

**GLOBAL  
INFLUENZA  
PROGRAMME**

# **Pandemic H1N1 2010**

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# WHO Role during pandemic (H1N1) 2009

- Under the International Health Regulations (2005)
  - Detect event (notification by Member States of unusual event of potential international concern)
  - Alert MS (announcement of the Public Health Emergency of International Concern (PHEIC) on 25 April 2009 to all NFP)
  - Assess the international risk
  - Provide recommendations (based on the advice of the Emergency Committee)
  - Monitor the event (including pandemic phases announcement)
  - Support country's response : GOARN, supplies (vaccine, antiviral, reagents)
- Normative functions
  - Provide guidelines: e.g. clinical management, infection control in hospitals, on aircraft, on ships, guideline on use of antiviral, mass gathering and so on

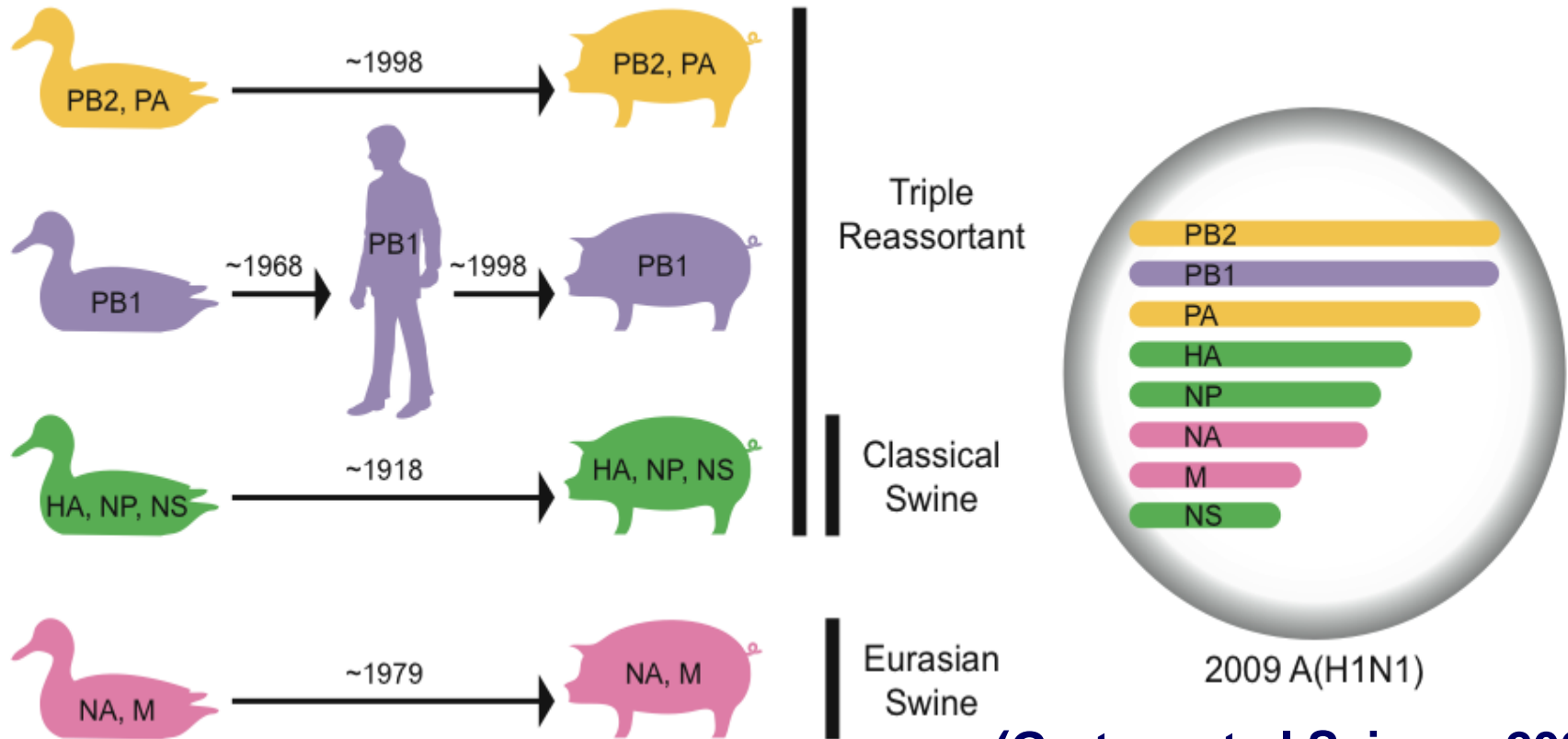
# Conditions for a pandemic

- Emergence of a novel virus
  - ✓ Virus A mutated
  - ✓ Reassorted virus
  - ✓ Virus A subtype not circulated since a long time
- The population has little or no immunity
- The virus is able to produce sustained human to human transmission



