



Pandemic (H1N1) 2009:

Situation Update in WHO European Region and the World

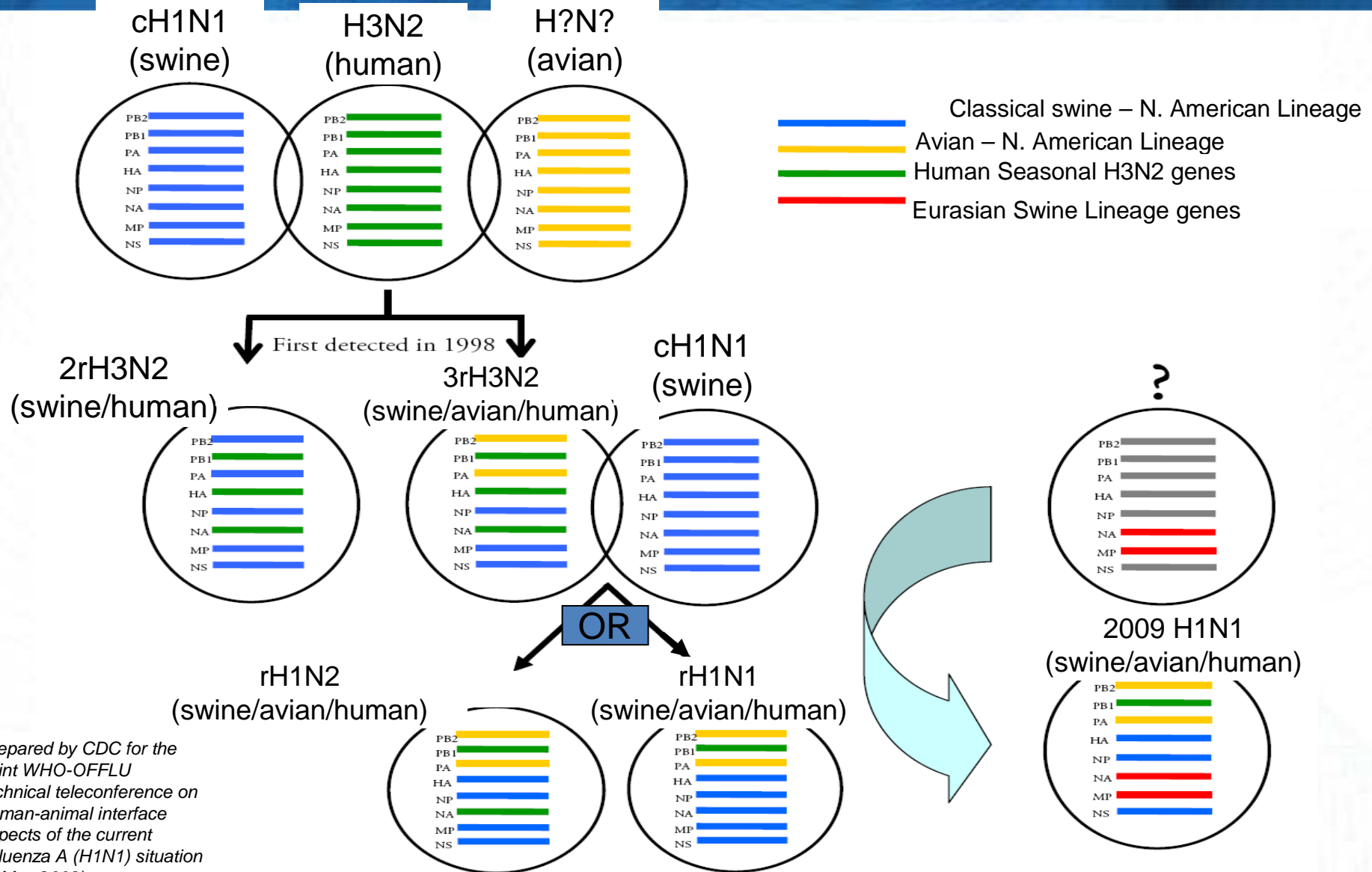
12th SAC Seminar *COMBATING GLOBAL INFECTIONS*
Listvyanka-Irkutsk, Russian Federation 21-24 September 2009

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Timeline - pandemic (H1N1) 2009

- April 12: an outbreak of influenza-like illness in Veracruz, Mexico reported to WHO
 - April 15-17: two cases of new A(H1N1) virus infection in two southern California counties in U.S.A.
 - April 23: novel influenza A (H1N1) virus infection confirmed in several patients in Mexico.
 - April 24: WHO declares a public health emergency of international concern (PHEIC).
 - April 27: WHO declares pandemic phase 4 - sustained community transmission in Mexico
 - April 29: WHO declares pandemic phase 5 (2 countries affected in one WHO region)
 - June 11: WHO declares pandemic phase 6 (in addition to phase 5, community spread in one country in a second WHO region)
 - **Within 9 weeks**, all WHO regions reporting cases of pandemic (H1N1) 2009
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Proposed Evolution of Swine Influenza Viruses in North America

