Evolution of a pandemic

A(H1N1) 2009

APRIL 2009 – AUGUST 2010

2nd edition

World Health Organization

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World Health Organization

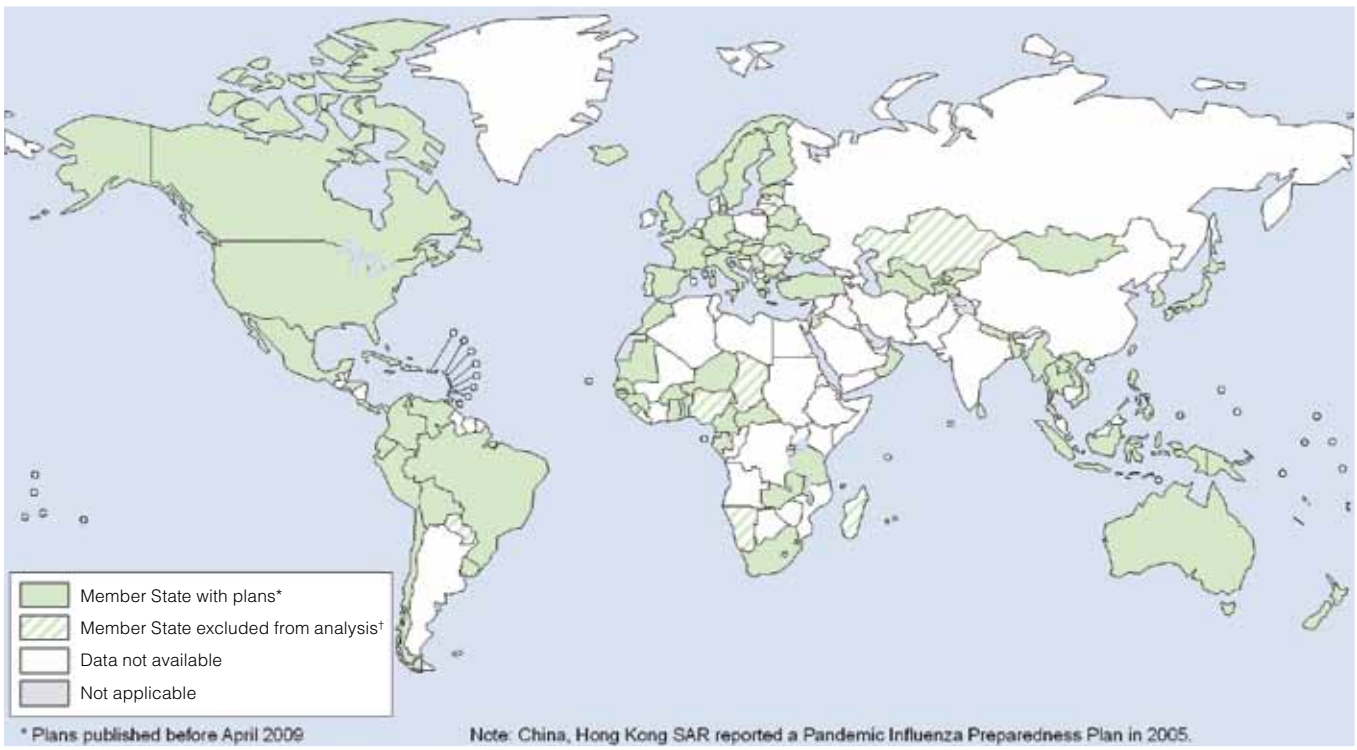
“On Saturday, 25 April, upon the advice of the Emergency Committee called under the rules of the International Health Regulations, the Director-General declared this event a Public Health Emergency of International Concern.”

http://www.who.int/csr/don/2009_04_26/en/index.html

A public health emergency of international concern is an event which is determined to constitute a public health risk to other states through international spread of disease and to potentially require an international response …

http://whqlibdoc.who.int/publications/2008/9789241580410_eng.pdf

WHO Member States with publicly available pandemic preparedness plans at the start of the 2009 (H1N1) pandemic



† Plans were excluded based on the study criteria, or they were exclusively aimed at the agriculture sector.

Overview of key pandemic preparedness indicators

Characteristic of pandemic preparedness plans	Number (%)	Characteristic of pandemic preparedness plans	Number (%)
Part of national disaster plans	25 (21)	Communication channels identified	108 (91)
Sub-national preparedness plan developed	6 (5)	Logistics for antiviral distribution planned	67 (62)
Pandemic exercise carried out	9 (8)	Planned vaccination prioritized	73 (61)
Communication and coordination structure outlined	87 (73)	Animal surveillance for influenza	96 (81)
Country specific triggers	53 (45)	Planned collaboration with WHO	107 (90)

April

24 April

"The Government of Mexico has reported three separate events … surveillance began picking up cases of influenza-like illness starting 18 March … as of 23 April there are … more than 854 cases of pneumonia from the capital. Of those, 59 have died.

"Of the Mexican cases, 18 have been laboratory confirmed … as … Influenza A(H1N1).

"The majority of these (pneumonia) cases have occurred in otherwise healthy young adults."

http://www.who.int/csr/don/2009_04_24/en/index.html

27 April

"The [Director-General] has raised the level of influenza pandemic alert … to phase 4 … [and] indicates that the likelihood of a pandemic has increased, but not that a pandemic is inevitable."

http://www.who.int/mediacentre/news/statements/2009/h1n1_20090427/en/index.html

29 April

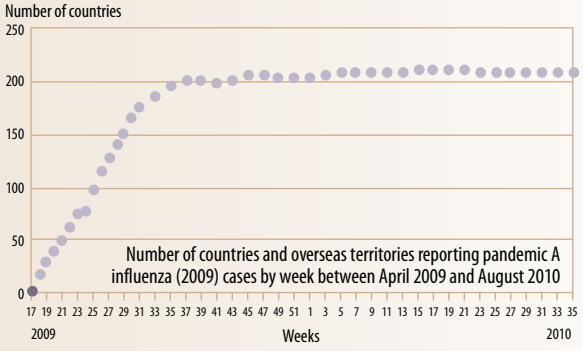
"Based on assessment … and … expert consultation, [the Director-General] decided to raise the current level of influenza pandemic alert to phase 5. Influenza pandemics must be taken seriously precisely because of their capacity to spread rapidly to every country in the world."

http://www.who.int/mediacentre/news/statements/2009/h1n1_20090429/en/index.html

27 April 2009 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO

Date	Number confirmed cases	Number countries affected
24 April	25	2
26	38	2
27	73	4
28	105	7
29	148	9
30	257	11



Laboratory diagnostic protocol published

Phase 5 declared

28 APRIL | 29 APRIL | MAY | JUNE | JULY

May

Deployment of antiviral stocks

Immediately following the declaration of Phase 5, WHO initiated the distribution of the 3 million treatment courses of WHO rapid response stockpile of antiviral medicines to 72 countries. At the same time, a number of countries were supplied from regional stocks, resulting in 123 shipments of antivirals between 3 May and 21 May 2009.

http://apps.who.int/gb/ebwha/pdf_files/WHA64/A64_10-en.pdf

APRIL

2009

2 MAY — Diagnostic kits made globally available

3 MAY — Director-General announces deployment of oseltamivir to 72 countries

5 MAY — WHO dispatches 2.4 million courses of antivirals to 72 countries

18 MAY — High level consultation on H1N1 for all Member States convened

High level consultation: new influenza A(H1N1)

Keiji Fukuda, Assistant Director-General – Health Security and Environment; Ban Ki-moon, Secretary-General of the United Nations; and Margaret Chan, Director-General of the World Health Organization

In view of the threat posed by the current outbreak of new influenza A(H1N1), the Director-General of the World Health Organization convened a High-Level Consultation for all Member States at the start of the Sixty-second World Health Assembly.

Key uncertainties

The only thing certain about influenza viruses is that nothing is certain.

It remains uncertain how fast the new influenza A(H1N1) virus will spread throughout the world and whether it will become widely established.

It remains uncertain whether the infectivity and virulence of the new influenza A(H1N1) virus will change over time.

Key considerations

Being prepared has made a vital difference: Investment in developing national and regional pandemic preparedness plans over the past five years has paid major dividends.

The International Health Regulations (2005) have been tested for the first time in a public health emergency affecting multiple countries and the experience has shown that Member States are prepared to meet their 2005 commitments.

Success depends on a multi-stakeholder approach: Many preparedness plans emphasize a whole of government approach.

Effective communication is paramount: Real-time exchange of information has been a key feature of the response so far.

Science-based approaches remain the bedrock of the response: The outbreak is at different stages in different countries and continents.

Health systems matter: Many of the countries that have been affected to date stressed the importance of universal access to health care, and the need for strong primary health care.

http://www.who.int/csr/resources/publications/swineflu/High_Level_Consultation_18_May_2009.pdf

Clinical management of pandemic influenza guidance published — 21 MAY

Vaccine strain recommendation — 26 MAY

Vaccine reassortants available — 27 MAY

JUNE

JULY

May

Severity assessment

29 May

"… countries may find it useful to assess the specific severity parameters of a pandemic at national and regional level to efficiently target and scale the use of limited resources and interventions …

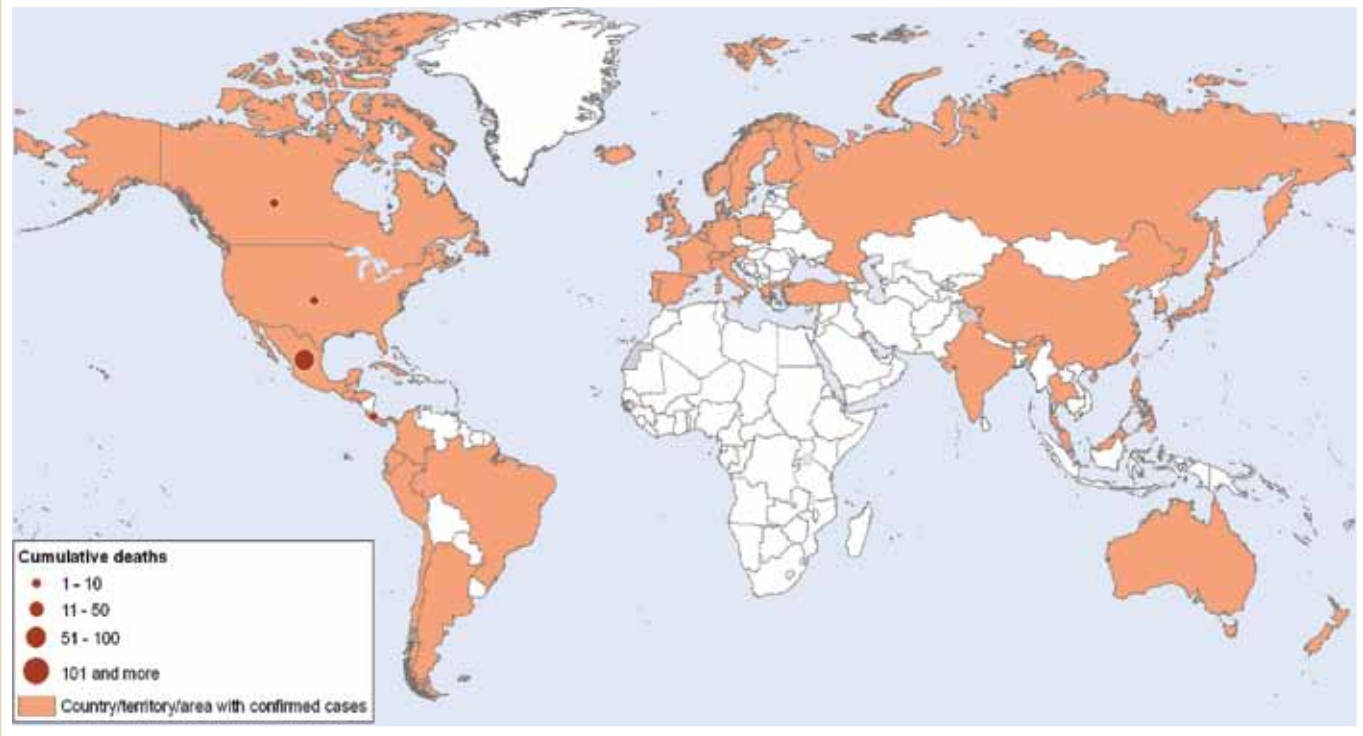
"… severity may vary from country to country and among different population groups or geographic locales … Severity will likely change as an event unfolds over time … The robustness of a severity assessment will reflect the quality and availability of information about the virus and the people who are susceptible to infection.

"… the impact of a pandemic on a population is a function of 3 determinants: (i) the pandemic virus and its virological and clinical manifestations; (ii) the vulnerability of the population; and (iii) the capacity of the population for response."

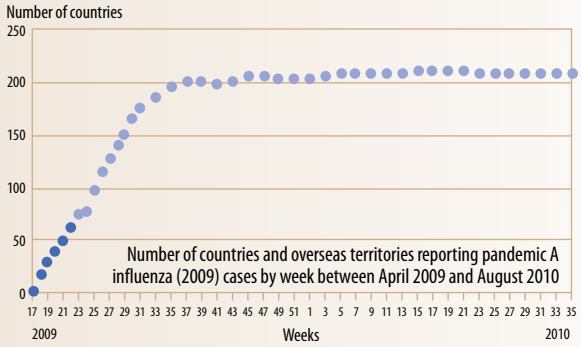
http://www.who.int/wer/2009/wer8422/en/index.html

27 May 2009 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO



Within one month, the virus had spread to much of the world including the temperate regions of the southern hemisphere, where the usual winter influenza transmission season was just starting.



Number of countries and overseas territories reporting pandemic A influenza (2009) cases by week between April 2009 and August 2010

June

11 June

"The Emergency Committee held its fourth meeting on 11th June 2009.

"The Committee considered available information on transmission of new influenza A(H1N1) in a number of locations in countries in different regions of the World Health Organization, and concluded that the criteria for a pandemic have been met.

"As previously recommended by the Director-General, countries should not close borders or restrict international traffic and trade.