# Origins of gene segments, 2009 A(H1N1) virus

Gene Segments, Hosts, and Years of Introduction

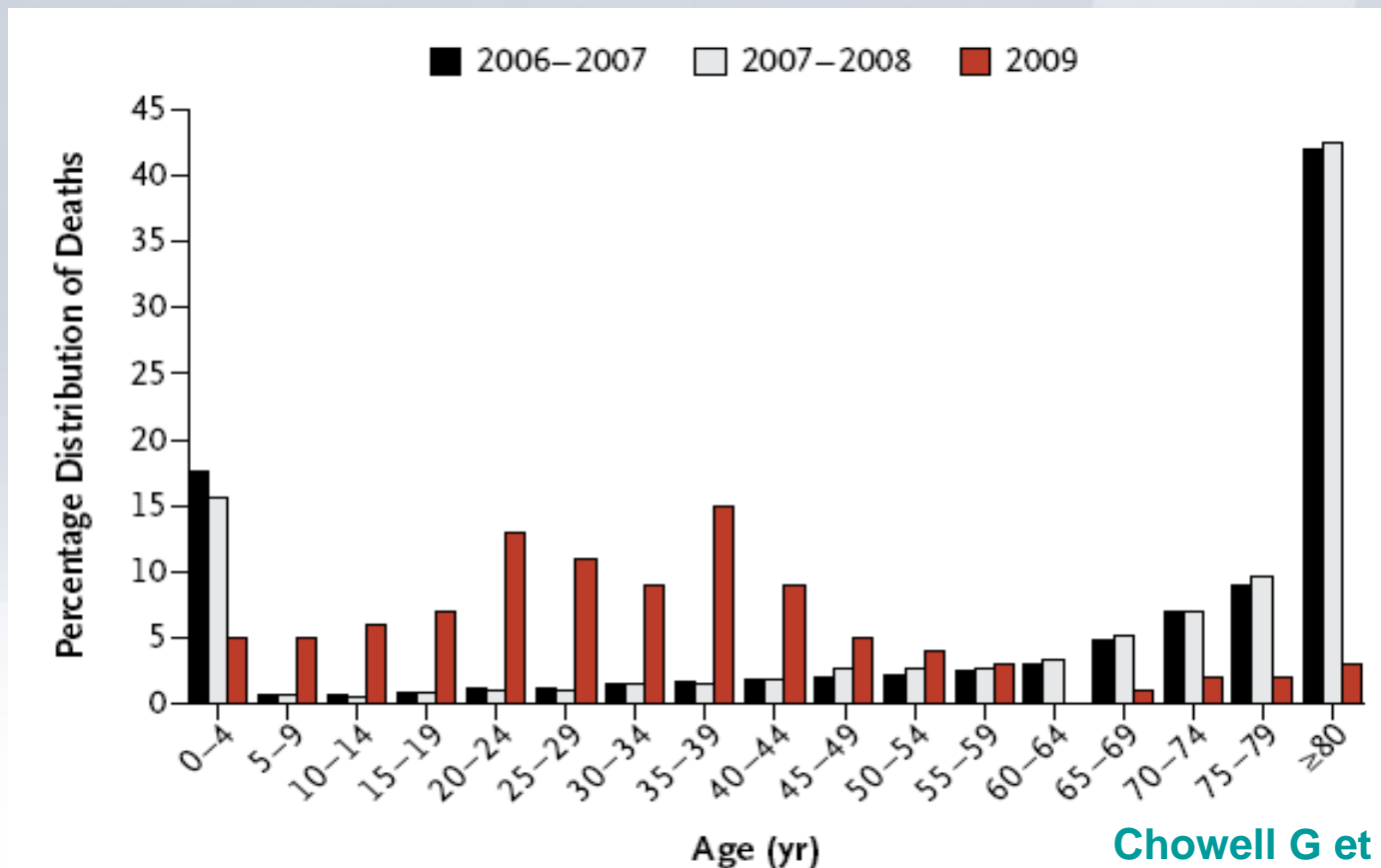


(Garten, et al Science 2009)

# Pandemic (H1N1) 2009 disease

- Young age groups affected
- High proportion of GI symptoms (10-50%)
- Deaths mainly due to viral pneumonia
- 20-40 % of deaths occurring in healthy adults (with no underlying conditions)

# Age-Related distribution of deaths from severe pneumonia, Mexico, 24 March- 29 April 09 compared to influenza seasons 2006-8

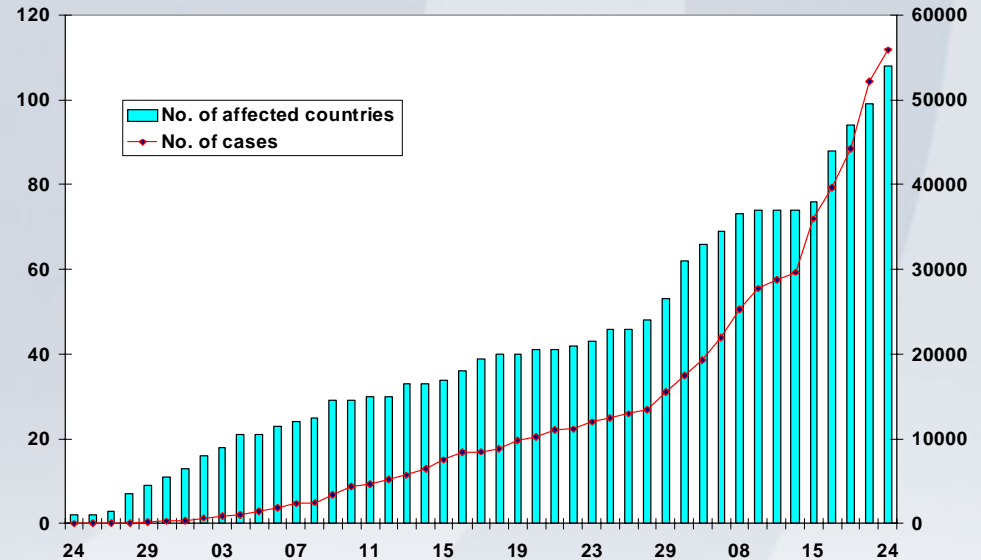


Chowell G et al, NEJM 2009

During 5-weeks period, 2155 cases of severe pneumonia with 821 hospitalizations + 100 deaths: 87% of deaths and 71% of severe pneumonia cases aged 5- 59 yrs