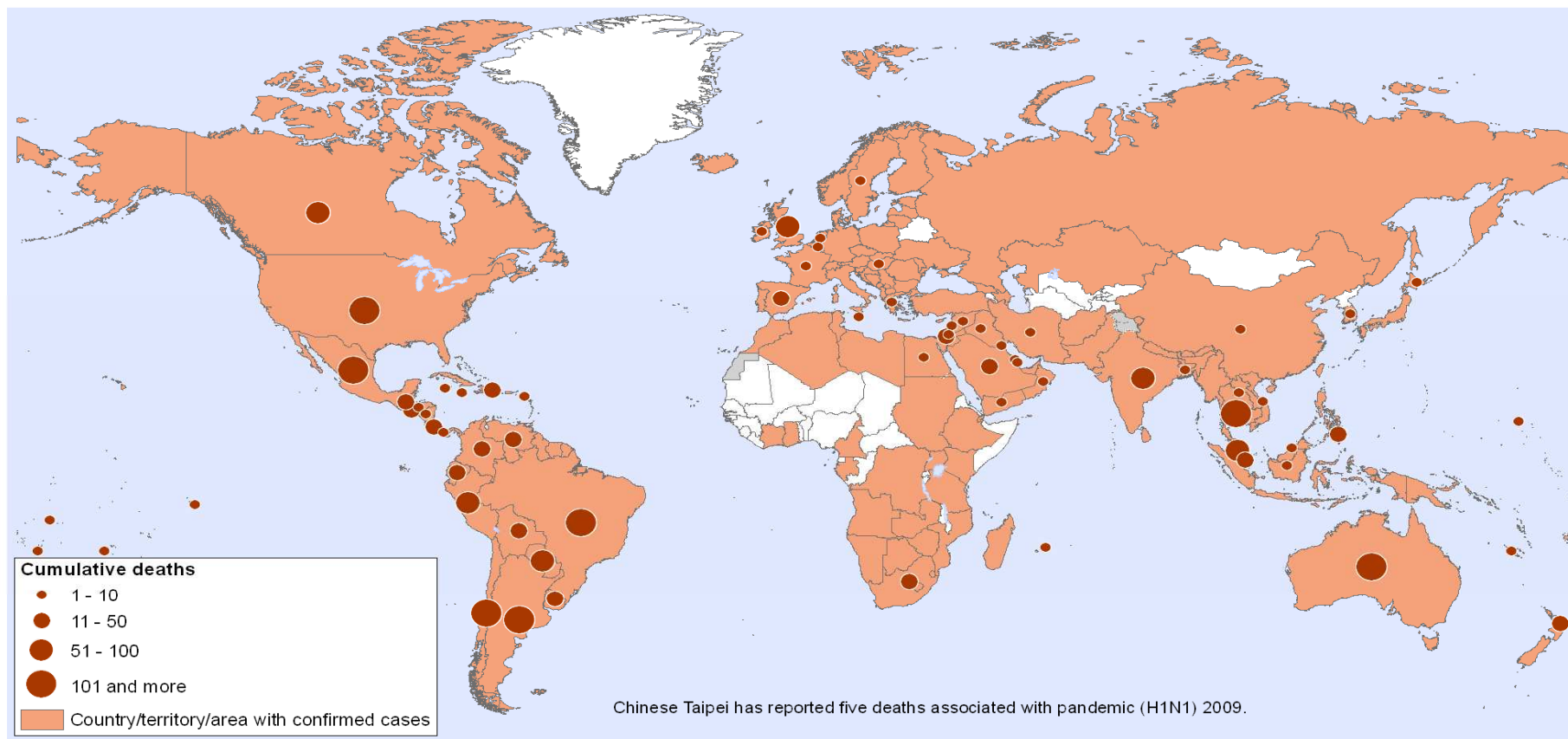


Characteristics of the Pandemic (H1N1) 2009 virus

- Viruses analyzed to date are homogeneous antigenically compared to the vaccine strain A/California/7/2009
- To date, no recognized genetic markers associated with virulence
 - Viruses isolated from severe cases do not show sequence differences.
- Virus replicates more in lungs and causes more severe pneumonia in animals (ferrets, mice, primates) than seasonal H1N1
- Sensitive to neuraminidase inhibitors (oseltamivir, zanamivir)
 - only 26 cases of oseltamivir resistance (all H275Y) so far, 12 related to prophylaxis
 - Resistant to M2 inhibitors amantadine and rimantadine
- Its genetic and antigenic evolution is unpredictable.

Pandemic (H1N1) 2009:

Over 296,471 laboratory confirmed cases and at least 3,486 deaths as reported to WHO (13 September 2009)



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Map produced: 09 September 2009 11:18 GMT

Data Source: World Health Organization
Map Production: Public Health Information
and Geographic Information Systems (GIS)
World Health Organization

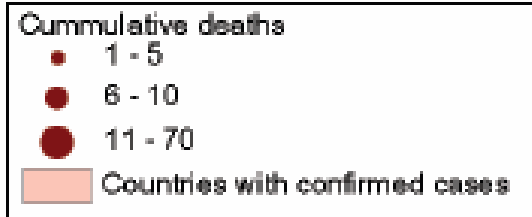


Pandemic (H1N1) 2009:

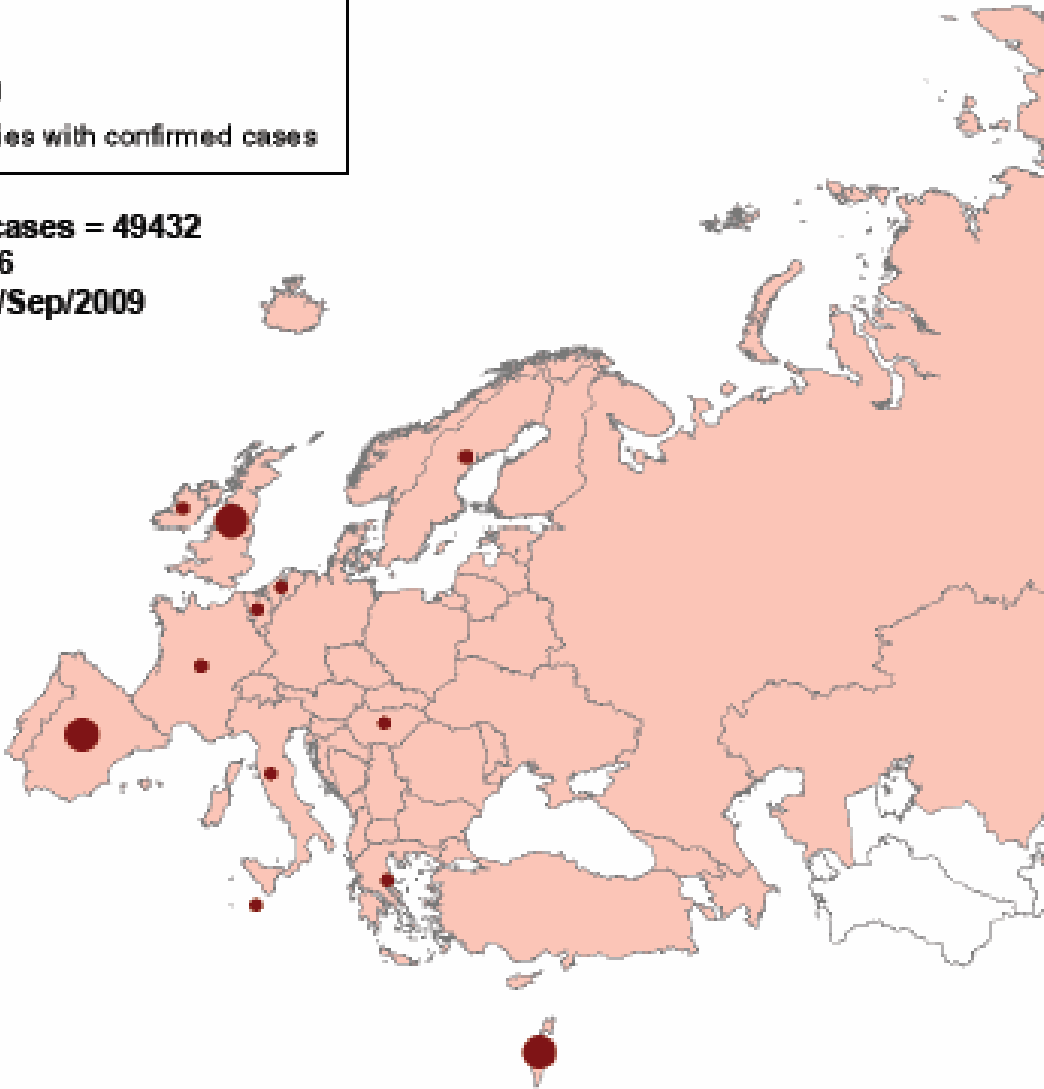
Over 296,471 laboratory confirmed cases and at least 3,486 deaths as reported to WHO (13 September 2009)