"Countries should assess their specific situation and make a timely transition from focusing national efforts on containment to focusing on mitigation measures, including appropriate non-pharmaceutical interventions."

http://www.who.int/csr/disease/swineflu/4th_meeting_ihr/en/index.html

World now at the start of 2009 influenza pandemic

"As of today, nearly 30 000 confirmed cases have been reported in 74 countries …

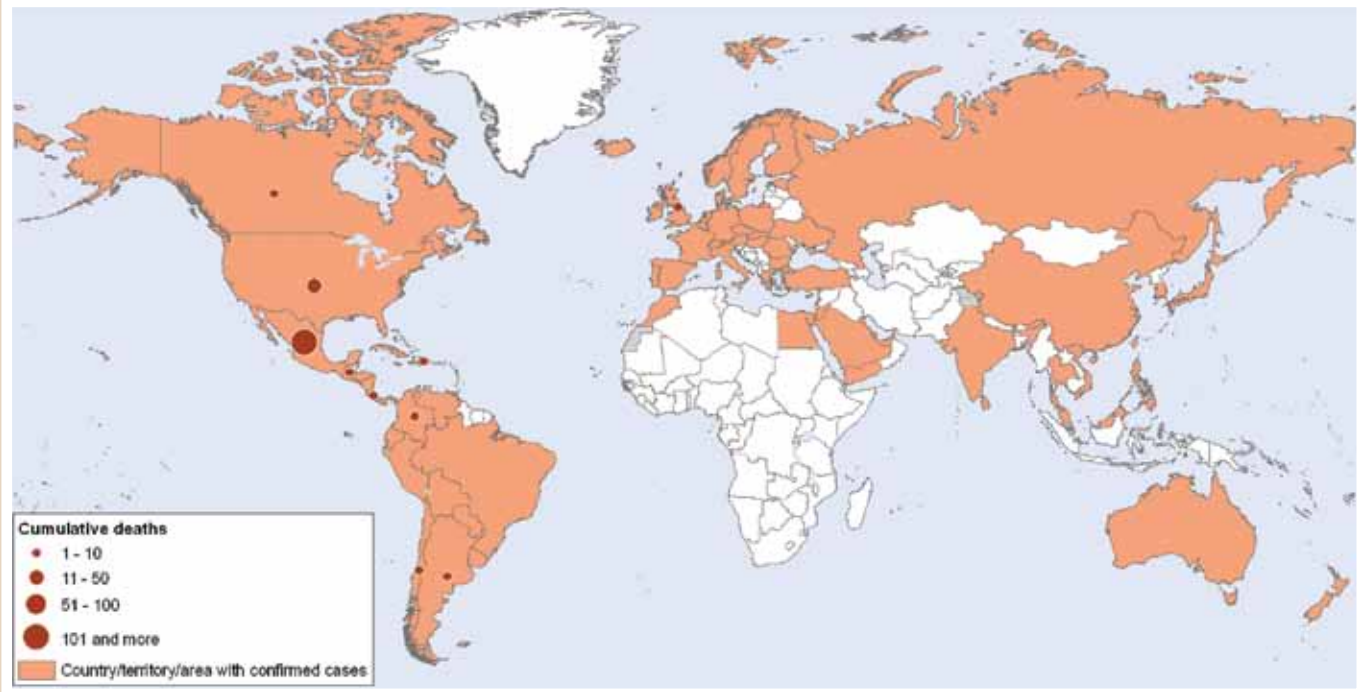
"Further spread is considered inevitable … I have therefore decided to raise the level of influenza pandemic alert from phase 5 to phase 6 …

"Globally, we have good reason to believe that this pandemic, at least in its early days, will be of moderate severity."

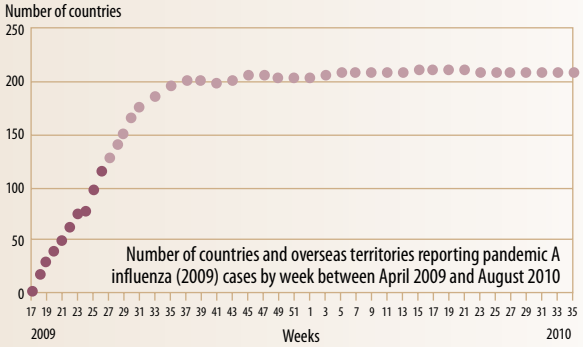
http://www.who.int/mediacentre/news/statements/2009/h1n1_pandemic_phase6_20090611/en/index.html

17 June 2009 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO

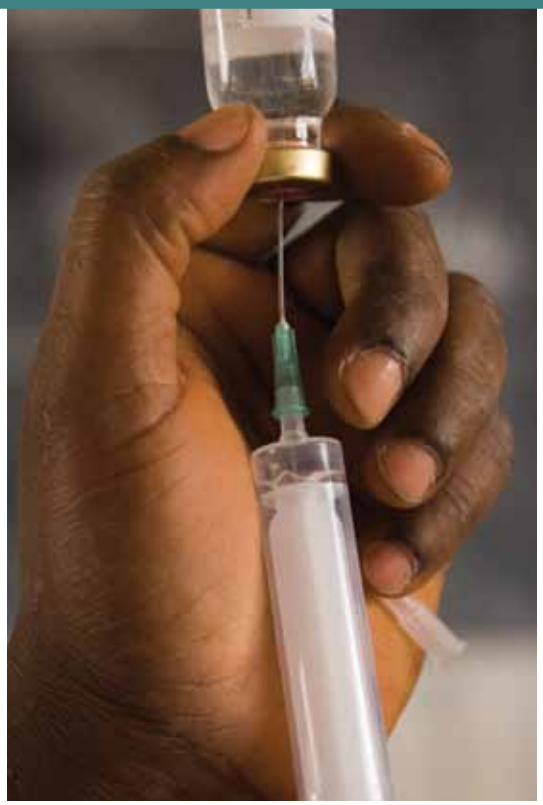


As community transmission became sustained on four continents, countries shifted their monitoring from screening of returning travellers to performing enhanced surveillance in hospitals and clinics. Spread across the southern hemisphere temperate region during the winter of 2009 (June–August) was rapid, and the pandemic virus quickly replaced other influenza viruses that season.



Number of countries and overseas territories reporting pandemic A influenza (2009) cases by week between April 2009 and August 2010

July



Immunization

"The Strategic Advisory Group of Experts (SAGE) … [met] to discuss … vaccine for the pandemic (H1N1) 2009.

"The experts identified three different objectives that countries could adopt as part of their pandemic vaccination strategy:

- protect the integrity of the health-care system and the country's critical infrastructure;
- reduce morbidity and mortality; and
- reduce transmission of the pandemic virus within communities.

"Although the severity of the pandemic is currently considered to be moderate with most patients experiencing uncomplicated, self-limited illness, some groups such as pregnant women and persons with asthma and other chronic conditions such as morbid obesity appear to be at increased risk …

"All countries should immunize their health-care workers as a first priority to protect the essential health infrastructure."

http://www.who.int/csr/disease/swineflu/notes/h1n1_vaccine_20090713/en/index.html

Urgent needs identification and prioritization process commenced

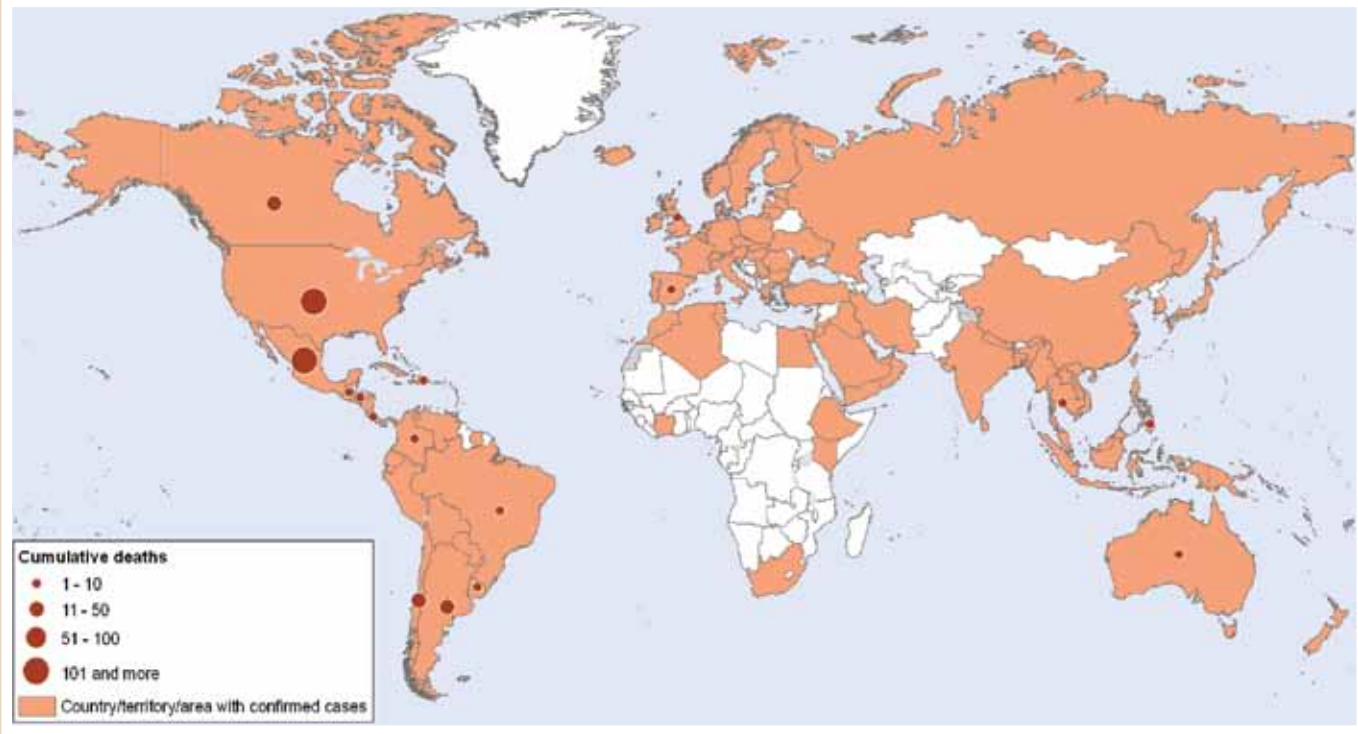
Target groups for vaccination decided by SAGE

JUNE | 6 JULY | 13 JULY | AUGUST | SEPTEMBER

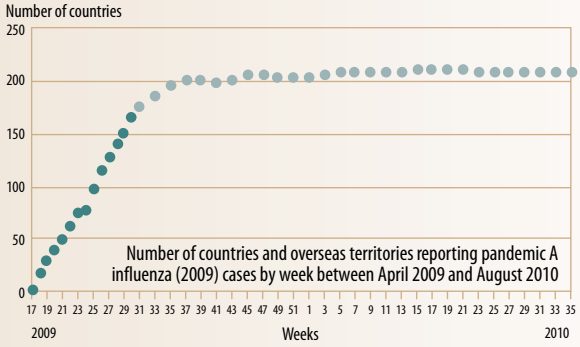
2009

1 July 2009 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO



As the case counts increased, the burden on laboratories became overwhelming and countries and territories stopped testing and reporting less severe cases.



August

Collaborative call to action to reduce impact of pandemic (H1N1) 2009

"WHO, IFRC, UNSIC, OCHA and UNICEF,[1] prompted by the humanitarian imperative, will work with partners such as the Red Cross and Red Crescent Societies, NGOs and civil society to support governments and communities to reduce the impact from the pandemic (H1N1) 2009."

http://www.who.int/csr/resources/publications/swineflu/call_action/en/

Urgent Needs Identification and Prioritization (UNIP) process

"The donors asked the UN system, WHO and the World Bank to develop a more detailed assessment of what is required [at Member State level] … [The] process targets as a first priority the least developed countries and as a second priority the GAVI[2] eligible countries …

"… the first category of support is to provide antibiotics and antivirals to treat severe illness, and sufficient quantities of vaccine to protect health-care workers and other essential service personnel …

"… the second category of support is to assist countries in strengthening their pandemic readiness …

"… The overarching goal of the UNIP process is to mobilize resources … so as to:

- Limit excess mortality
- Increase societal resilience
- Build on existing capacity."

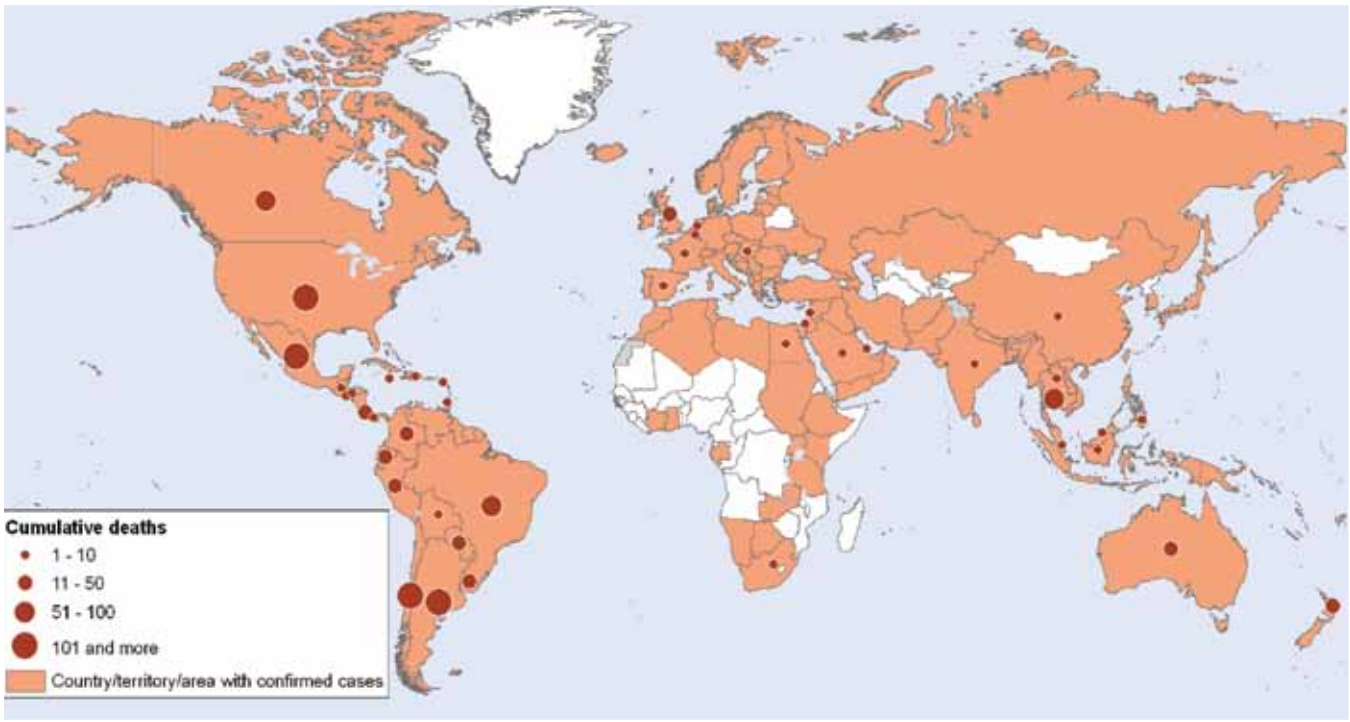
http://www.undg.org/docs/10592/UNIP_REPORT_18_(final).pdf

[1] IFRC – International Federation of Red Cross and Red Crescent Societies, UNSIC – UN System Influenza Coordination, OCHA – Office for the Coordination of Humanitarian Affairs, UNICEF – United Nations Children's Fund.
[2] GAVI – the Global Alliance for Vaccines and Immunisation (GAVI).