# Description of pandemic

- Spread
  - *Rapid*
  - *Slow*
  - *Waves*
- Severity
  - *Mild*
  - *Moderate*
  - *High*



# Influenza Pandemics in 20<sup>th</sup> Century Varied Widely in Terms of Severity and spread



1918: "Spanish Flu"

2 waves, rapid spread

40-50 million deaths

H1N1



1957: "Asian Flu"

1-2 waves, rapid spread

1-4 million deaths

H2N2



1968: "Hong Kong Flu"

2-3 waves, slow spread

1 million deaths

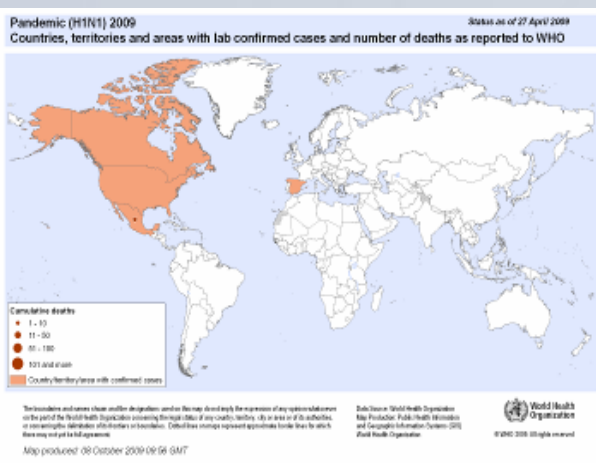
H3N2



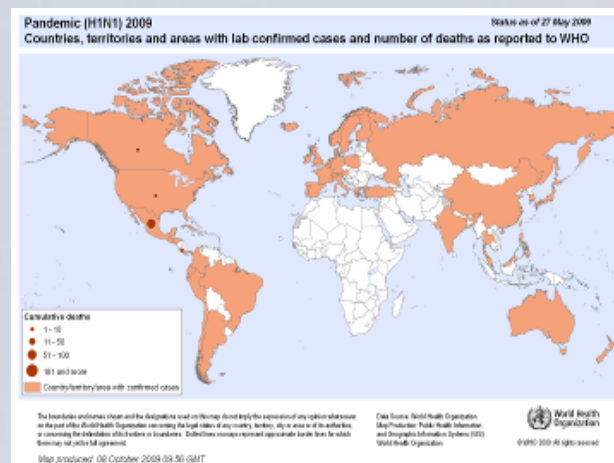
# Pandemics spread

- 1957: spread to all China in 6 weeks and to the entire world in 6 months
- 2009-2010: spread to all continents in less than 9 weeks but to the entire world in 10 months.
  - Announcement of pandemic phase 6 on 11 June 2009- 74 countries reporting cases of (H1N1) 2009 virus
  - West Africa reported A(H1N1)pdm outbreaks only in early 2010

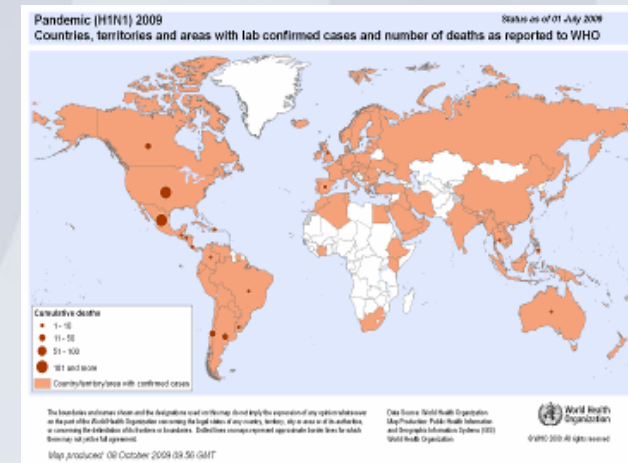
# Continued Global Spread of H1N1 April 2009 - February 2010