- The US is reporting increases in ILI activity, in Canada influenza activity remains low. In Japan, influenza activity remains stably increased
 - Geographically regional to widespread influenza activity continues to be reported throughout much of South and Southeast Asia, tropical regions of Central and South America
 - In the temperate regions of the southern hemisphere, influenza activity continues to decrease or has returned to the seasonal baseline in most countries.
 - Pandemic (H1N1) influenza virus continues to be the predominant circulating influenza virus
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Influenza A (H1N1) : Countries with confirmed cases and number of deaths reported to WHO European Regional Office



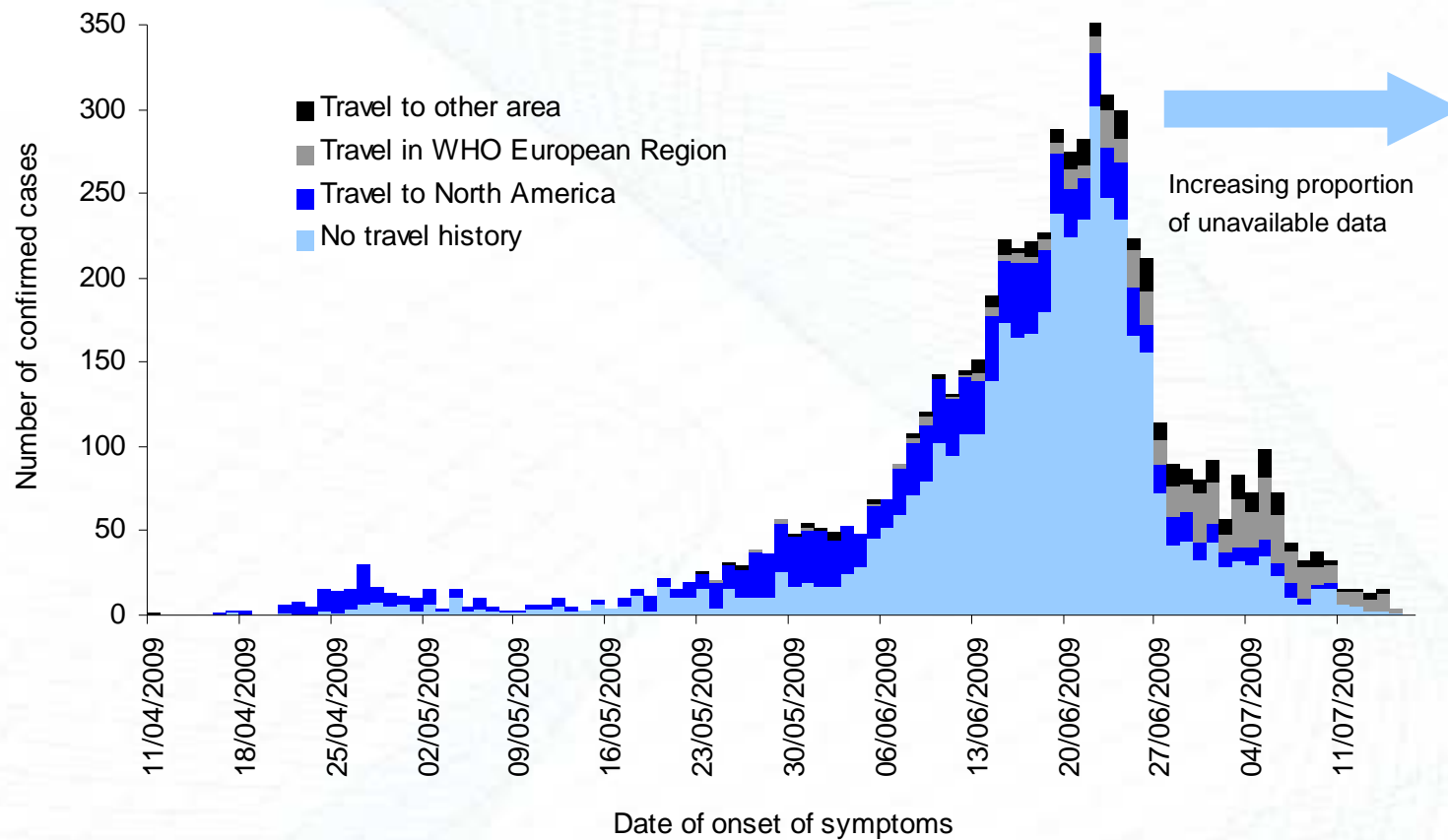
Confirmed cases = 49432
Deaths = 126
Data as of 7/Sep/2009



In week 37/2009, a total of 769 detections of A(H1N1)v influenza were reported, similar to the previous week

All countries reported low or moderate influenza activity, 4 countries reported ILI consultation rates that are above seasonal baseline thresholds. Twenty countries reported pandemic (H1N1) 2009 as the dominant virus in circulation. No countries reported any other influenza subtypes as dominant.