Call to action

2 August 2009 Pandemic (H1N1) 2009

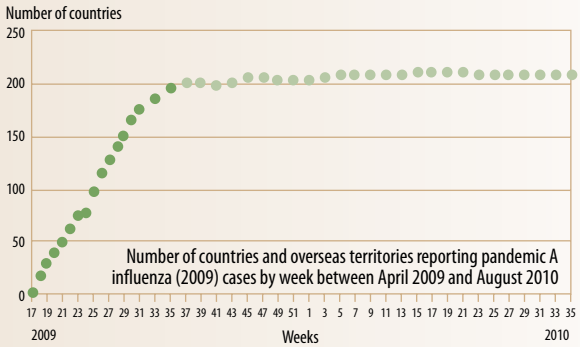
Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO



Requests for support from least-developed countries for pandemic preparedness

Requested area for support	% assessed countries requesting
Increased supply of personal protective equipment	82
Technical assistance with strengthening of operational communications	72
Assistance with the production and dissemination of materials to support community-based communications for behaviour change	69
Training of health-care workers in infection control and case management	69
Strengthening whole-of-society readiness	69
Training of public health workers in pandemic surveillance	54
Health sector planning, including for mass vaccination campaigns	50

Adapted from http://www.undg.org/docs/10592/UNIP_REPORT_18_(final).pdf



September

"WHO applauds and welcomes the announcement of donations of pandemic vaccine made today by the United States of America, in concert with Australia, Brazil, France, Italy, New Zealand, Norway, Switzerland, and the United Kingdom."

http://www.who.int/mediacentre/news/statements/2009/pandemic_vaccine_donations_20090918/en/index.html

"… WHO received pledges of approximately 200 million doses of vaccine, 70 million syringes and US$ 48 million for operations …"

http://www.who.int/csr/disease/swineflu/action/h1n1_vaccine_deployment_final_update_2010_11_10.pdf

"WHO currently estimates worldwide production capacity for pandemic vaccines at approximately 300 million doses per year.

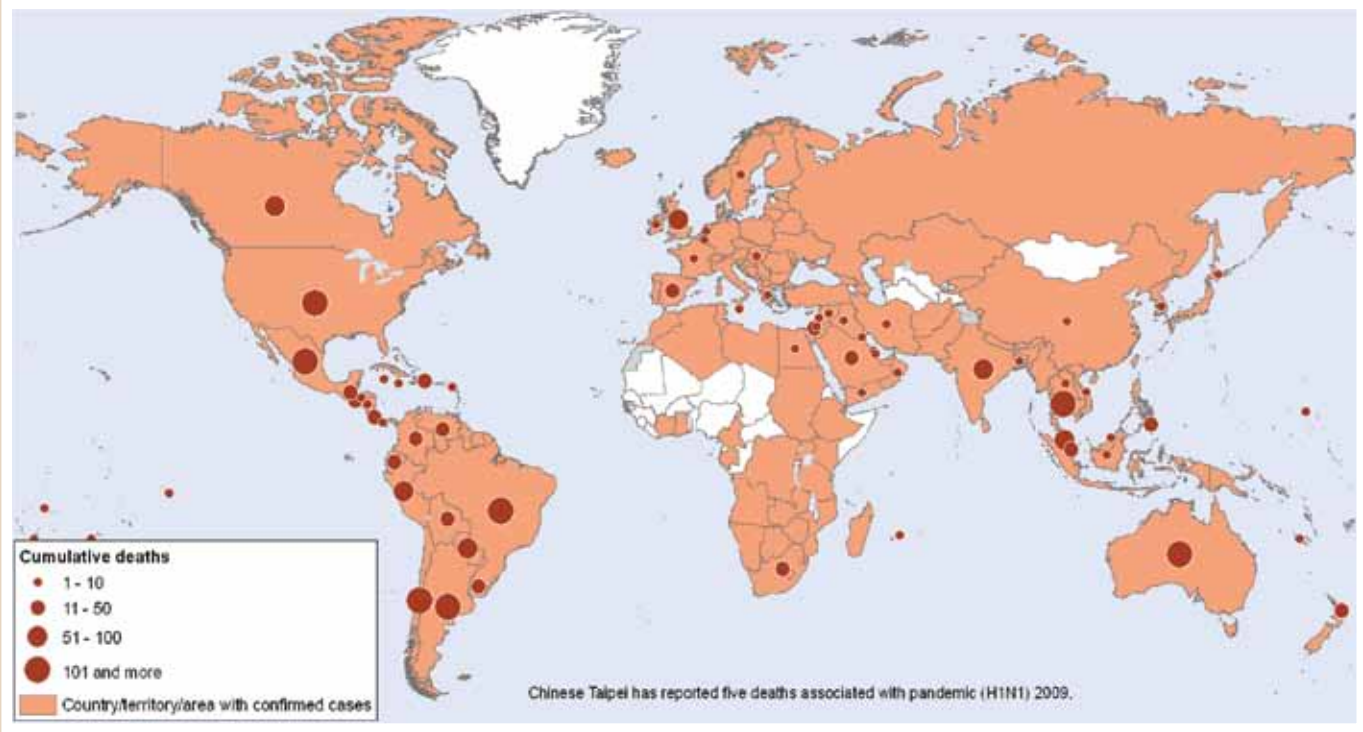
"Global manufacturing capacity for influenza vaccines is limited, inadequate and not readily augmented."

http://www.who.int/csr/disease/swineflu/notes/pandemic_influenza_vaccines_20090924/en/index.html

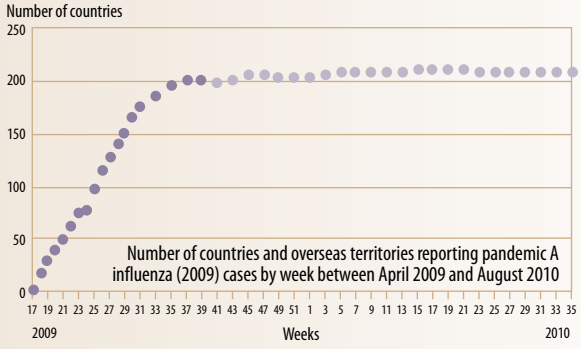
Donations of vaccines announced

6 September 2009 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO



Countries with less capacity for testing reported fewer deaths as only laboratory-confirmed fatalities were reported. Over time, the numbers reported to WHO lagged further and further behind the true picture and other means of monitoring the progress of the pandemic were developed.

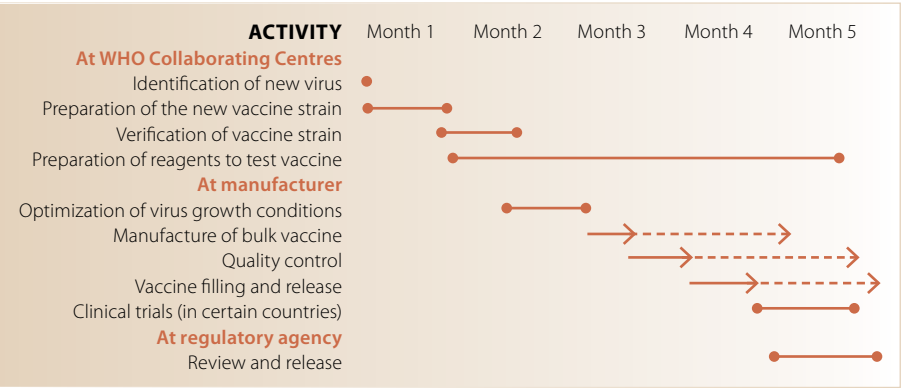


Number of countries and overseas territories reporting pandemic A influenza (2009) cases by week between April 2009 and August 2010

October

Pandemic influenza vaccine production

1. Identification of a new virus significantly different to currently circulating viruses.
2. Preparation of candidate vaccine virus which is able to grow in hen's eggs.
3. Characterization of the candidate vaccine viruses to verify their similarity to pandemic virus.
4. Preparation of reagents to test the candidate vaccine viruses.
5. Optimization of virus growth conditions for maximum virus production.
6. Production of bulk vaccine using thousands of eggs.
7. Quality control of each batch for sterility, safety and potency.
8. Vaccine is tested, filled, packed and released.



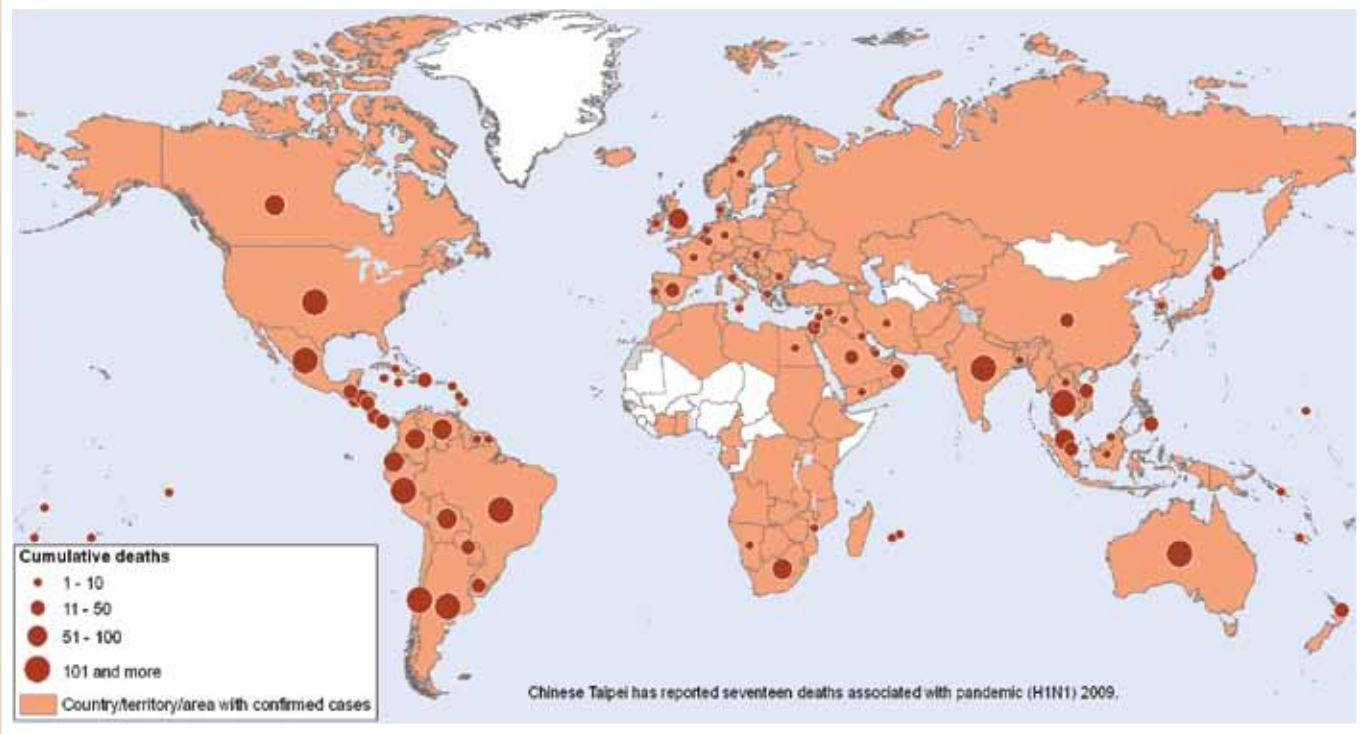
Key: The arrows with dotted lines preceded by non-broken arrows indicate the time.

The entire process can be completed in approximately 5–6 months.

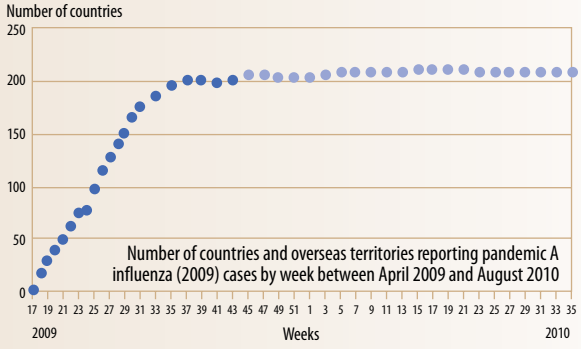
http://www.who.int/csr/disease/swineflu/notes/h1n1_vaccine_20090806/en/index.html

4 October 2009 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO

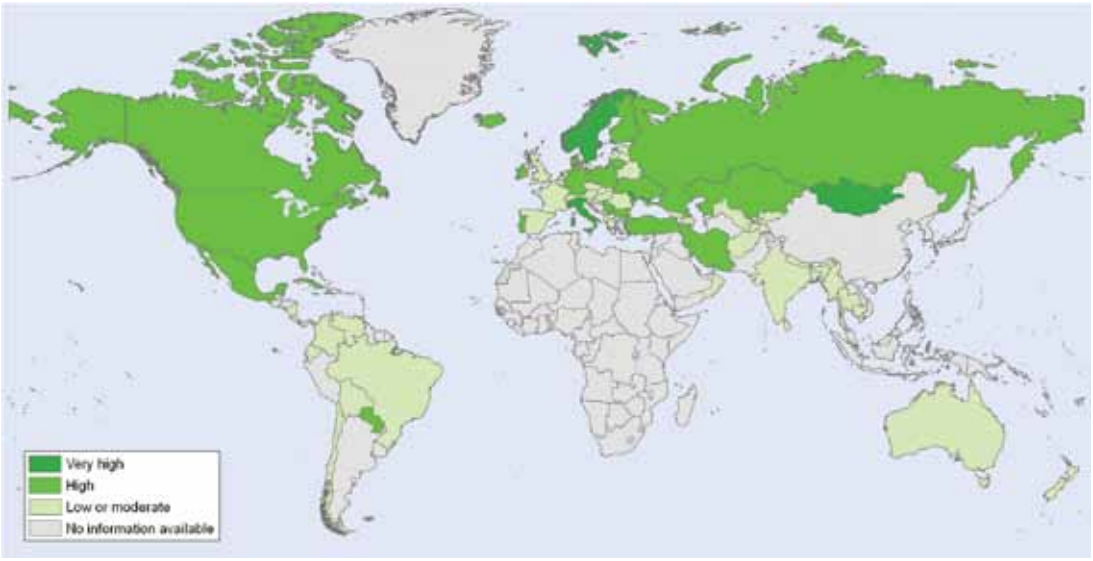


As school children returned to school, the influenza season started unusually early in much of the temperate regions of the northern hemisphere. For some, it was the earliest influenza season on record since the pandemic of 1968. WHO rolled out a system for regional and global reporting of epidemiological data (FluID) to improve the monitoring of influenza seasonal outbreaks and future pandemics, similar to a system that had been in use in Europe for a number of years.