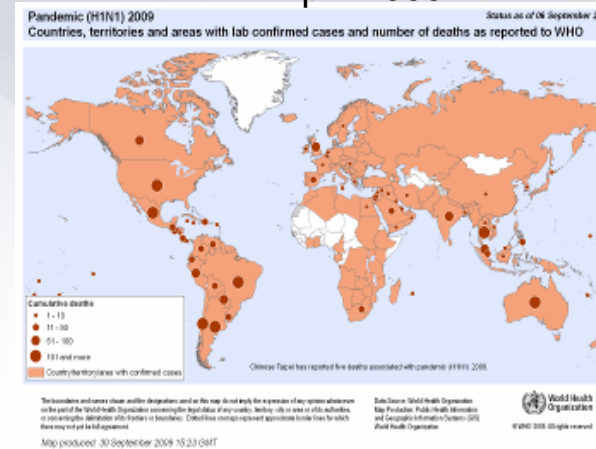
April 2009



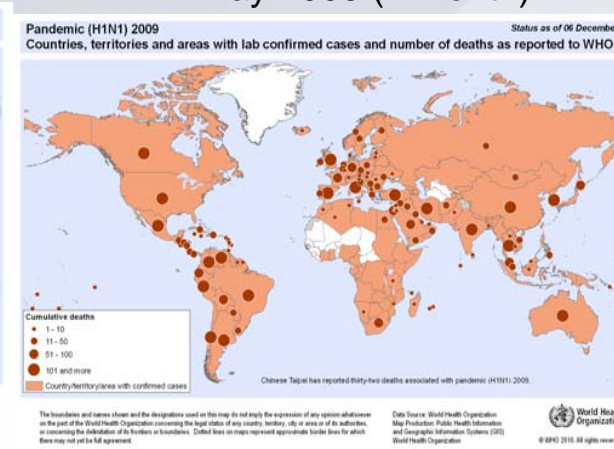
May 2009 (1 month)



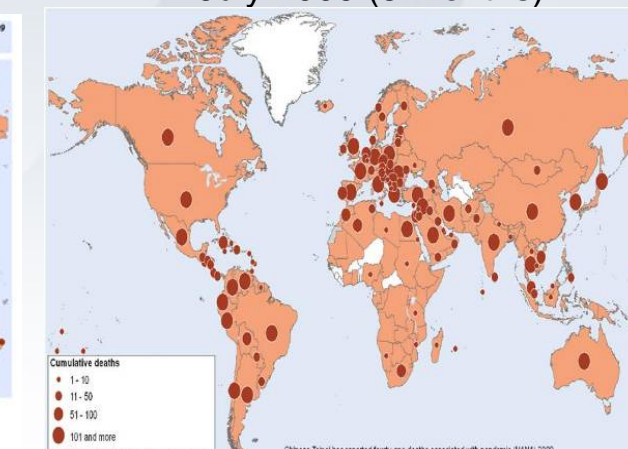
July 2009 (3 months)



September 2009 (5 Months)



December 2009 (8 months)

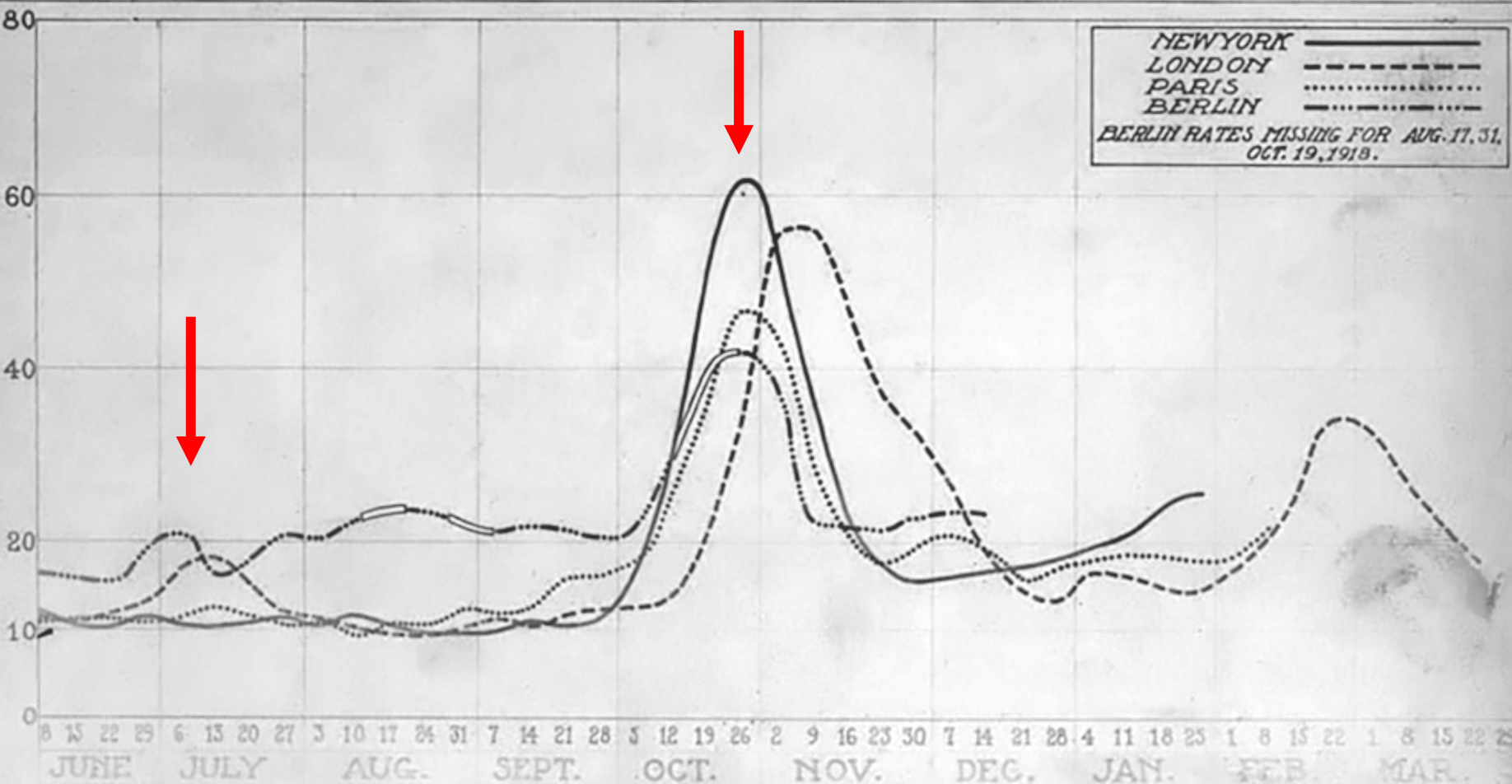


February 2010 (10 months)