Number of confirmed cases by date of onset and travel history, WHO European Region, as of 16 July 2009 (n=6,294)



Pandemic (H1N1) 2009 transmissibility

- Secondary attack rate estimates
 - School outbreaks: 22-33% (USA)
 - Households: 19% (USA) to 43% (Chile)
- Community transmission in multiple countries
 - NYC community-based telephone survey: 6.9% of the population developed an influenza-like illness (ILI) between 1-20 May 09.
- Explosive outbreaks/amplification in schools
- Ro estimates
 - Pandemic H1N1: 1.2 -1.7 (3.5 in special setting)
 - Seasonal influenza: 1.2 -1.4
- Prodrome(e.g.sorethroat, cough) present prior to fever onset

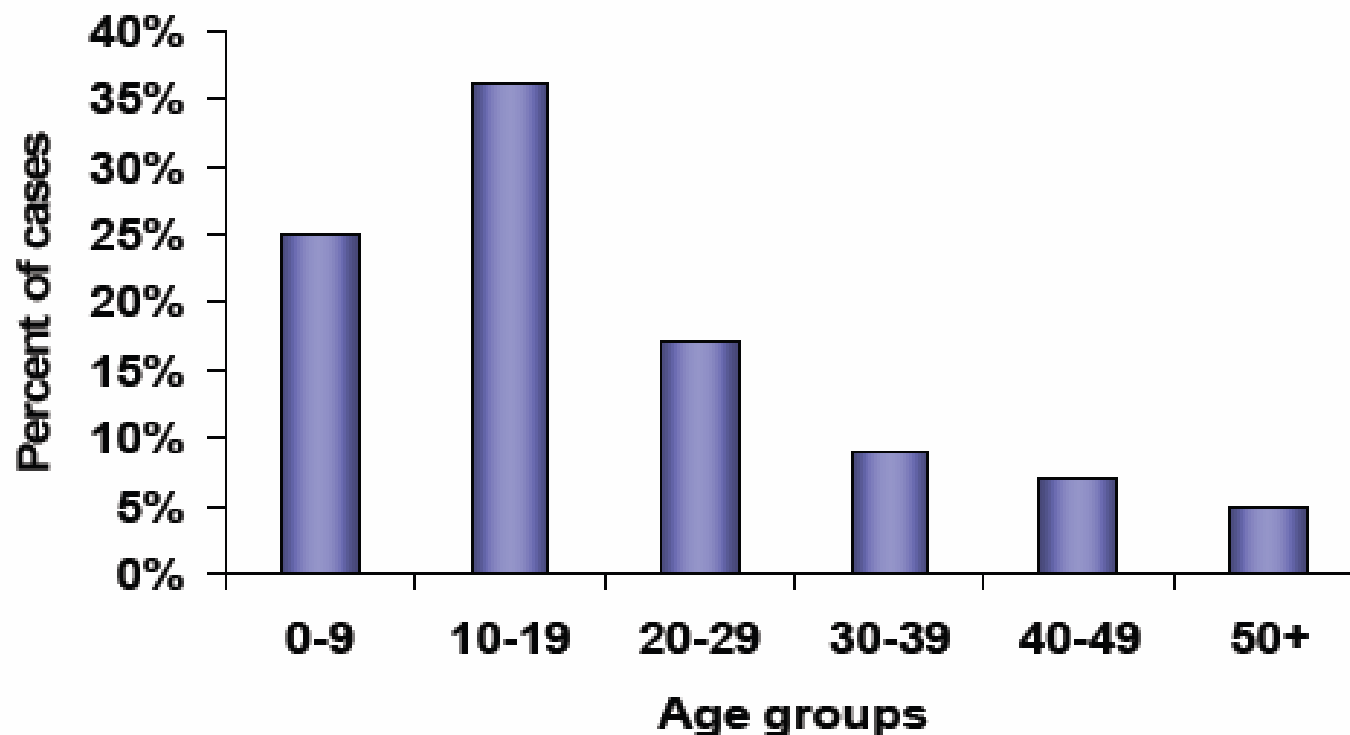
Clinical spectrum of infection

- Majority of cases have uncomplicated ILI that resolves without antiviral treatment
 - More GI complaints (e.g., vomiting, diarrhea) than seasonal
 - Non-febrile, mild, and asymptomatic (viral RNA+) cases
- Hospitalization: up to 10% of confirmed cases
 - 1-10% in US, 2-6% in Canada, 3.5% in Chile-UK assumptions up to 1% of clinical cases
- Intensive care unit: about 15-30% of hospitalized cases were admitted to ICU (USA, Canada)
 - UK assumptions up to 25% require intensive care
- Mechanical ventilation: about 10% of hospitalized cases had mechanical ventilation (USA, Canada)
- CFR: < 1% of confirmed cases
 - Higher risk in adults (> 20 yrs old) and those with co-morbidities-US < 0.4%; Mexico < 1.5%; Chile-0.1%; Argentina < 1.5%;
 - UK assumptions up to 0.1% of clinical cases

Pandemic H1N1 2009

Distribution of cases by age group

- Confirmed cases (Chile, EU and EFTA, Japan, Panama, Mexico)



Age distributions for outpatients and hospitalised patients

- Age distribution of severe and fatal cases is older than that of all confirmed cases
 - Laboratory confirmed cases:
 - Median 12-17 yrs old (UK, USA, Japan, Chile, Canada)
 - Hospitalized cases:
 - USA (N= 567): 46% < 18 yrs (median 26 yrs)
 - California, USA (N=30): median 27.5 yrs
 - Fatal cases:
 - USA (N=87): 61% aged 30-64 yrs (median, 37 yrs)
 - Mexico (N=74): 68% aged 20-49 yrs
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Additional information case-data up to 16 July

- Data so far from cased based reporting shows that
 - Hospitalizations overall 10% (857 of 8,360)
 - Note: Hospitalization should not be regarded as a proxy of severity of disease
 - 2% of confirmed cases report having been vaccinated against seasonal influenza
 - 0.4% of confirmed cases have reportedly had pneumonia (other complications are practically absent in these data)
 - 3% of confirmed cases had any precondition (e.g. cancer, diabetes, HIV, heart disease, seizures, lung disease, pregnancy, malnutrition, other)