November

Monitoring the pandemic: WHO Update 74: 9–15 November
Intensity of acute respiratory illness in population



The intensity indicator is an estimate of the proportion of the population with acute respiratory disease, covering the spectrum of disease from influenza-like illness to pneumonia.

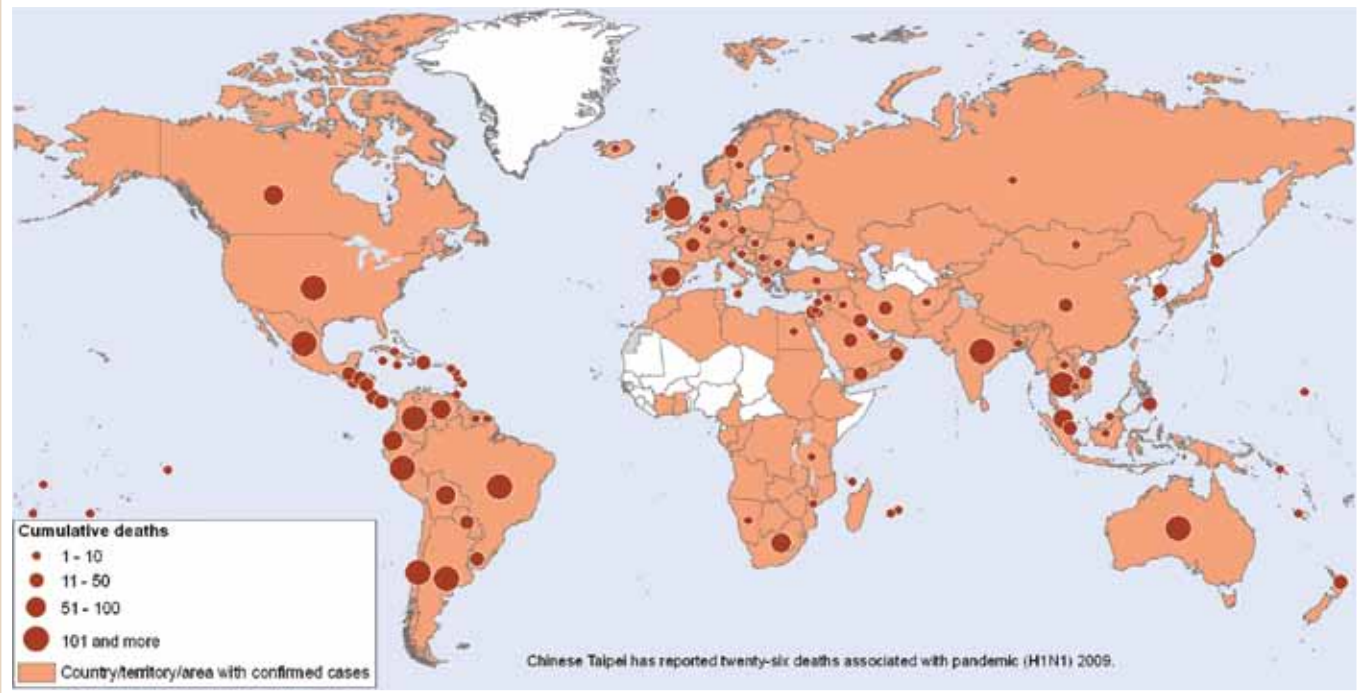
- **Low or moderate:** a normal or slightly increased proportion of the population is currently affected by respiratory illness.
- **High:** a large proportion of the population is currently affected by respiratory illness.
- **Very high:** a very large proportion of the population is currently affected by respiratory illness.

"As of 8 November 2009, worldwide more than 206 countries and overseas territories or communities have reported laboratory-confirmed cases of pandemic influenza H1N1 2009, including over 6250 deaths."

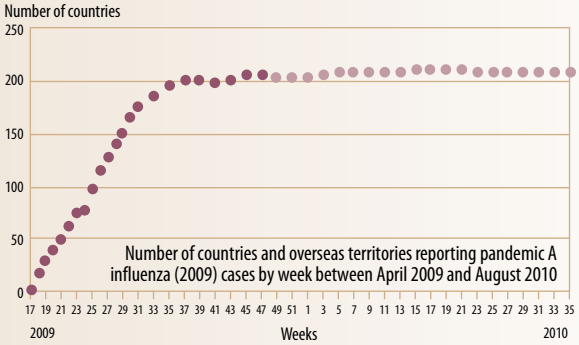
http://www.who.int/csr/don/2009_11_13/en/index.html

1 November 2009 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO



By November, public concern over the pandemic had generally declined and there were fewer visits to health-care providers by the "worried well" and persons with mild illness. However, the numbers of severe cases and deaths were much higher in the northern hemisphere winter season, even in those countries where transmission first occurred in the previous summer.



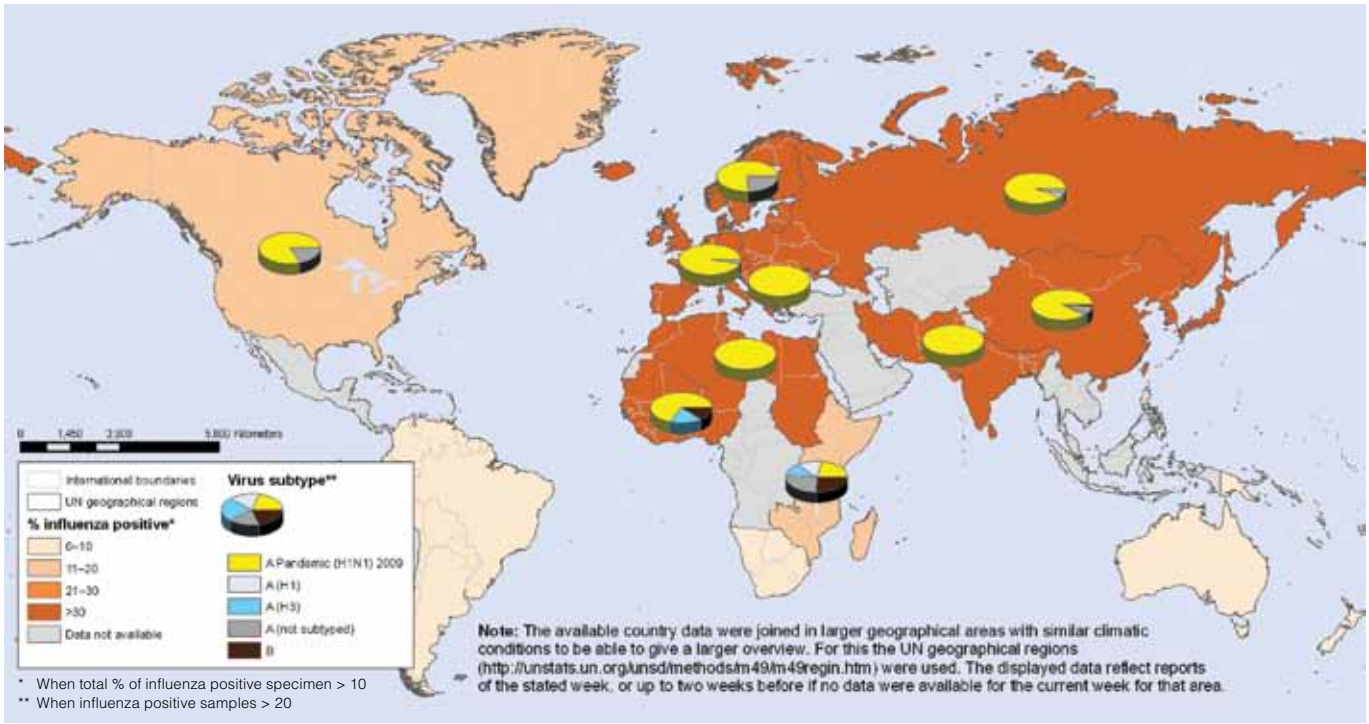
Convening of the Public Health Research Agenda for Influenza

OCTOBER | 17 NOVEMBER | DECEMBER | JANUARY | FEBRUARY

2010

December

Percentage of specimens testing positive for influenza and distribution of virus subtypes



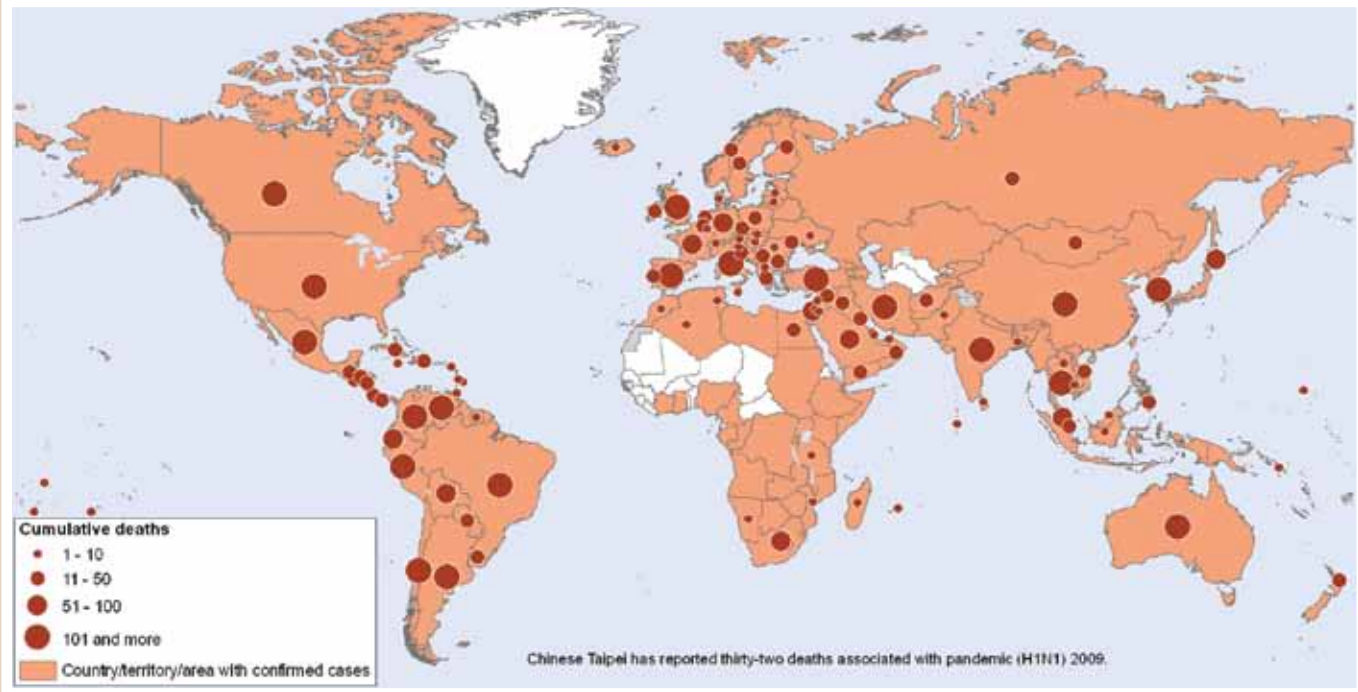
29 November – 6 December 2009

From 19 April 2009 to 5 December, a total of 82 countries reported … [virological data]. The total number of specimens … positive for influenza viruses was … 351 047. Of these, 258 698 (73.7%) were pandemic H1N1, 8358 (2.4%) were seasonal A(H1), 23 777 (6.8%) were A(H3), 54 162 (15.4%) were A (not subtyped) and 6047 (1.7%) were influenza B.

Adapted from http://www.who.int/csr/disease/swineflu/laboratory18_12_2009/en/index.html

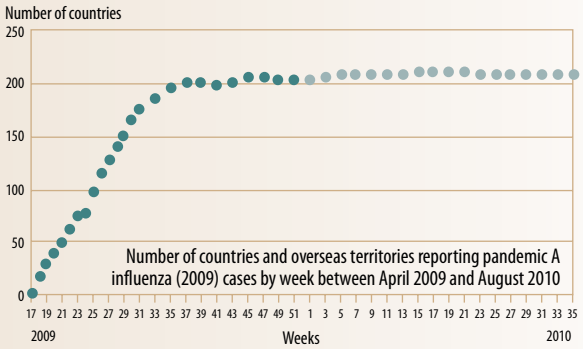
6 December 2009 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO



During December 2009, the percentage of seasonal H1N1 viruses had decreased to 0.2% while the pandemic H1N1 strain had increased to 87% of all viruses tested from countries sharing their virological data.

http://www.who.int/csr/disease/swineflu/laboratory30_12_2009/en/index.html



January

WHO coordinated the deployment of pandemic (H1N1) 2009 vaccine donated by several countries and vaccine manufacturers

Overview of resource mobilization (millions)

RESOURCE	PLEDGED	COMMITTED
Vaccines (doses)	200	122 453
AD syringes	70	70
Safety boxes	0.5	0.5
Funding (USD)	57.3	56.3

Sufficient vaccines were pledged to meet at least 10% population coverage of all eligible countries that requested vaccine.

Ninety-seven countries requested vaccine, 87 countries signed agreements with WHO and 82 National Deployment Plans were completed and finalized.

