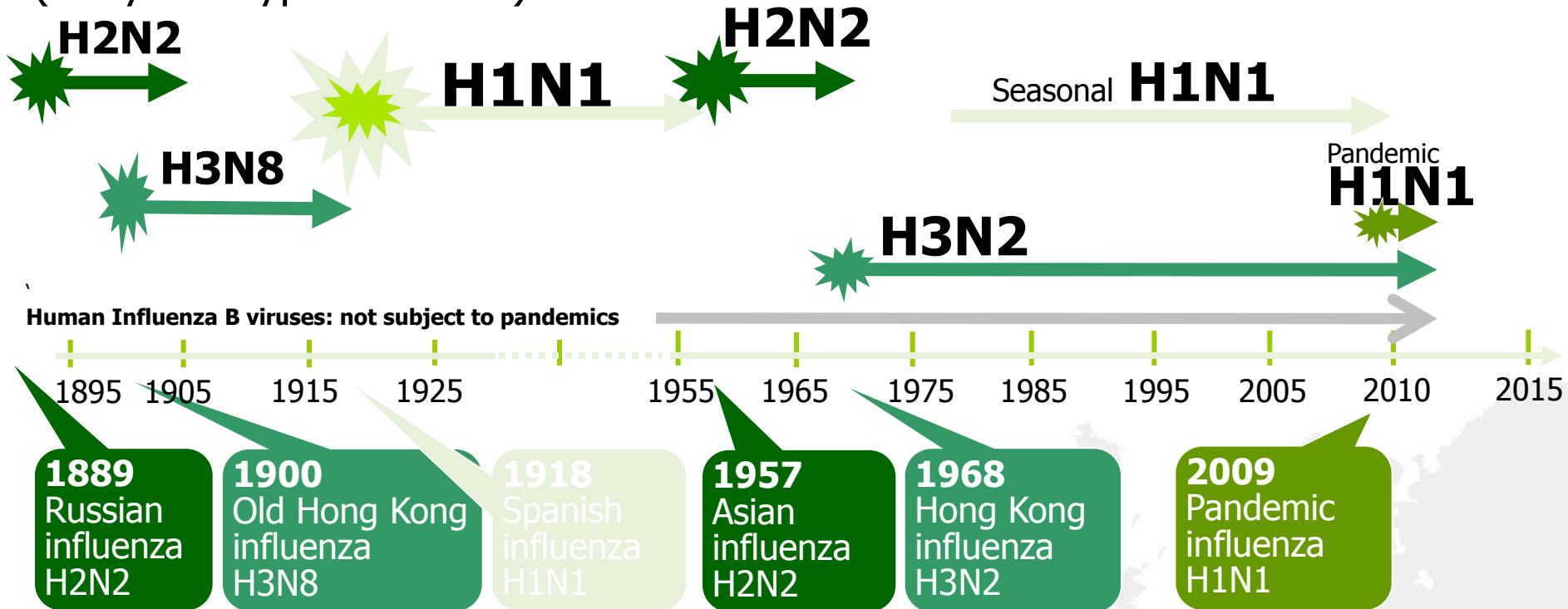
- Against mild disease in the pandemic – up to 80% effectiveness in the general population
- Limited data for the risk groups
- Analyses of vaccination in the early deaths in the UK shows suggestive evidence of effectiveness of A(H1N1)2009 containing vaccines in reducing the risk of death
- Published observational data from the pandemic consistently showing benefit of use of the antivirals in preventing severe disease



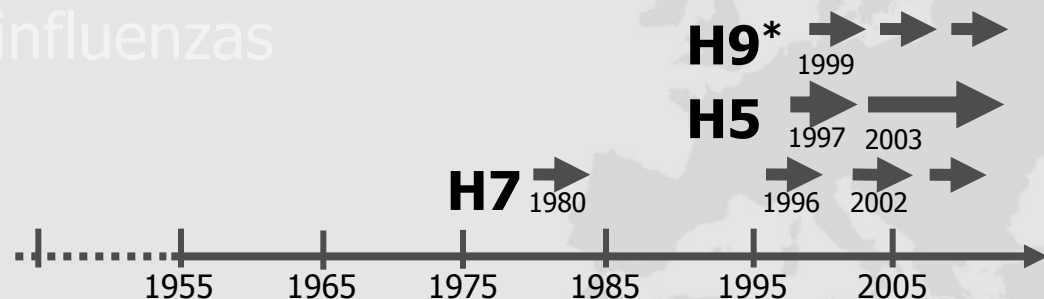
Spare Slides

Pandemics of influenza

Recorded human pandemic influenza
(early sub-types inferred)



Recorded new avian influenzas



Comparison: Early 21st Century Seasonal influenza vs Pandemic 2009

Source ECDC Pandemic risk assessment



	Seasonal Influenza 1978 to 2008/9	2009 Pandemic Influenza
Circulating Influenza Viruses	Two A viruses (H1N1), (H3N2) & some B viruses - blend varied with season	Almost exclusively the pandemic (H1N1), a few (H3N2) & increasing numbers of B viruses
When waves occurred	In season - mostly starting after Christmas in recent years	Started out of season with Spring/Summer wave then an Autumn/Winter wave
Intensity of transmission	Variable year on year, local heterogeneity estimated to be 5 to 15% per annum	Hard to estimate, local heterogeneity, estimated to be over 15%
Setting for transmission	Probably any setting where people come together	Schools are considered especially important, along with household transmission

Comparison: Early 21st Century Seasonal influenza vs Pandemic 2009

Source ECDC Pandemic risk assessment



	Seasonal Influenza 1978 to 2008/9	2009 Pandemic Influenza
Experiencing severe disease	Those in clinical risk groups and older people	Young children, pregnant women and those in clinical risk groups. About 30% with severe disease were outside risk groups. Many born before the mid 1950s were immune, but those not immune experienced severe disease.
Premature Deaths	Considered that around 90% were in those aged 65 years or older Thompson et al	In confirmed reported deaths around 80% under age 65 years (Reports to ECDC) About 30% healthy, outside risk groups Donaldson et al
Acute respiratory distress syndrome	Extremely rare	Uncommon but does occur, even in young fit adults



Comparison: Early 21st Century Seasonal influenza vs Pandemic 2009

Source ECDC Pandemic risk assessment



	Seasonal Influenza 1978 to 2008/9	2009 Pandemic Influenza
Acute respiratory distress syndrome	Extremely rare	Uncommon but does occur, even in young fit adults
Antiviral resistance	Common and transmissible oseltamivir resistance in A(H1N1) emerged in season 2007/8	Rare and to date only transmitting very rarely in certain circumstances
Mortality and Years of Potential Life Lost (YPLL)	Few confirmed deaths reported each year in official statistics Estimates of up to 40,000 in a bad year from statistical methods	Substantial numbers of confirmed deaths announced by Member States Not yet estimated in an EU member states but in the United States