Case detection, infection control and treatment

- Need early diagnosis and treatment: must triage to recognise severe disease and those at risk for severe disease:
 - requires up to date and local data on the epidemiological situation, risk groups and symptoms
 - Need for infection control measures:
 - isolation/cohorted wards
 - Protection of personnel (droplet precautions unless performing aerosol-generating procedures)
 - Need for trained staff to run ICU and treat patients
 - Give antivirals early
 - Follow normal strategy for severe community acquired pneumonia
 - Beware secondary bacterial infections
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Antiviral treatment

- **Treat patients who initially present with severe illness or whose condition begins to deteriorate with oseltamivir as soon as possible.**
 - Treatment within 48 hours after symptom onset is strongly associated with better clinical outcome.
 - For patients with severe or deteriorating illness, provide treatment even if started later.
 - **Where oseltamivir is unavailable or cannot be used, zanamivir may be given**
 - **This recommendation applies to all patient groups, including pregnant women, and all age groups, including young children and infants.**
 - **Provide prompt antiviral treatment for children with severe or deteriorating illness, and those at risk of more severe or complicated illness.**
 - Includes all children under the age of 5 years, as this age group is at increased risk of more severe illness.
 - **Otherwise healthy children >5 years need not be given antiviral treatment unless their illness persists or worsens.**
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Human infection with pandemic (H1N1) 2009 virus: updated interim WHO guidance on global surveillance

(10 July 2009)



Human infection with pandemic (H1N1) 2009 virus: updated interim WHO guidance on global surveillance

10 July 2009

Background

This document updates the interim WHO guidance on global surveillance of pandemic (H1N1) 2009 virus infection in humans.¹ The guidance has been revised to make it applicable to current global pandemic phase 6. It will be further reviewed and modified as the pandemic (H1N1) 2009 evolves.

Standardized and coordinated international information sharing is crucial for the management of the pandemic at global and national levels. National authorities need to know how the pandemic is evolving, not only in their own country, but also in neighbouring countries and continents. The continual flow and analysis of information provided by individual countries contributes to the development of a global picture that:

- results in a better understanding of critical clinical, epidemiological and virological features of the (H1N1) 2009 pandemic
- guides global prevention and control activities
- allows health-care providers and public health authorities to modify their own strategies for case management, community mitigation, and health resource allocation
- reduces the impact of inaccurate and unconfirmed rumours.

This updated interim guidance is designed as much as possible, for use by existing or developing systems and infrastructure and takes into account the varying capacities of countries with regard to influenza surveillance. The guidance identifies a minimum set of data that can feasibly be collected in all settings, thereby allowing all Member States to participate in the global surveillance effort while collecting useful information to guide their own national control efforts.

Global surveillance of pandemic (H1N1) 2009 virus infections in humans

The approach and methods for global surveillance vary at different stages of the pandemic. In countries with no or very few cases, the main aims of surveillance remain early detection of the introduction of the virus using laboratory confirmation of cases and initial risk assessment.



Human infection with pandemic (H1N1) 2009 virus: updated interim WHO guidance on global surveillance (10 July 2009)

- Describes reporting requirements under IHR
- Covers:
 - Early detection
 - Description and assessment
 - Continuous monitoring

Updated interim WHO guidance on global surveillance: *Early Detection*

- For countries not yet affected:
 - The first confirmed pandemic (H1N1) 2009 virus infection detected in a country should be immediately reported by the IHR National Focal Point
 - And afterwards reporting:
 - Any changes in the epidemiological, virological or clinical presentation
 - Any unusual or unexpected public health events, e.g. clusters of severe unexplained acute respiratory illness or unexplained deaths
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Updated interim WHO guidance on global surveillance: *Description and Assessment*

- Describe the epidemiological and virological features of early cases to guide control and prevention activities
 - Assess disease severity
 - Laboratory testing priorities
 - Confirming infection in new areas
 - Testing severe cases
 - Monitoring the co-circulation of pandemic (H1N1) 2009 virus and seasonal viruses
 - As long as feasible, report weekly numbers of confirmed cases and deaths
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Updated interim WHO guidance on global surveillance: *Continuous Monitoring*

Monitor influenza activity to track:

- global geographical spread
 - disease trend
 - intensity
 - impact of the pandemic on health-care services
 - Qualitative indicators against which it is expected all countries are able to report
 - incidence of mild and severe cases
 - deaths from acute respiratory disease
 - Quantitative indicators against which countries with established surveillance systems are expected to report
 - changes in viral antigenicity and antiviral sensitivity
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Output Expected

- A composite picture of severity and geographical spread primarily based on local interpretation of data and investigations.
 - A description of clinical presentation, course, complications, and risk factors
 - Virological data for strain selection and antiviral sensitivity assessment
 - Numbers of hospitalizations and deaths
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Reporting: EuroFlu

- Platform used by WHO/Europe for seasonal and pandemic influenza surveillance (www.euroflu.org)
 - Weekly bulletin published each Friday in English and Russian
 - Provision of regional data to global surveillance platform
 - Provision of EU/EEA Member States to ECDC
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EuroFlu Weekly bulletin (English and Russian)

Low or moderate influenza activity and a continued overall decrease in the number of Pandemic (H1N1) 2009 virus detections

Summary: In week 34/2009, a total of 837 detections of A(H1N1) influenza were reported. The number of Pandemic (H1N1) 2009 virus detections in Europe was highest in week 33, but has decreased with week 31. All countries reported low or moderate influenza activity based on several of slightly increased levels of ILI/ARI consultations. Twenty-two countries reported pandemic A(H1N1) virus detections.

Epidemiological situation - week 34/2009: For the activity indicator, the national season levels of influenza like illness (ILI) and/or the respiratory infection (ARI) were low or moderate in all countries. For the geographical spread indicator, Austria and Israel reported widespread activity, while other countries reported local or no activity. Of 14 countries reporting the impact of the pandemic, 10 reported a moderate impact and 4 other countries reported a low impact, i.e. decrease in visits to care centres were not above usual levels (click [here](#) for details).