# INFLUENZA PANDEMIC

## MORTALITY IN AMERICA AND EUROPE DURING 1918 AND 1919

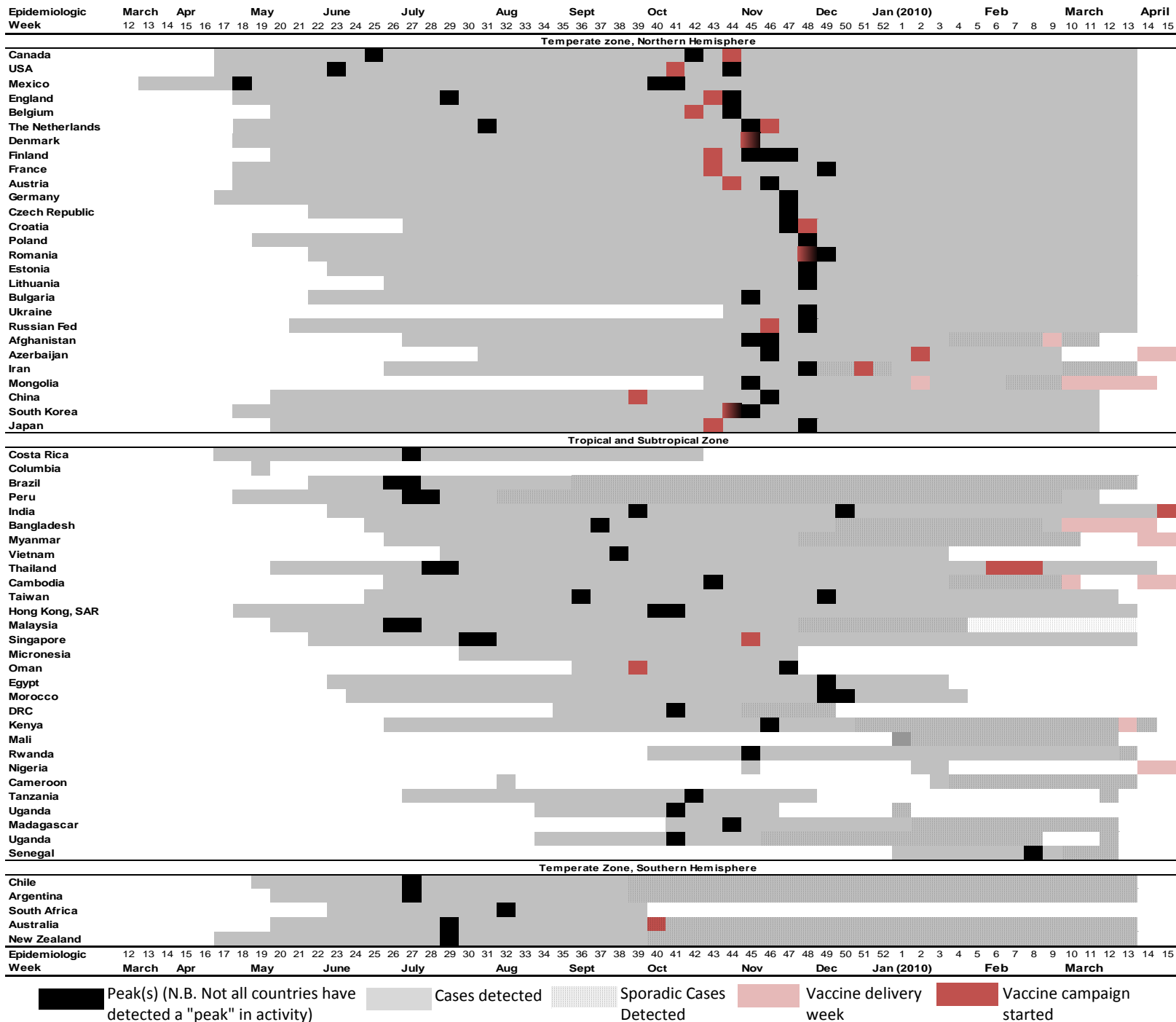
DEATHS FROM ALL CAUSES EACH WEEK  
EXPRESSED AS AN ANNUAL RATE PER 1000



# Time Course of the H1N1 Pandemic for select countries\*

\*Data sources vary by country and include: country provided epi curves of case onset, ILI consultation rates, Virus isolates by date, % positive specimens collected, media source (first case report for some countries)

\*Table developed by: Maria Van Kerkove PhD, MRC Centre for Outbreak Analysis and Modeling, Imperial College London