WHO deployment of donated H1N1 vaccine

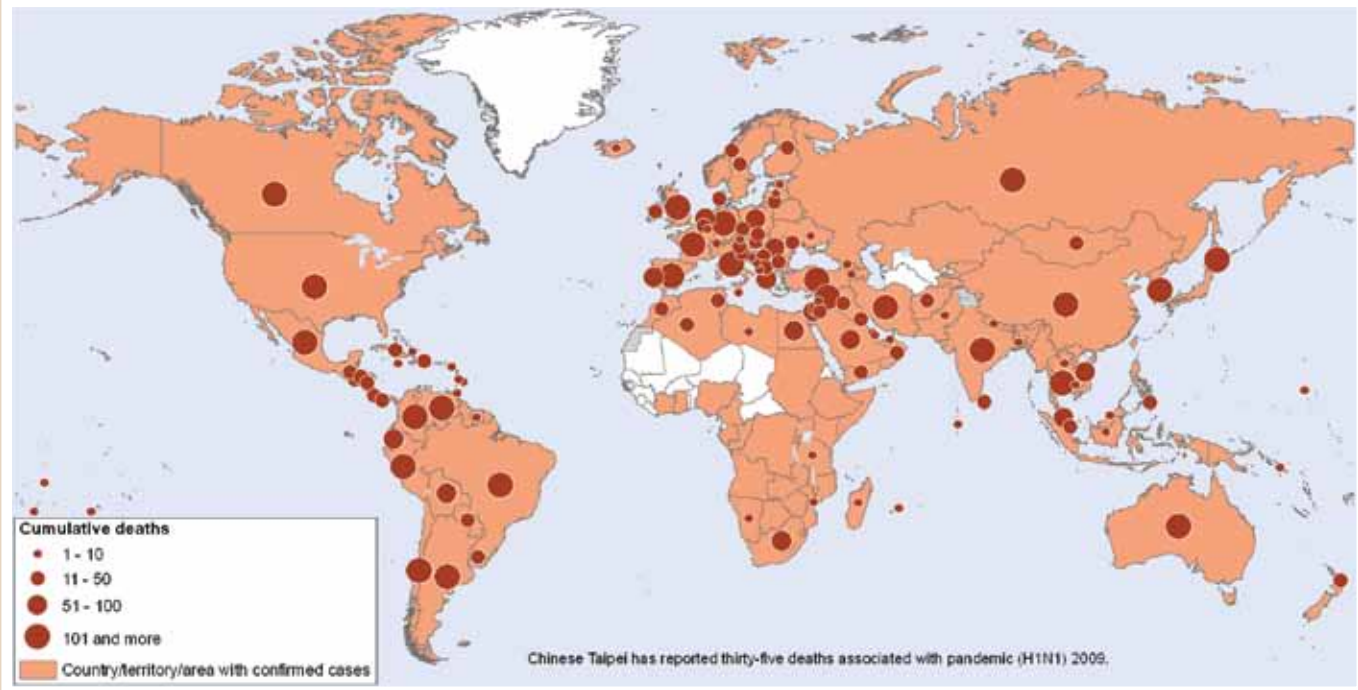
Executive Board decision to convene the IHR/Pandemic review

OCTOBER | NOVEMBER | DECEMBER | 7 JANUARY | 21 JANUARY

2009 2010

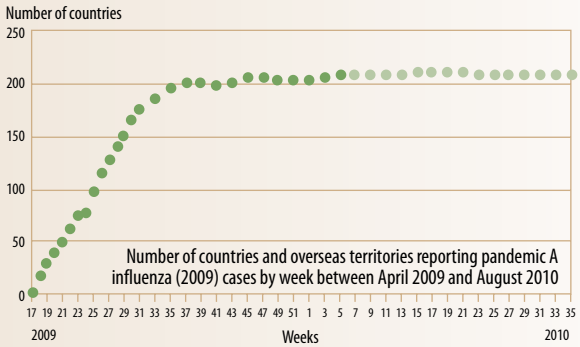
3 January 2010 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO



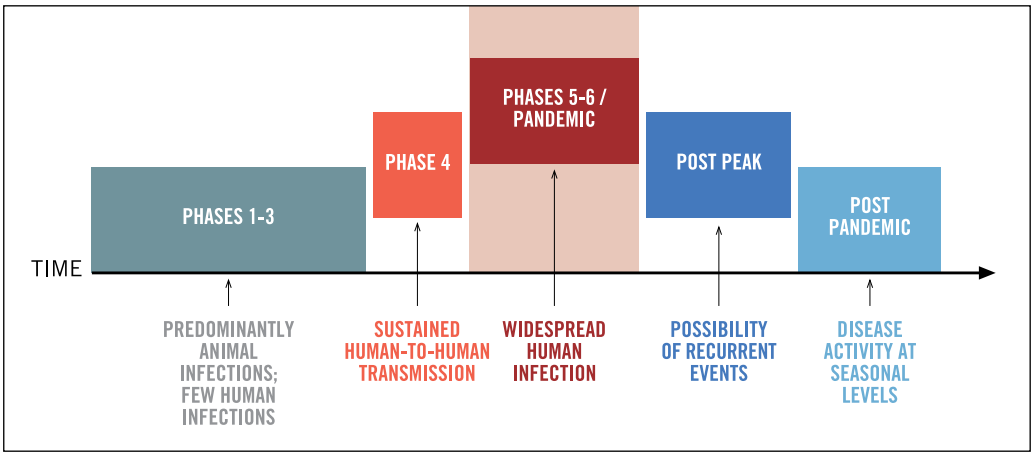
At the January 2010 Executive Board meeting of WHO, the Director-General requested a review of the Organization's response to the pandemic. The aim of the review was to:

— assess the functioning of the International Health Regulations
— assess the ongoing response to the pandemic
— identify lessons learned for strengthening preparedness and response for future public health emergencies.



February

7th Meeting of the Emergency Committee



Pandemic influenza phases

"… it was premature to conclude that all parts of the world have experienced peak transmission of the H1N1 pandemic influenza … the Director-General determined that there had been no change in the pandemic phase."

http://www.who.int/csr/disease/swineflu/7th_meeting_ihr/en/index.html

"The most active areas of transmission continue to be in later peaking areas, particularly northern Africa, South Asia, and East Asia …

"In North Africa, pandemic influenza transmission persists but substantial declines in activity have been observed over the past month across the region …

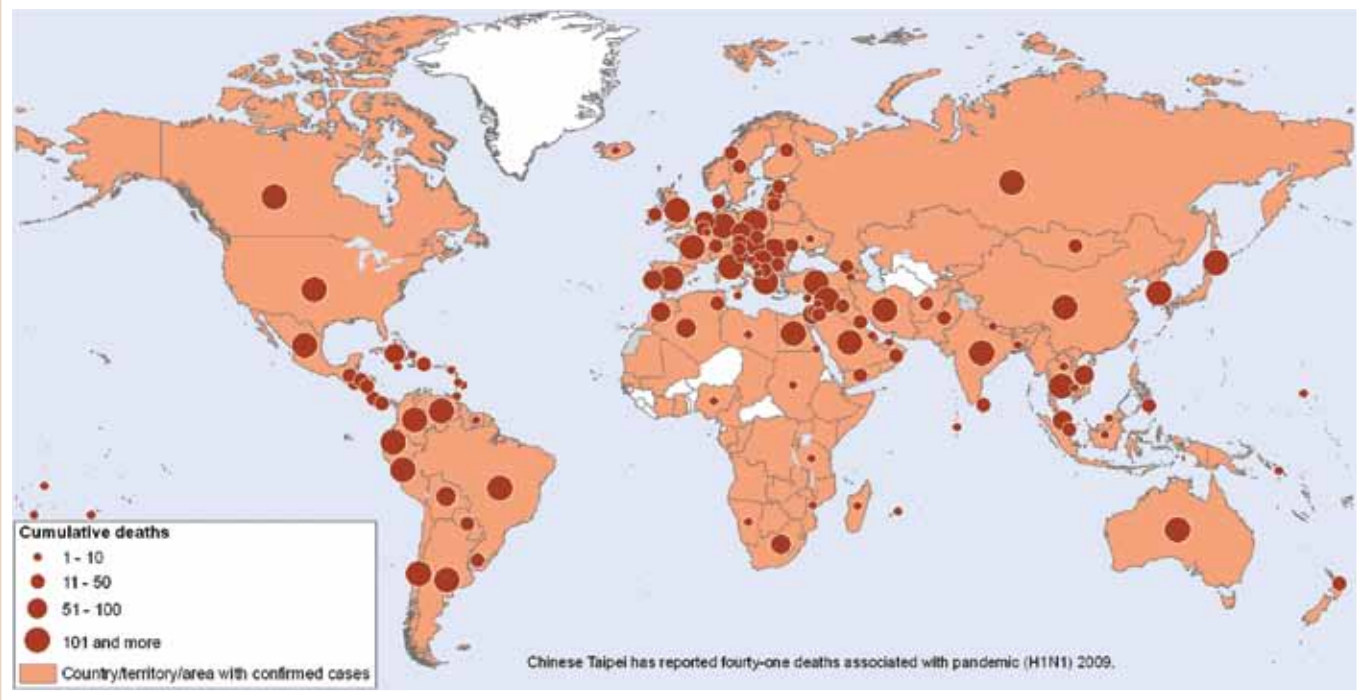
"In South and Southeast Asia, pandemic influenza virus continues to circulate widely across the region, however, overall activity continues to decrease or remain low in most places …

"In East Asia, pandemic influenza transmission persists across the region; however, overall activity has declined substantially in most places."

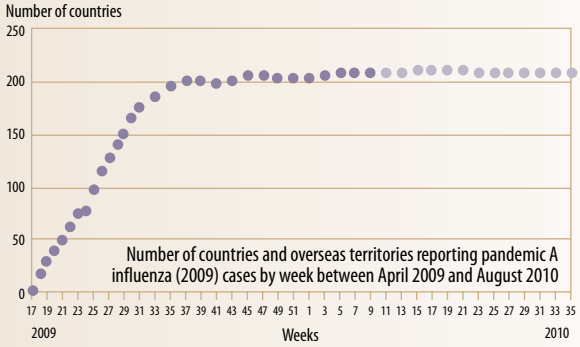
http://www.who.int/csr/don/2010_02_12/en/index.html

7 February 2010 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO



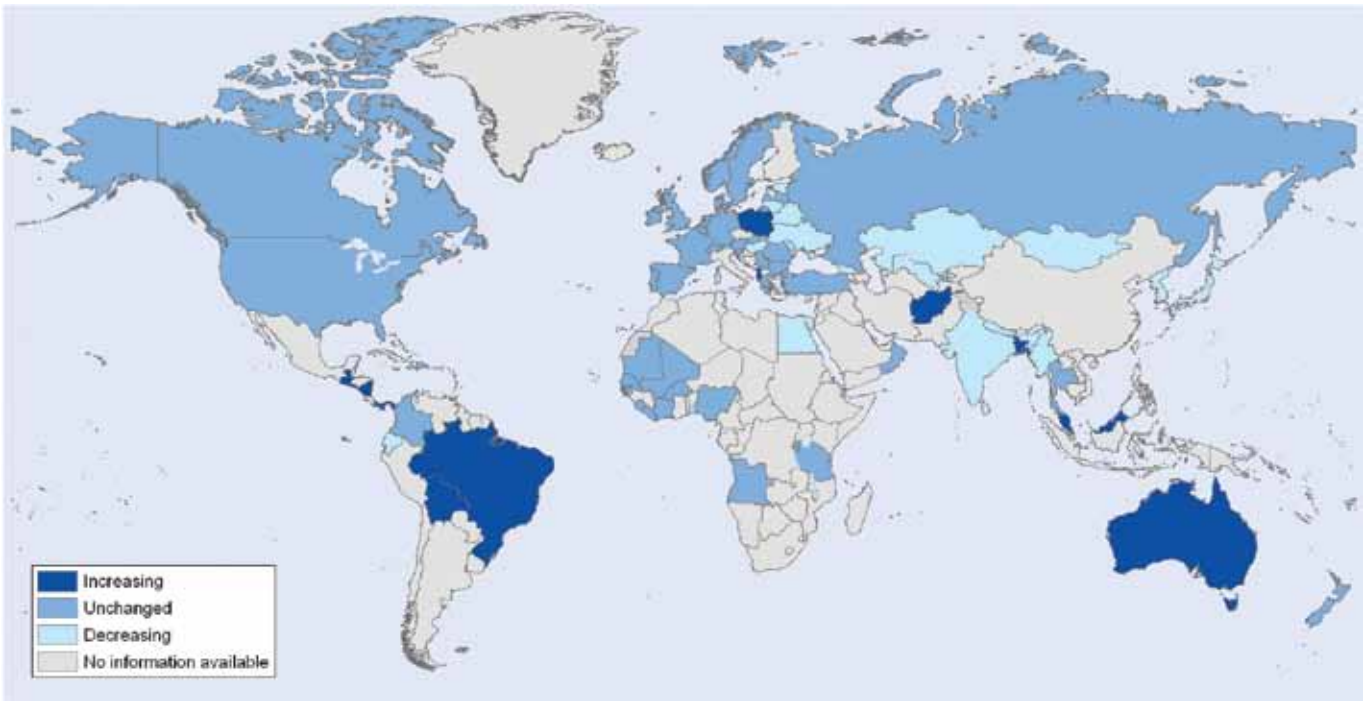
As of 7 February 2010, worldwide more than 212 countries and overseas territories or communities had reported laboratory confirmed cases of pandemic influenza H1N1 2009, including at least 15 292 deaths.



Number of countries and overseas territories reporting pandemic A influenza (2009) cases by week between April 2009 and August 2010

March

Monitoring the pandemic: WHO update 90: 8–14 March 2010
Trend of respiratory disease activity compared to previous week



Week 10, March 2010

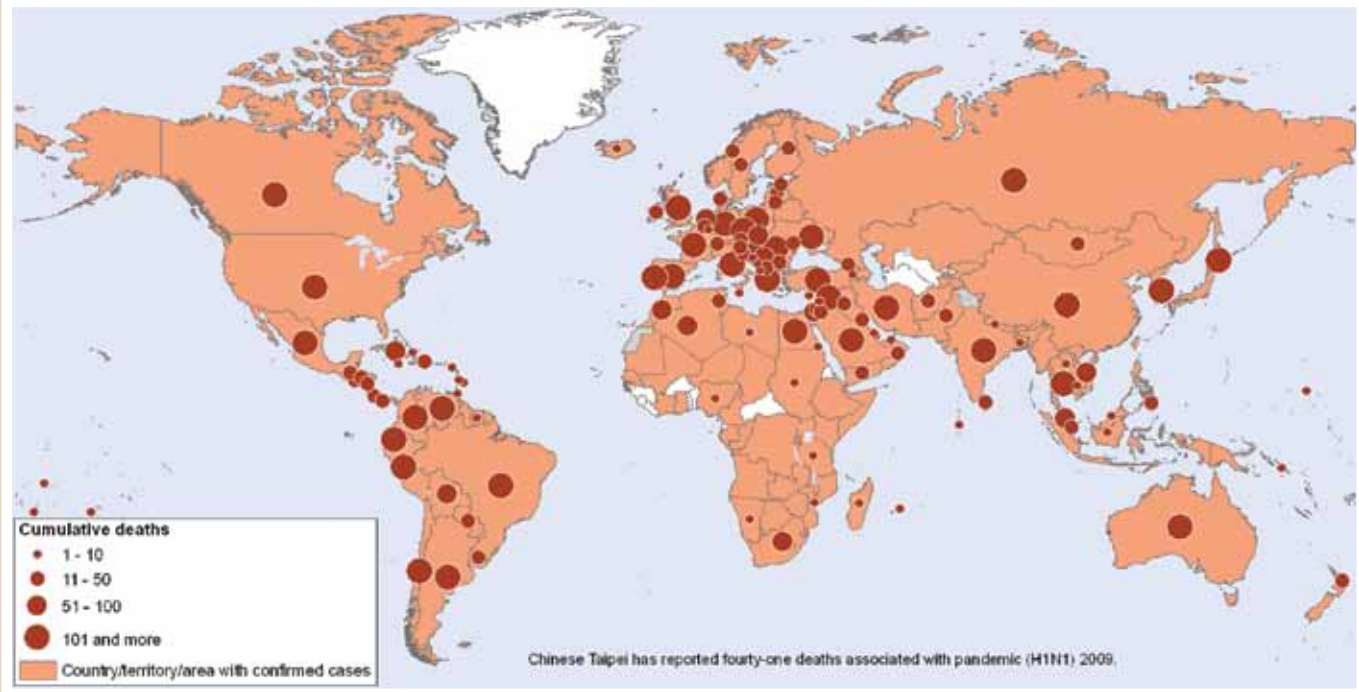
Region	Deaths[a]
WHO Regional Office for Africa (AFRO)	167
WHO Regional Office for the Americas (AMRO)	At least 7 539
WHO Regional Office for the Eastern Mediterranean (EMRO)	1 018
WHO Regional Office for Europe (EURO)	At least 4 388
WHO Regional Office for South-East Asia (SEARO)	1 633
WHO Regional Office for the Western Pacific (WPRO)	1 710
Total[a]	16 455

[a] The reported number of fatal cases is an under representation of the actual numbers as many deaths are never tested or recognized as influenza related.