Comparative epidemiological situation - weeks 34/2009-34/2005: Until week 33/2009, detections of pandemic H1N1 influenza had not exceeded seasonal levels of ILI or ARI in countries of the European Region. An increase in influenza activity has been observed for Cyprus, Luxembourg, Turkey (2009/2010), Wales (2009/2010), Northern Ireland (2009/2010), Malta, Norway, Iceland (2009/2010), Israel and Austria (2009/2010), and the Netherlands (2009/2010). Around week 31, a substantial increase in ILI rates was observed in Norway and this has continued in week 34 (click [here](#)). While the ILI rate for Norway has been a levelled over the last few weeks, the proportion of ILI cases that is seasonal (non-pandemic) with detectable virus remains very low. The rate in ILI is therefore likely to represent increased public concern for influenza, and probably does not indicate a substantial rise in the incidence of ILI.

Virological situation - week 34/2009: The total number of respiratory specimens collected by sentinel physicians in week 34/2009 was 486, of which 67 (14%) were positive for influenza virus: all 67 were type A (65 subtypes H1 and 2 not subtyped). In addition, 722 non-sentinel source specimens (e.g. specimens collected in diagnostic purposes or hospitals or as part of enhanced surveillance for pandemic H1N1) were reported positive for influenza virus: 718 type A (633 subtypes H1, 34 subtypes H2, five subtypes H3 and 4 not subtyped) and four type B. Of the total influenza A virus detections that were subtyped in week 34/2009 (977/984, 96%), were the pandemic H1N1/2009 virus. In general, the number of Pandemic (H1N1) 2009 virus detections in Member States is decreasing or levelling off.

Genetic and biological situation - weeks 34/2009-34/2005: Of 14752 virus detections (genital and non-genital) since week 34/2005, 14186 (96%) were type A, 5630 subtypes H1, 368 subtypes H2, 330 subtypes H3 and 2076 not subtyped) and 566 (4%) were type B.

Based on the antigenic and/or genetic characterisation of 3952 influenza viruses reported from week 40/2005 to week 34/2009, 2797 (71%) were A/Indonesia/05/2005 (H5N1)-like, 118 (3%) A/Georgia/06/2005 (H1N1)-like, 27 (1%) A/Finland/02/2001 (H3N2) (unrelated H3N2 lineage) and 398 (10%) as A/Indonesia/05/2005-like or A/Finland/02/2001-like (H3N2-related) lineage (click [here](#) for details). A total of 1004 (17%) were pandemic H1N1, A/California/04/2009-like, the current virus strain recommended by WHO for pandemic vaccine production (click [here](#)).

Antiviral susceptibility reports from week 40/2005 to 34/2009 have shown all type B influenza viruses to be sensitive to oseltamivir and zanamivir, all A(H1N1) viruses to be sensitive to oseltamivir and zanamivir but resistant to M2 inhibitors, while for seasonal A(H1N1) viruses 50% were resistant to oseltamivir, 100% sensitive to zanamivir and 50% sensitive to M2 inhibitors. All pandemic (H1N1) 2009 viruses have been susceptible to zanamivir and resistant to M2 inhibitors, while only a single case of oseltamivir resistance has been reported in Denmark (click [here](#)).

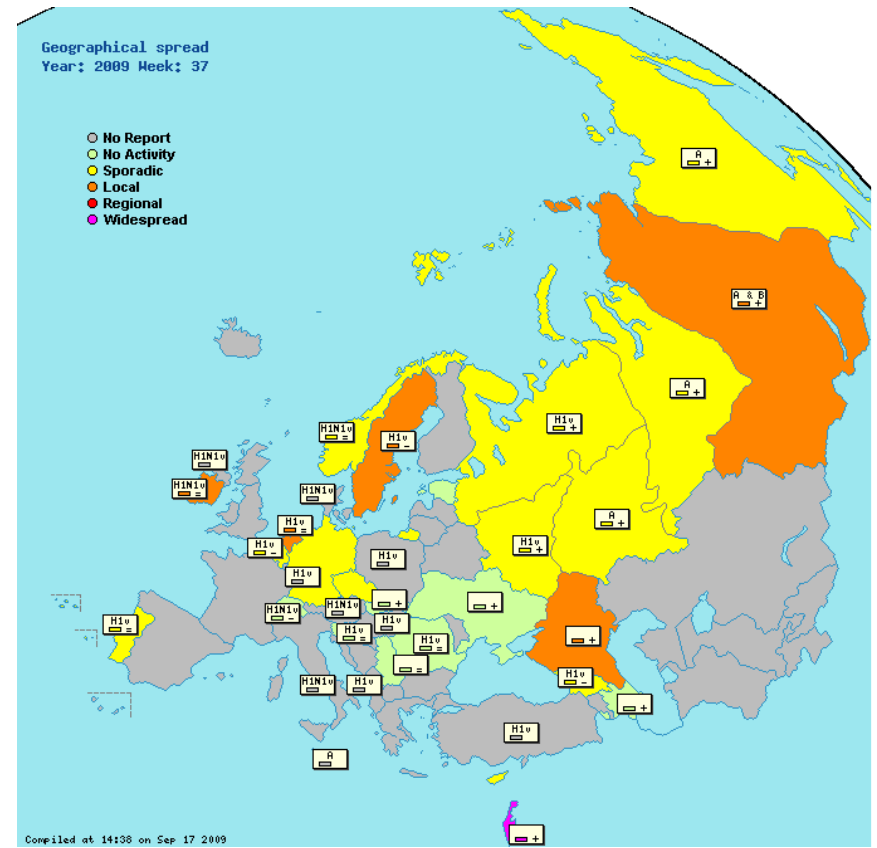
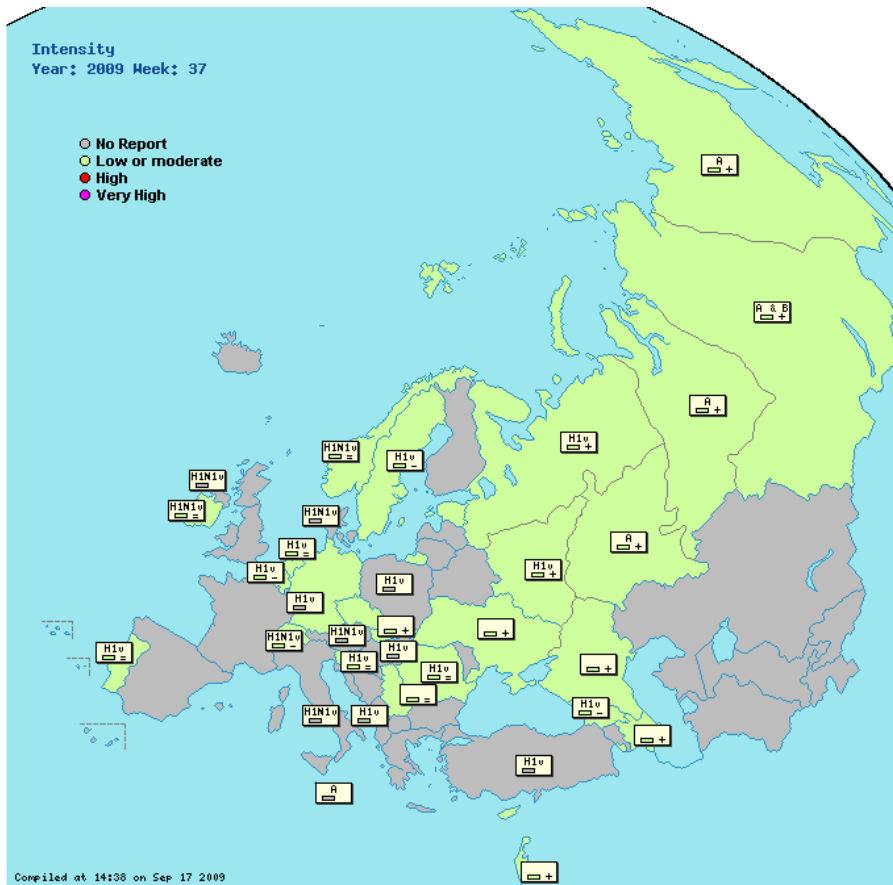
Comment: In week 34/2009 influenza activity was of low or moderate intensity across the European Region. For the geographical spread indicator, widespread activity was reported for Austria and Israel, with the other countries reporting local or no activity. A peak in Pandemic (H1N1) 2009 virus detections was observed around week 33 for Europe as a whole (click [here](#)) and total detections continued to decline in week 34/2009, possibly due in part to some countries switching to virological monitoring rather than testing of all cases. The impact on health care services is currently considered moderate in Poland and low in other countries.