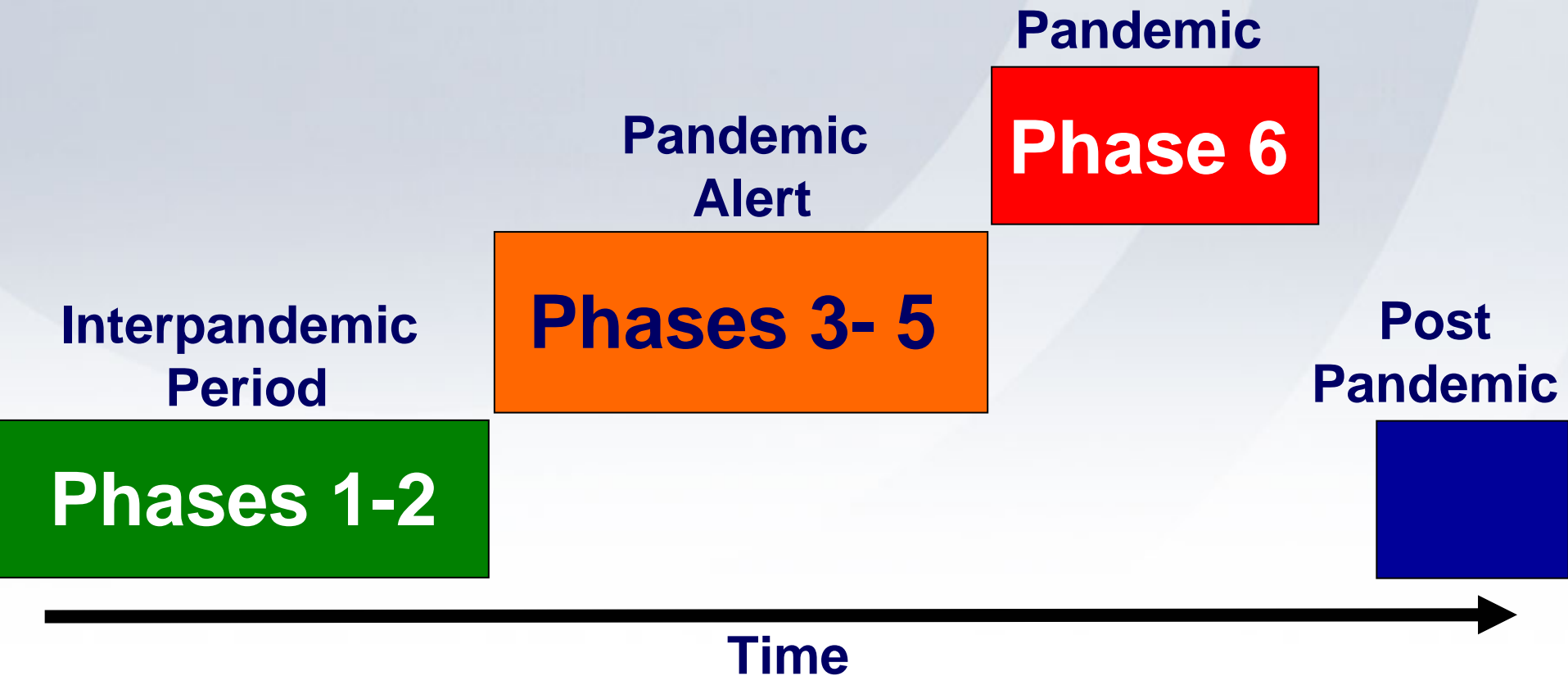
# Background pandemic phases (PP guidelines 2005)

- Phases are conceptual tool
  - To assist with planning on timing of control measures by countries & WHO
- Most national plans utilize 6-phase approach
  - WG consensus to retain 6 phases (in the 2009 PP guidelines) to minimize disruption to current plans

Inter-pandemic phase New virus in animals, no human cases	Low risk of human cases	1
	Higher risk of human cases	2
Pandemic alert New virus causes human cases	No or very limited human-to-human transmission	3
	Evidence of increased human-to-human transmission	4
	Evidence of significant human-to-human transmission	5
Pandemic	Efficient and sustained human-to-human transmission	6