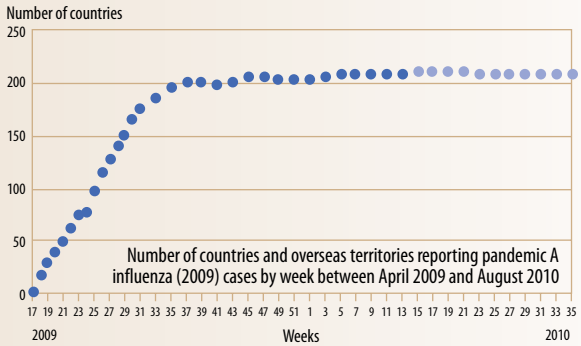
http://www.who.int/csr/don/2010_03_05/en/index.html

14 March 2010 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO



Pandemic virus continued to circulate in tropical areas of the world, most notably western Africa, between the temperate area winter seasons. Western Africa had been largely spared up to this point.



April

The IHR Review Committee convenes

"The assessment of the global response to the pandemic H1N1 will be conducted by the International Health Regulations Review Committee (Review Committee on the functioning of the International Health Regulations (2005) in relation to Pandemic (H1N1) 2009), a committee of experts with a broad mix of scientific expertise and practical experience.

"Observers invited to the first meeting include representatives of all States Parties to the IHR (194 countries), United Nations organizations and relevant intergovernmental organizations, and nongovernmental organizations in official relations with WHO."

http://www.who.int/csr/disease/swineflu/frequently_asked_questions/review_committee/en/index.html

From the Director-General's opening remarks at the first meeting of the Review Committee of the International Health Regulations

"This has been the first influenza pandemic in four decades. This has been the first major test of the functioning of the revised International Health Regulations, which entered into force in 2007.

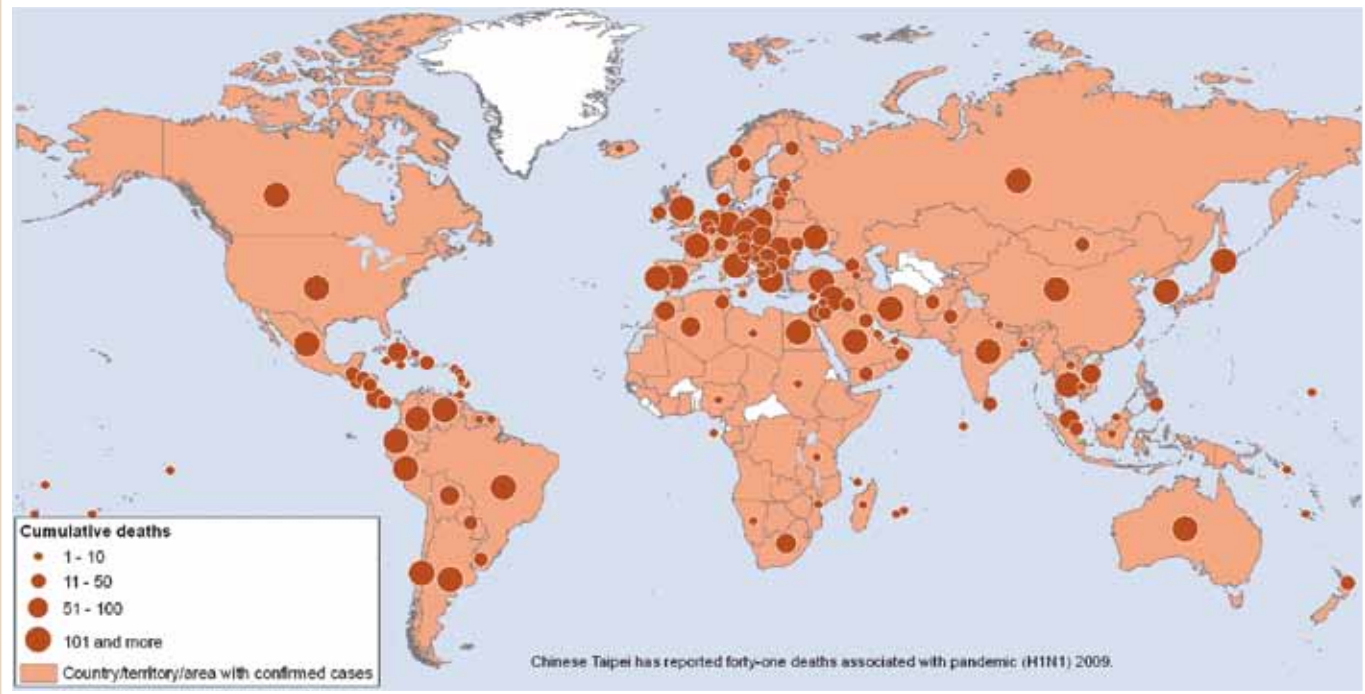
"As I have said before, this has been the most closely watched and carefully scrutinized pandemic in history. This gives us a vast body of scientific, clinical, and epidemiological data to assess.

"We are seeking lessons, about how the IHR has functioned, about how WHO and the international community responded to the pandemic, that can aid the management of future public health emergencies of international concern."

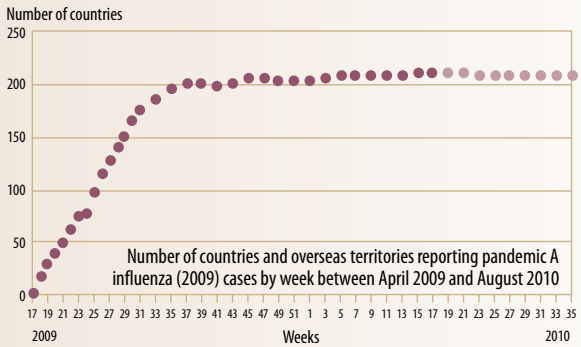
http://www.who.int/dg/speeches/2010/ihr_20100412/en/index.html

18 April 2010 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO



During the period between the northern and southern hemisphere winters, most influenza transmission was occurring in tropical areas of the world, primarily in Asia and parts of Africa. The seasonal influenza virus, A(H3N2), reappeared in many areas co-circulating with the pandemic H1N1 virus.



IHR review committee convenes

MARCH | 12 APRIL | MAY | JUNE | JULY

May

WHO Global Influenza Surveillance and Response System

- National Influenza Centres
- H5 Reference Laboratories
- WHO Collaborating Centre for Studies on the Ecology of Influenza in Animals
- WHO Collaborating Centre for Surveillance, Epidemiology and Control of Influenza
- WHO Collaborating Centre for Reference and Research on Influenza

The WHO Global Influenza Surveillance and Response System (GISRS) monitors the evolution of influenza viruses and provides recommendations in areas including laboratory diagnostics, vaccines, antiviral susceptibility and risk assessment.

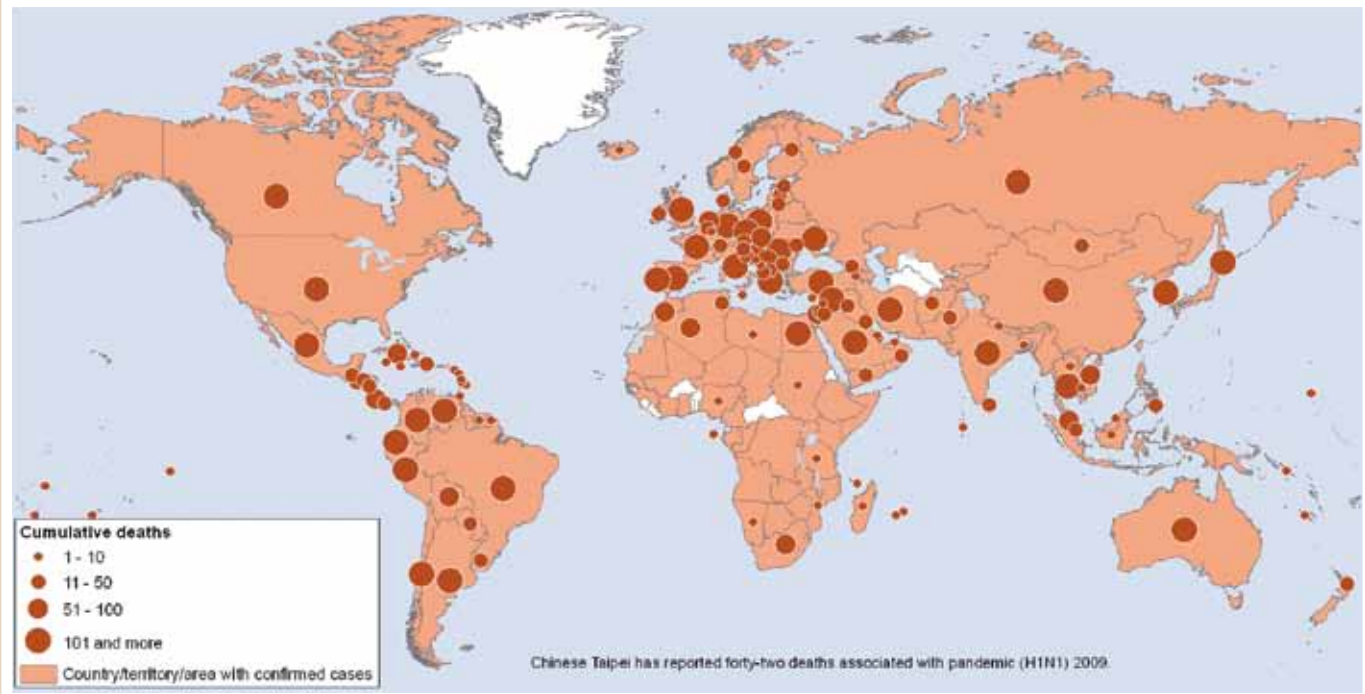
WHO GISRS also serves as a global alert mechanism for the emergence of influenza viruses with pandemic potential.

Established in 1952, the network currently comprises six WHO Collaborating Centres, four Essential Regulatory Laboratories and 136 institutions in 106 WHO Member States, which are recognized by WHO as National Influenza Centres, in addition to ad hoc groups established to address specific emerging issues.

http://www.who.int/influenza/gisrs_laboratory/en/

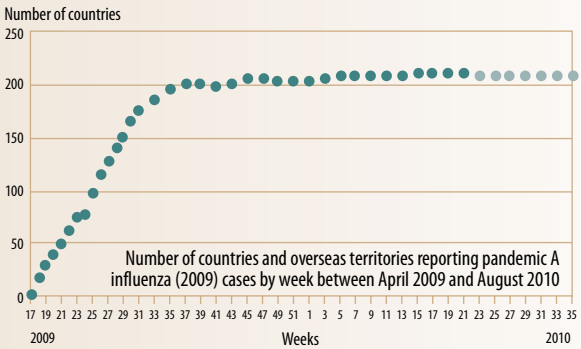
16 May 2010 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO



Role of GISRS in the pandemic:

1. Development and global distribution of diagnostic assays
2. Monitoring the co-circulation of pandemic and seasonal influenza virus
3. Monitoring the evolution of the 2009 H1N1 pandemic virus: antigenic and genetic characterization
4. Antiviral resistance monitoring
5. Vaccine virus and reagent development
6. Information exchange



http://www.who.int/wer/2009/wer8436.pdf

June

Shipment of specimens to WHO Collaborating Centres*

TO ATLANTA

From 71 countries, over 15 000 clinical specimens and isolates

TO MELBOURNE

From 25 countries, over 5000 clinical specimens and isolates

TO TOKYO

From 7 countries, over 470 clinical specimens and isolates

TO LONDON

From 62 countries, over 5000 clinical specimens and isolates

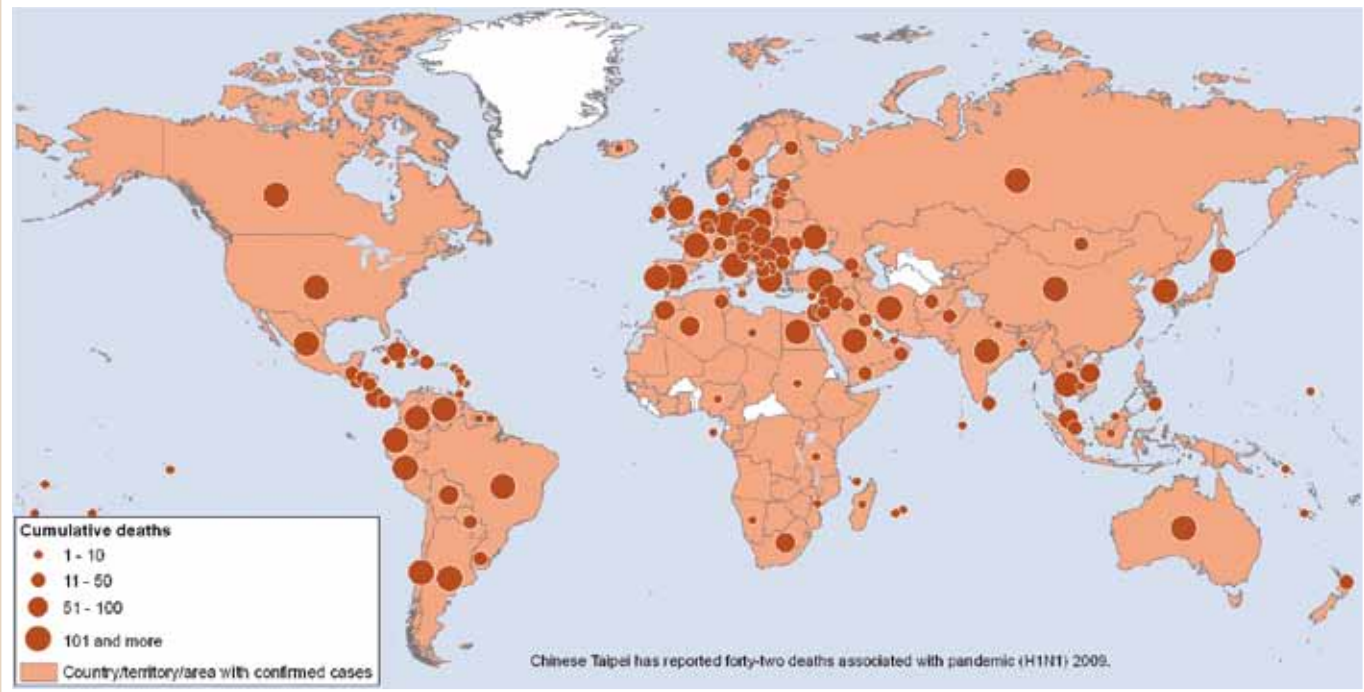
Throughout the pandemic, WHO supported 320 shipments of specimens through the WHO Shipment Fund project. This project provides shipping services for all National Influenza Centres and other influenza laboratories for sharing their influenza specimens with the GISRS. Under the agreement, the costs incurred by the courier company transporting the specimens are covered by the WHO Shipment Fund Project.