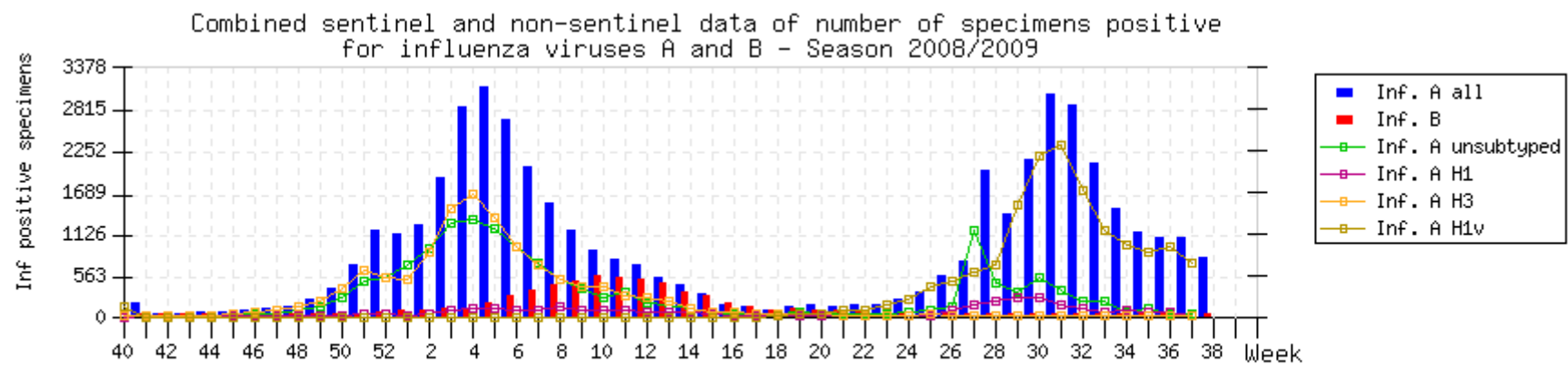
For more information also at the situation in Europe, please go to the dedicated web pages of WHO (click [here](#)) and ECDC (click [here](#)). EuroFlu provides data for the global situation updates in the WHO headquarters website (click [here](#)).



Table and graphs (where available)

Country	Geographic Region	Seasonal activity	Pandemic activity	Comment	ILI cases (100 000)	ARI cases (100 000)	Testing capacity (per 100 000)
Albania	South-Eastern Europe	10	0	None	100 000	100 000	100 000
Andorra	South-Western Europe	10	0	None	100 000	100 000	100 000
Austria	Central Europe	10	10	Highly active	100 000	100 000	100 000
Belarus	Eastern Europe	10	0	None	100 000	100 000	100 000
Bulgaria	South-Eastern Europe	10	0	None	100 000	100 000	100 000
Croatia	Central Europe	10	0	None	100 000	100 000	100 000
Cyprus	Eastern Mediterranean	10	0	None	100 000	100 000	100 000
Czechia	Central Europe	10	0	None	100 000	100 000	100 000
Denmark	North Europe	10	0	None	100 000	100 000	100 000
Estonia	North Europe	10	0	None	100 000	100 000	100 000
Finland	North Europe	10	0	None	100 000	100 000	100 000
France	Western Europe	10	0	None	100 000	100 000	100 000
Germany	Central Europe	10	0	None	100 000	100 000	100 000
Greece	South-Eastern Europe	10	0	None	100 000	100 000	100 000
Guernsey	Western Europe	10	0	None	100 000	100 000	100 000
Hungary	Central Europe	10	0	None	100 000	100 000	100 000
Iceland	North Europe	10	0	None	100 000	100 000	100 000
Ireland	Western Europe	10	0	None	100 000	100 000	100 000
Israel	Eastern Mediterranean	10	0	None	100 000	100 000	100 000
Italy	South-Western Europe	10	0	None	100 000	100 000	100 000
Latvia	North Europe	10	0	None	100 000	100 000	100 000
Lithuania	North Europe	10	0	None	100 000	100 000	100 000
Malta	South-Eastern Europe	10	0	None	100 000	100 000	100 000
Netherlands	Western Europe	10	0	None	100 000	100 000	100 000
Norway	North Europe	10	0	None	100 000	100 000	100 000
Poland	Central Europe	10	0	None	100 000	100 000	100 000
Portugal	South-Western Europe	10	0	None	100 000	100 000	100 000
Romania	South-Eastern Europe	10	0	None	100 000	100 000	100 000
Slovakia	Central Europe	10	0	None	100 000	100 000	100 000
Slovenia	Central Europe	10	0	None	100 000	100 000	100 000
Spain	South-Western Europe	10	0	None	100 000	100 000	100 000
Sweden	North Europe	10	0	None	100 000	100 000	100 000
Switzerland	Central Europe	10	0	None	100 000	100 000	100 000
Turkey	South-Eastern Europe	10	0	None	100 000	100 000	100 000
Ukraine	Eastern Europe	10	0	None	100 000	100 000	100 000
United Kingdom	Western Europe	10	0	None	100 000	100 000	100 000
Wales	Western Europe	10	0	None	100 000	100 000	100 000
Yemen	Eastern Mediterranean	10	0	None	100 000	100 000	100 000