# 2005 Phases

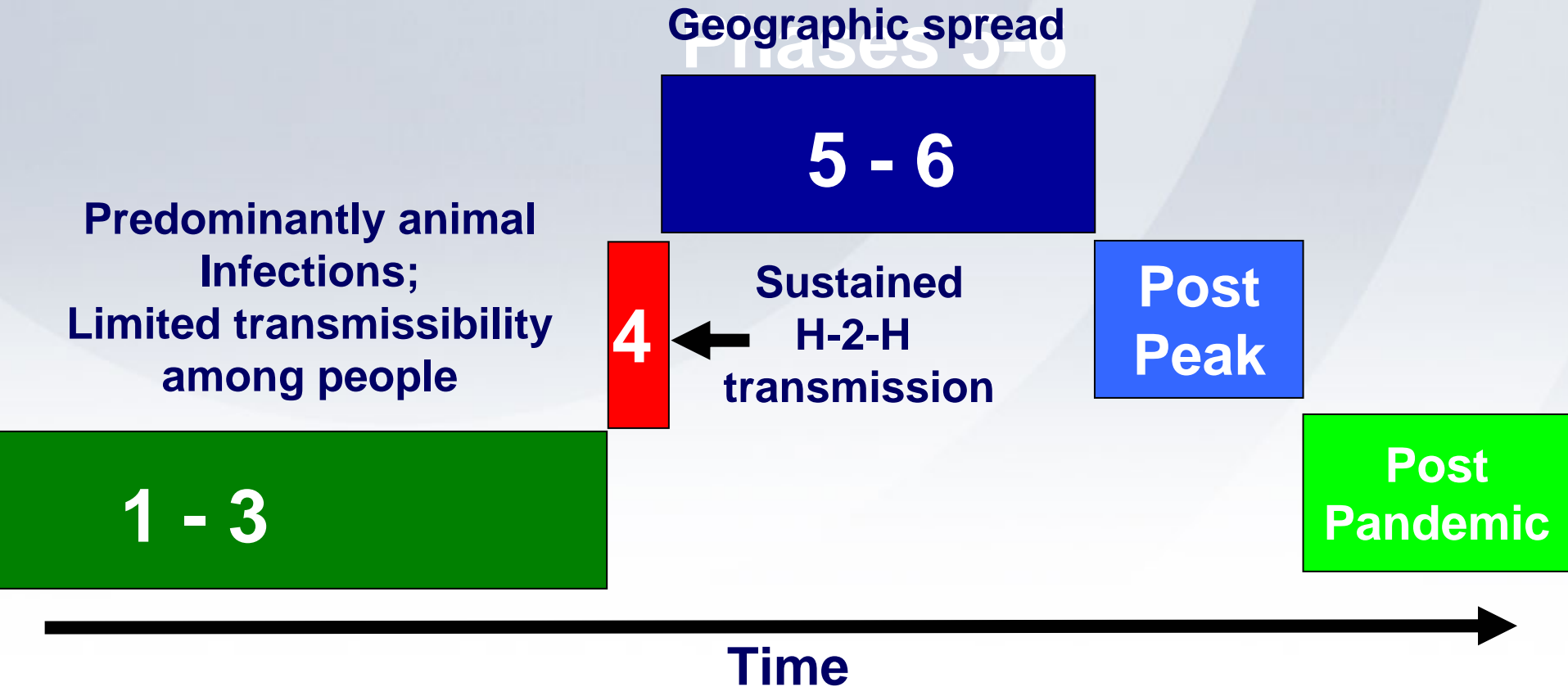
## Structure & Pandemic Disease "Risk"



# Issues Raised by 2005 Phases

- Interpretation, especially regarding phase 4
  - "small cluster (s) with limited human-to-human transmission but spread is highly localized, suggesting virus is not well adapted to humans"
  - Why aren't we in phase 4 for H5N1?
- When to implement rapid containment?
- Do phases accurately portray pandemic "risk"? Does this pandemic phase system help to plan/ respond to pandemic?
- Revision of the 2005 Pandemic preparedness guidelines started in 2007 and was finalized early 2009