http://www.who.int/influenza/gisrs_laboratory/logistic_activities/en/

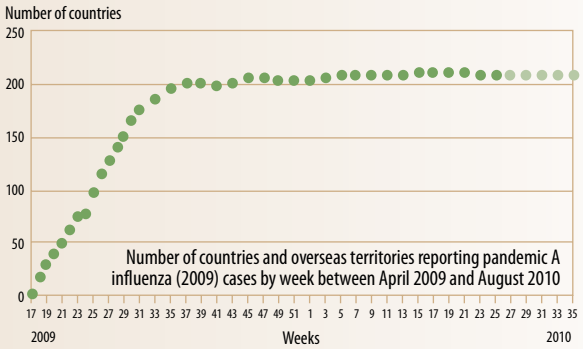
* The WHO Collaborating Centres are institutions which are designated by the Director-General to carry out activities in support of the Organization's programmes. Currently there are over 800 WHO Collaborating Centres in more than 80 Member States. **http://www.who.int/collaboratingcentres/en/**

13 June 2010 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO



The arrival of winter in the southern hemisphere brought a return of influenza. This second season was less severe for some areas but more severe for others. The previously circulating seasonal H1N1 strain was no longer being detected but H3N2 began to be increasingly seen and in some countries of the southern hemisphere it was the most commonly detected virus of the season.



Number of countries and overseas territories reporting pandemic A influenza (2009) cases by week between April 2009 and August 2010

July

Regional distribution of pandemic H1N1 vaccine through the WHO Deployment Initiative

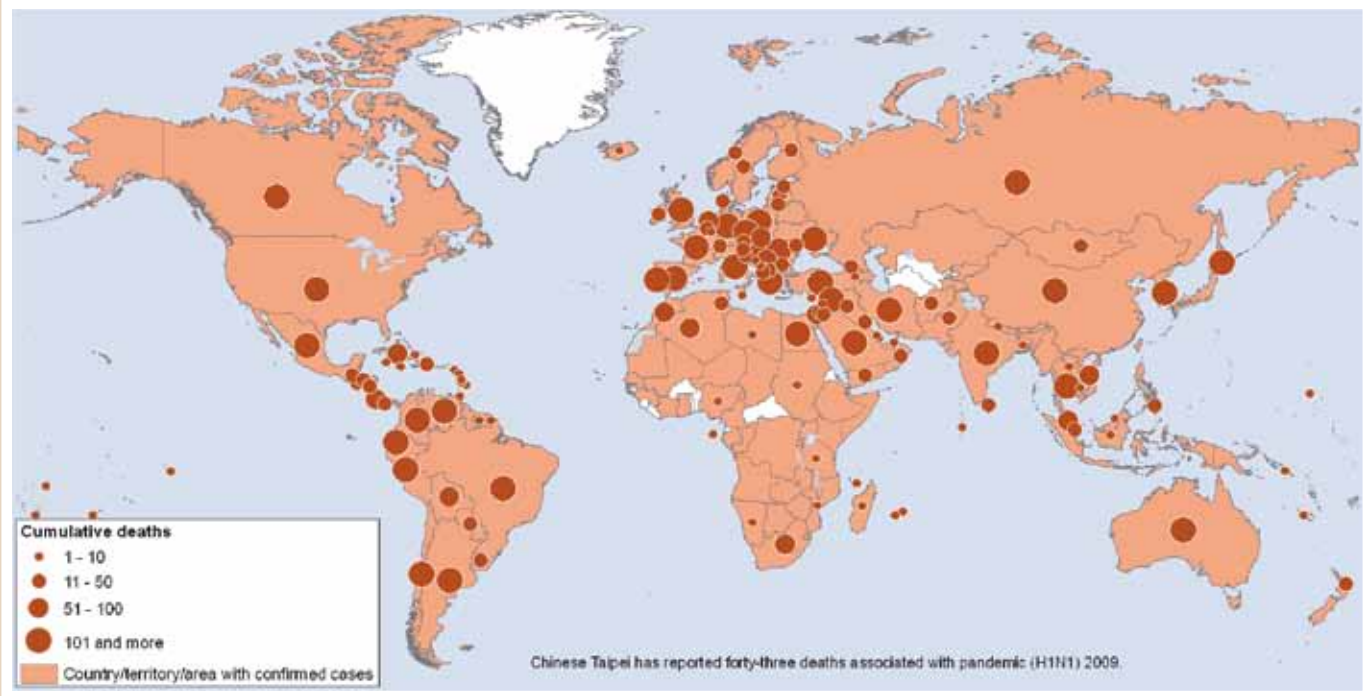
WHO region	No. of vaccine doses delivered
WHO African Region	32 096 290
WHO South-East Asia Region	21 090 700
WHO Region of the Americas	10 025 000
WHO Western Pacific Region	8 722 800
WHO Eastern Mediterranean Region	4 354 000
WHO European Region	1 777 500
Total	**78 066 290**

Overall, the WHO Vaccine Deployment Initiative delivered more than 78 million vaccine doses. Almost 70% of all vaccine doses were delivered to the WHO African Region and the WHO South-East Asia Region combined. In the WHO African Region in particular there were high numbers of eligible countries, many of which had dense populations.

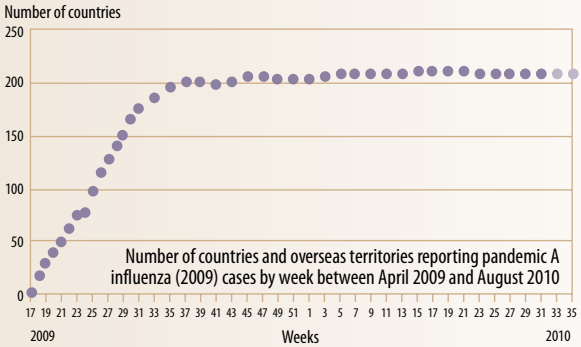
http://whqlibdoc.who.int/publications/2012/9789241564427_eng.pdf

11 July 2010 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO



As the second winter season since the beginning of the pandemic peaked in the southern hemisphere's temperate countries, H3N2 became the most commonly detected virus in some areas, outnumbering pandemic H1N1 cases. However, H1N1 continued to disproportionately affect younger adults, including some who had no underlying risk factors for severe disease. Many of these countries, notably those in the southern cone of South America, experienced a relatively mild season compared to the previous season when the pandemic virus first appeared.



August

Declaration of the end of the pandemic

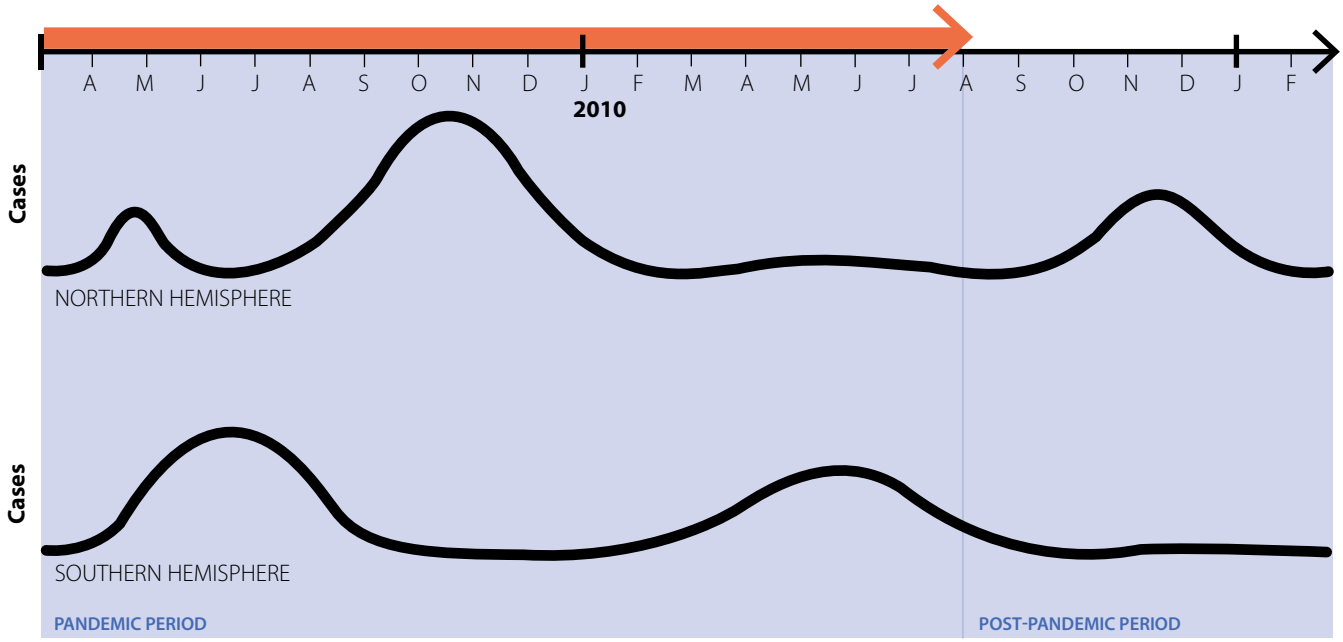
"The world is no longer in phase 6 of influenza pandemic alert. We are now moving into the post-pandemic period. The new H1N1 virus has largely run its course …

"Based on experience with past pandemics, we expect the H1N1 virus to take on the behaviour of a seasonal influenza virus and continue to circulate for some years to come …

"During the pandemic, the H1N1 virus crowded out other influenza viruses to become the dominant virus. This is no longer the case. Many countries are reporting a mix of influenza viruses, again as is typically seen during seasonal epidemics."

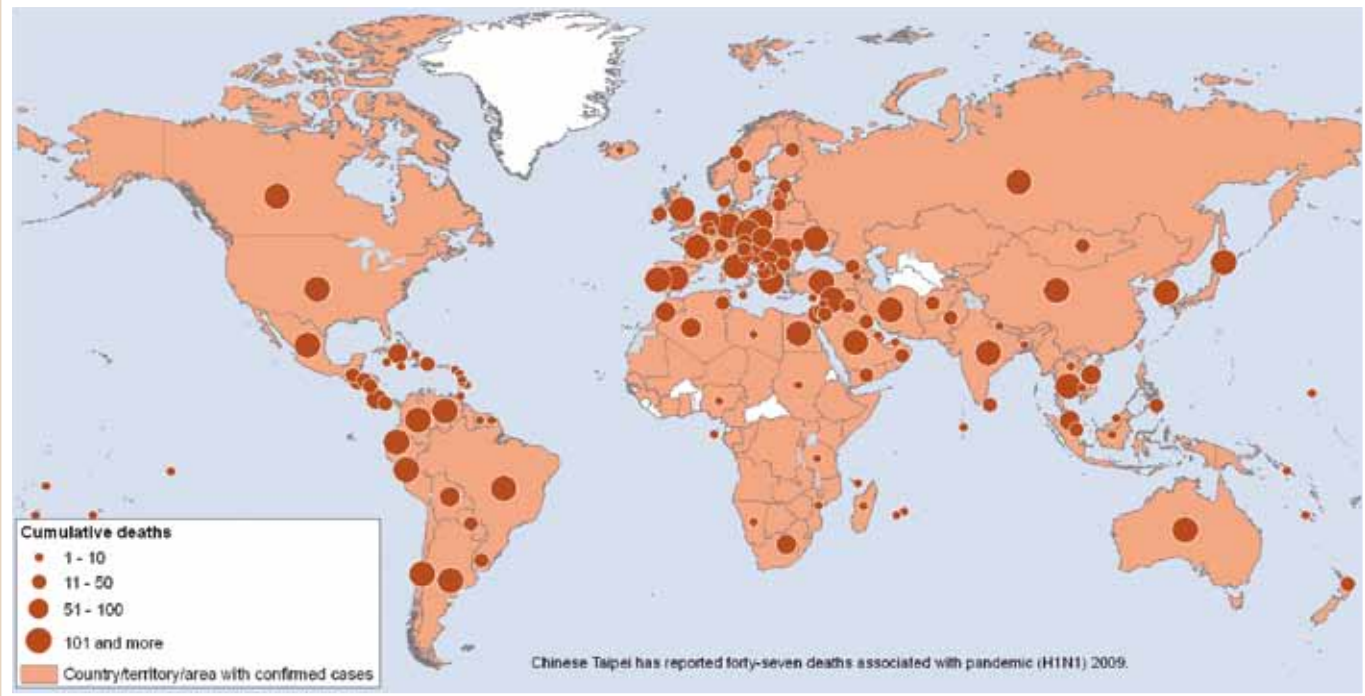
http://www.who.int/mediacentre/news/statements/2010/h1n1_vpc_20100810/en/index.html

Schematic of the pandemic waves across the hemispheres

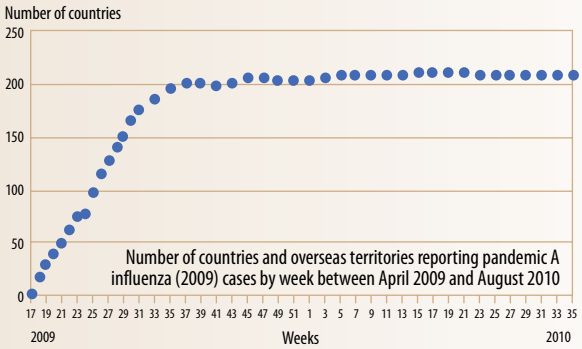


15 August 2010 Pandemic (H1N1) 2009

Countries, territories and areas with laboratory-confirmed cases and number of deaths as reported to WHO



Although it was expected that some countries in the northern hemisphere would still see significant numbers of pandemic H1N1 cases in the coming winter, the virus was beginning to settle into a pattern similar to that of seasonal influenza prompting the Director-General to declare an official end to the pandemic on 10 August 2010.