Created at 13:22 on Sep 19 2009

Source: The WHO European Influenza Network (EuroFlu.org)

Summary of SAGE Discussion's

- SAGE identified 3 different objectives that countries could adopt as part of their pandemic vaccination strategy:
 - (i) protecting the integrity of the health-care system and the country's critical infrastructure;
 - (ii) reducing morbidity and mortality; and
 - (iii) reducing transmission of the pandemic virus within communities.
 - H1N1 influenza vaccine will be not be available in sufficient quantities - a stepwise approach to vaccinate particular groups may be considered
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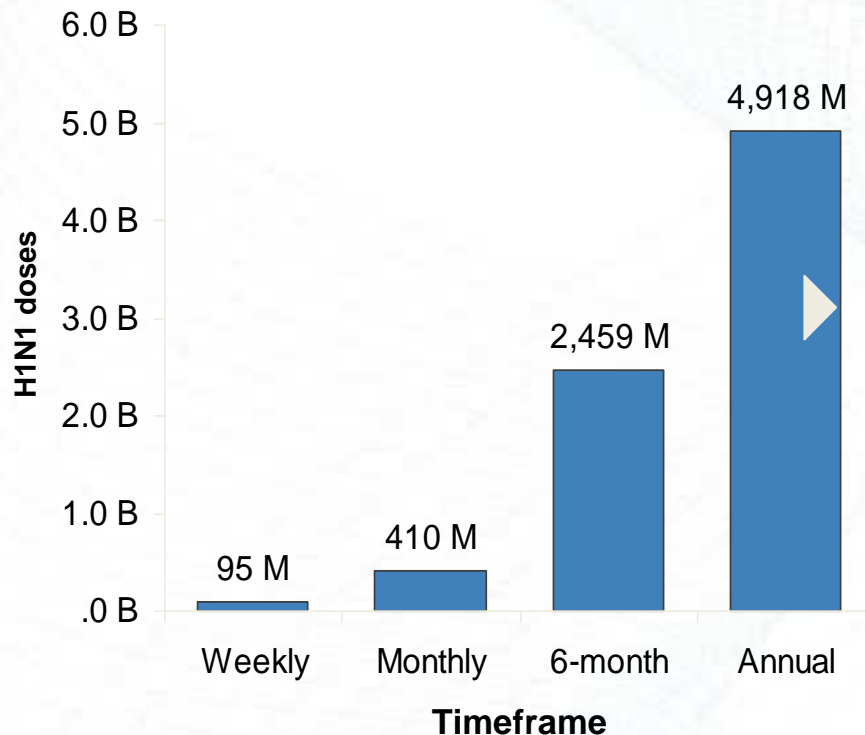
WHO recommendations on the use of pandemic vaccine, July 2009

- Immunization of health care workers is a first priority (1-2% of population)
 - Stepwise approach considered to vaccinate particular groups: based on country epidemiology and objectives
 - Pregnant women (2% of the world population)
 - Those aged >6mo with one of several chronic medical conditions (asthma and other chronic conditions)
 - Healthy young adults >15-49 years;
 - Healthy children
 - Healthy adults >49-65 years
 - Healthy adults >65 years
-

Pandemic vaccine baseline capacity was estimated at 94.5M doses per week

Estimated H1N1 Vaccine Capacity

At 1:1 yields, most dose-sparing formulation, full capacity



Source: WHO survey

- Capacity estimate 94.5 M doses per week
 - Assumed 1:1 yield with seasonal H1N1 vaccine (actual yield 0.6-0.7:1)
 - Most dose-sparing formulation
 - Full capacity
- WHO global stockpile: 150M doses assured
- WHO access at reduced price: under negotiation
 - Timeframe for both: October 2009-April 2010
- WHO decision on country eligibility will depend on global equity, epidemiology, hemisphere sequence and whether countries have already secured access



Survey of countries access to vaccine: inform eligibility for WHO global stockpile

- To estimate population covered through advanced purchase agreements (APA) or other means (eg. self-producing)
 - Total population WHO European Region ~890 million
 - Population of countries with APA is 561 million
 - Population of countries without APA but are self-producers is 144 million
 - Population not covered 185 million
 - Population of countries without APA in place but expecting to purchase is 82 million
 - Population of GAVI countries desiring WHO donation is 105 million
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Challenges for all countries

- Defining priority groups, for intervention and for vaccination
 - Define strategy for procurement and deployment of vaccine
 - Prepare for the impact of the pandemic during the second wave as larger numbers of people become infected.
 - Define current severity and monitor for change
 - Preparing health care facilities for treatment of severe and fatal illness and managing surge in admissions
 - Communication to the public on preventive measures and justification for priority groups
 - Continuing/establishing pandemic surveillance
 - Human resources in all fields (lack of sufficient capacity, fatigue)
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Acknowledgements

- The Member States for:
 - Timely reporting of cases, sharing of case-data and monitoring data
 - Sharing information on their response activities
 - Participating in and contributing to WHO consultations, trainings and meetings
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Thank you for your attention

<http://www.euro.who.int/influenza/ah1n1>
www.euroflu.org