Declaration of post-pandemic

JUNE | JULY | AUGUST

Post-pandemic

WHO recommendations for the post-pandemic period

Monitoring of respiratory disease activity

WHO recommends that surveillance during the post-pandemic period include:

- monitoring for unusual events;
- investigating severe or unusual cases, clusters or outbreaks;
- maintaining routine surveillance;
- continuing to use routine channels of data transmission, to transmit data from the routine surveillance of respiratory disease;
- notifying WHO immediately if any of the following changes are detected:
  - sustained transmission of antiviral-resistant H1N1 2009 influenza
  - human cases of infection with any influenza virus not currently circulating in human populations
  - any notable changes in the severity or other epidemiological or clinical characteristics of the H1N1 2009 virus
- monitoring the H1N1 2009 virus for important genetic, antigenic or functional changes.

Vaccination

Vaccination remains important as a means of reducing the morbidity and mortality caused by influenza viruses.

Clinical management

Persons suspected of illness from influenza should receive appropriate clinical care.

http://www.who.int/csr/disease/swineflu/notes/briefing_20100810/en/index.html

Conclusions of the Review Committee on the Functioning of the International Health Regulations (2005) in relation to Pandemic (H1N1) 2009

Summary conclusion 1

The IHR helped make the world better prepared to cope with public health emergencies. The core national and local capacities called for in the IHR are not yet fully operational and are not now on a path to timely implementation worldwide.

Summary conclusion 2

WHO performed well in many ways during the pandemic, confronted systemic difficulties and demonstrated some shortcomings. The Committee found no evidence of malfeasance.

Summary conclusion 3

The world is ill-prepared to respond to a severe influenza pandemic or to any similarly global, sustained and threatening public health emergency. Beyond implementation of core public health capacities called for in the IHR, global preparedness can be advanced through research, reliance on a multisectoral approach, strengthened health-care delivery systems, economic development in low- and middle-income countries and improved health status.

http://apps.who.int/gb/ebwha/pdf_files/WHA64/A64_10-en.pdf

Publications

WHO provided evidence-based technical guidance to individuals, communities and national authorities on public health topics related to pandemic influenza. Leading scientific and public health experts contributed to the guidelines. A selection is shown here.

Advice on the use of masks in the community setting in Influenza A(H1N1) outbreaks

Availability of a candidate international standard for antibody to A/California/7/2009 (H1N1)v-like viruses

Availability of a candidate reassortant vaccine virus for the novel influenza A(H1N1) vaccine development CBER-RG2

Availability of a candidate reassortant vaccine virus for the novel influenza A(H1N1) vaccine development NIBRG-121

Availability of a candidate reassortant vaccine virus for the novel influenza A(H1N1) vaccine development X-179A

Availability of a candidate reassortant vaccine virus for the novel influenza A(H1N1) vaccine development IDCDC-RG15

Availability of a candidate reassortant vaccine virus for the novel influenza A(H1N1) vaccine development IVR-153

Availability of a new candidate reassortant vaccine virus for pandemic (H1N1) 2009 vaccine development

Availability of a new candidate reassortant vaccine virus for pandemic (H1N1) 2009 virus vaccine development NIBRG-121xp

Availability of four new candidate reassortant vaccine viruses for pandemic (H1N1) 2009 virus vaccine development IDCDC-RG18, IDCDC-RG20, IDCDC-RG22 and NIBRG-122

Availability of two new candidate reassortant vaccine viruses for pandemic (H1N1) 2009 virus vaccine development X-181 and X-181A

Behavioural interventions for reducing the transmission and impact of influenza A(H1N1) virus: a framework for communication strategies

Biocontainment requirements for vaccine production from and quality control of the reassortant candidate vaccine virus CBER-RG2

Biocontainment requirements for vaccine production from and quality control of the reassortant candidate vaccine virus IVR-153

Biocontainment requirements for vaccine production from and quality control of the reassortant vaccine candidate viruses IDCDC-RG15, NIBRG-121 and X-179A

Call to action

Case management of Influenza A(H1N1) in air transport

CDC protocol of realtime RTPCR for influenza A(H1N1)

Characteristics of the emergent influenza A(H1N1) viruses and recommendations for vaccine development

Clean hands protect against infection

Clinical management of adult patients with complications of pandemic influenza A(H1N1) 2009 influenza: Emergency guidelines for the management of patients with severe respiratory distress and shock in district hospitals in limited-resource settings

Clinical management of human infection with pandemic (H1N1) 2009: revised guidance

Considerations of influenza A(H1N1) and HIV infection

Consultation on potential risks of pandemic (H1N1) 2009 influenza virus at the human-animal interface

Countries able to perform PCR to diagnose influenza A(H1N1) virus infection in humans

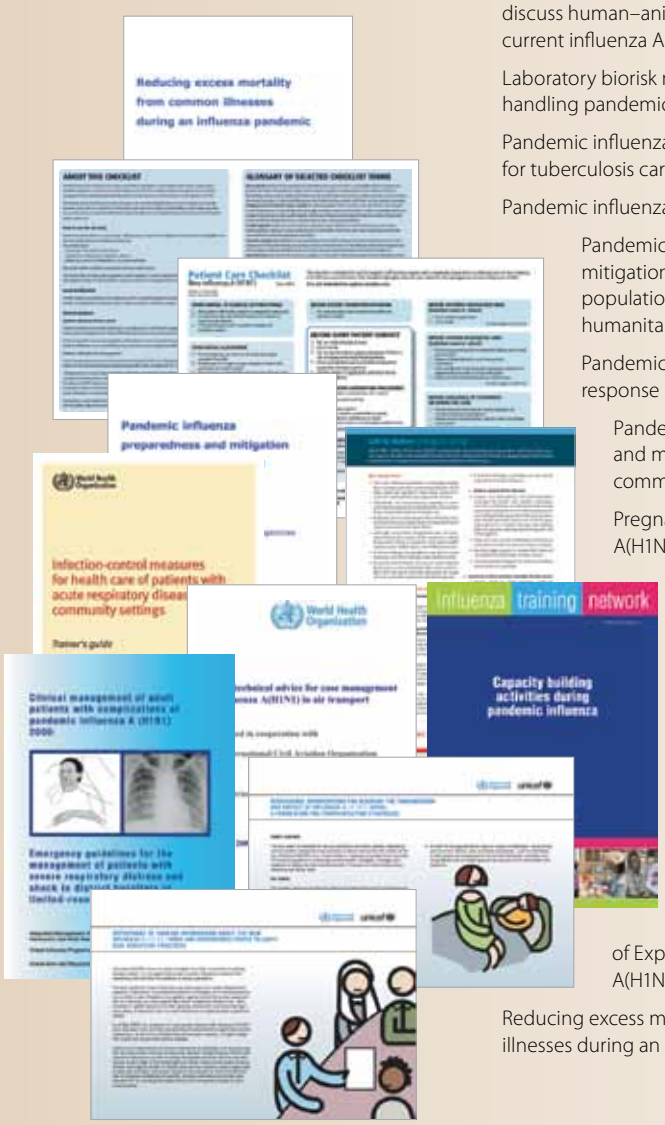
Gene sequences of the reassortant candidate vaccine viruses for the novel influenza A(H1N1)

Global surveillance during an influenza pandemic

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

Infection prevention and control in health care for confirmed or suspected cases of pandemic (H1N1) 2009 and influenza-like illnesses

Infection prevention and control of epidemic- and pandemic-prone acute respiratory diseases in health care



Influenza A(H1N1) patient care checklist

Instruction on how to obtain CDC realtime RT-PCR kits for detection of influenza A(H1N1)

Instructions for storage and transport of suspected or confirmed human and animal specimens and virus isolates of pandemic (H1N1) 2009

Interim planning considerations for mass gatherings in the context of pandemic (H1N1) 2009 influenza

Joint WHO-OFFLU technical teleconference to discuss human–animal interface aspects of the current influenza A(H1N1) situation

Laboratory biorisk management for laboratories handling pandemic influenza A(H1N1) 2009 virus

Pandemic influenza A(H1N1) 2009: considerations for tuberculosis care services

Pandemic influenza A(H1N1) – draft donor report

Pandemic influenza preparedness and mitigation in refugee and displaced populations. WHO guidelines for humanitarian agencies.

Pandemic influenza preparedness and response

Pandemic influenza prevention and mitigation in low resource communities

Pregnancy and pandemic influenza A(H1N1) 2009: information for programme managers and clinicians

Preliminary review of D222G amino acid substitution in the haemagglutinin of pandemic influenza A(H1N1) 2009 viruses

Protocol for antiviral susceptibility testing by pyrosequencing

Recommendations of the Strategic Advisory Group of Experts (SAGE) on Influenza A(H1N1) vaccines

Reducing excess mortality from common illnesses during an influenza pandemic

Reducing transmission of pandemic (H1N1) 2009 in school settings

Safe transport of pandemic influenza A(H1N1) 2009 virus cultures, isolates and patient specimens as Biological Substance, Category B

Sequencing primers and protocol

Statement from WHO Global Advisory Committee on Vaccine Safety about the safety profile of pandemic influenza A(H1N1) 2009 vaccines

Status of candidate vaccine virus development for the current Influenza A(H1N1) virus

Summary of available potency testing reagents for Pandemic (H1N1) 2009 virus vaccines

Summary report of a High-Level Consultation: new influenza A(H1N1)

Surveillance recommendations for Member States in the post-pandemic period

Update of WHO biosafety risk assessment and guidelines for the production and quality control of human influenza pandemic vaccines

Viral gene sequences to assist update diagnostics for influenza A(H1N1)

Viral gene sequences to assist update diagnostics for influenza A(H1N1) – GenBank accession numbers

WHO ad hoc scientific teleconference on the current influenza A(H1N1) situation

WHO Consultation on suspension of classes and restriction of mass gatherings to mitigate the impact of epidemics caused by the new influenza A(H1N1)

WHO Guidelines for Pharmacological Management of Pandemic (H1N1) 2009 Influenza and other Influenza Viruses

WHO information for laboratory diagnosis of pandemic (H1N1) 2009 virus in humans – revised

WHO interim technical advice for case management of pandemic (H1N1) 2009 on ships

WHO recommendations on influenza A(H1N1) vaccines

WHO Technical Consultation on the Severity of Disease Caused by the new influenza A

Links

12 April – An outbreak of influenza-like illness in Veracruz, Mexico reported
http://apps.who.int/gb/ebwha/pdf_files/WHA64/A64_10-en.pdf

14 April – CDC determines that a USA specimen is swine influenza A
http://apps.who.int/gb/ebwha/pdf_files/WHA64/A64_10-en.pdf

17 April – CDC determines that another USA specimen is swine influenza A (H1N1) virus
http://apps.who.int/gb/ebwha/pdf_files/WHA64/A64_10-en.pdf

25 April – Public Health Emergency of International Concern declared
http://www.who.int/mediacentre/news/statements/2009/h1n1_20090425/en/index.html

27 April – Phase 4 declared
http://www.who.int/mediacentre/news/statements/2009/h1n1_20090427/en/index.html

28 April – Laboratory diagnostic protocol published
http://www.who.int/csr/resources/publications/swineflu/CDCRealtimeRTPCR_SwineH1Assay-2009_20090430.pdf

29 April – Phase 5 declared
http://www.who.int/mediacentre/news/statements/2009/h1n1_20090429/en/index.html

2 May – Diagnostic kits made globally available
http://www.who.int/csr/resources/publications/swineflu/instruction_obtain_cdkit/en/index.html

3 May – Director-General announces deployment of oseltamivir to 72 least-developed countries
http://www.who.int/mediacentre/swineflu_presstranscript_2009_05_02.pdf

5 May – WHO dispatches 2.4 million courses of antivirals to 72 countries
http://apps.who.int/gb/ebwha/pdf_files/WHA64/A64_10-en.pdf

18 May – High-level consultation convened
http://www.who.int/csr/resources/publications/swineflu/High_Level_Consultation_18_May_2009.pdf

21 May – Clinical management of pandemic influenza guidance published
http://www.who.int/csr/resources/publications/swineflu/clinical_management/en/index.html

26 May – Vaccine strain recommendation
http://www.who.int/csr/resources/publications/swineflu/vaccine_recommendations/en/index.html

27 May – Vaccine reassortants available
http://www.who.int/csr/resources/publications/swineflu/candidates_X-179a/en/index.html

11 June – Phase 6 declared
http://www.who.int/mediacentre/news/statements/2009/h1n1_pandemic_phase6_20090611/en/index.html

24 June – WHO Consultation on schools and mass gatherings
http://www.who.int/csr/resources/publications/swineflu/who_consultation_20090624_en.pdf

6 July – Urgent needs identification and prioritization process commenced
http://www.undg.org/docs/10592/UNIP_REPORT_18_(final).pdf

13 July – Target groups for vaccination decided by SAGE
http://www.who.int/csr/disease/swineflu/notes/h1n1_vaccine_20090713/en/index.html

17 August – Call to action
http://www.who.int/csr/resources/publications/swineflu/20090817_call_to_action_en.pdf

17 September – Donations of vaccines announced
http://www.who.int/mediacentre/news/statements/2009/pandemic_vaccine_donations_20090918/en/index.html

17 November – Convening of the Public Health Research Agenda for Influenza
http://www.who.int/influenza/resources/research/en/

7 January – WHO deployment of donated H1N1 vaccine
http://www.euro.who.int/influenza/AH1N1/20100108_1

21 January – Executive Board decision to convene the IHR/Pandemic review
http://apps.who.int/gb/ebwha/pdf_files/EB126/B126_ID3-en.pdf

12 April – IHR review committee convenes
http://www.who.int/ihr/review_committee/en/index.html

10 August – Declaration of post pandemic
http://www.who.int/mediacentre/news/statements/2010/h1n1_vpc_20100810/en/index.html



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