# Proposed 2009 Phases Structure & Pandemic Disease "Risk"

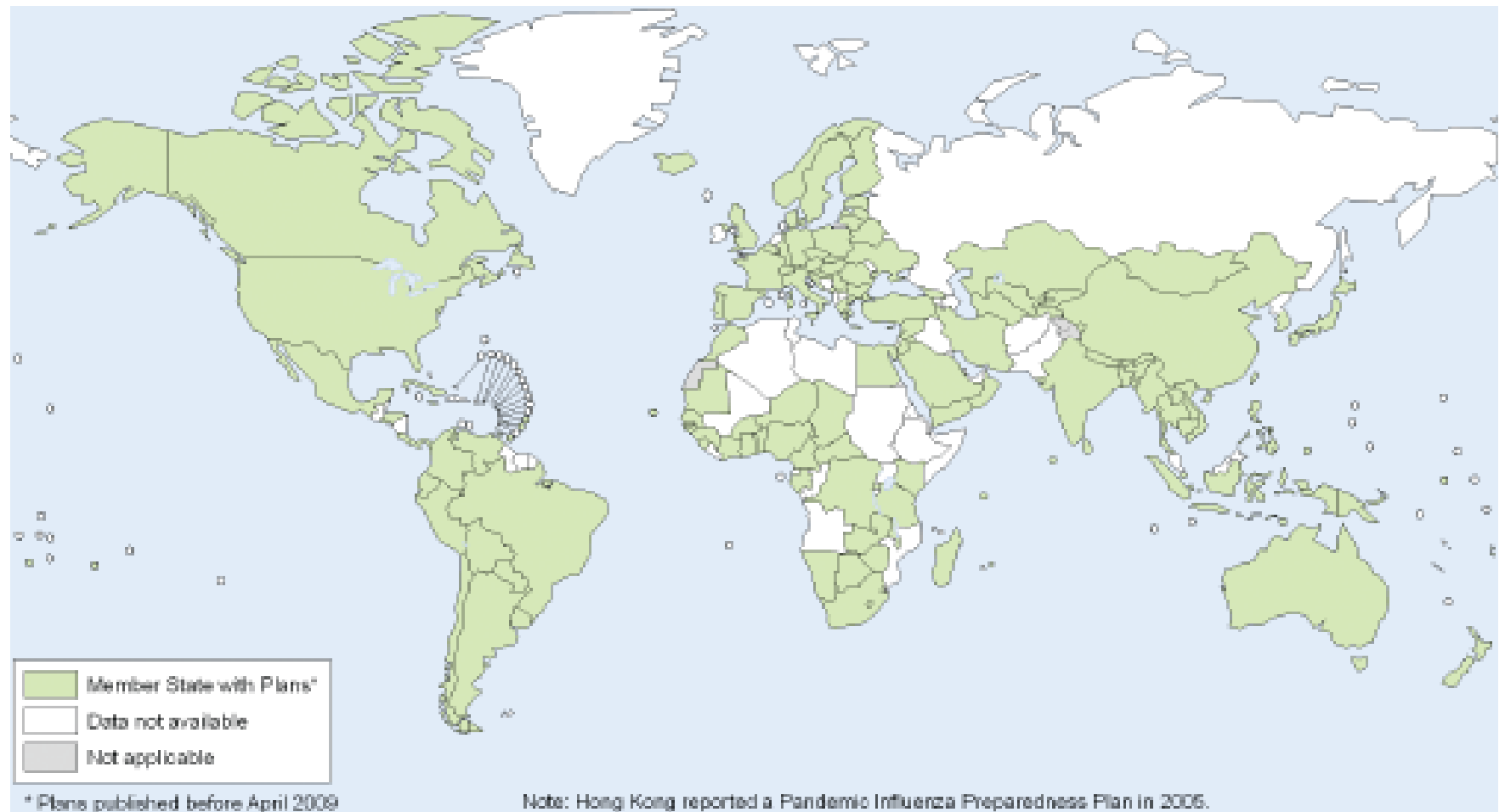




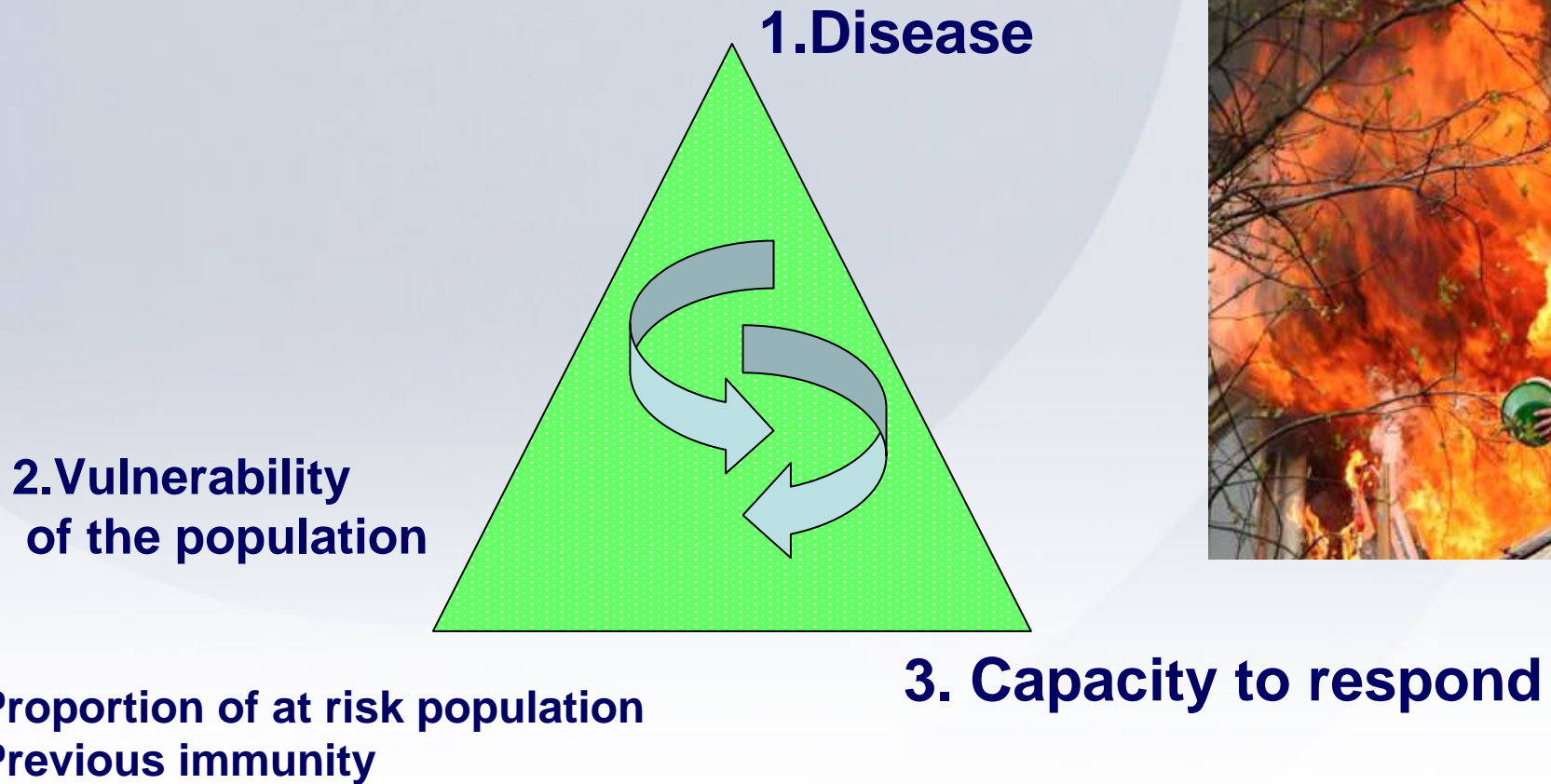
# Gap between "technical" and "public" communication



## WHO Member States with publicly available Pandemic Preparedness Plans at the start of the Pandemic (H1N1) 2009



# Impact/severity of the pandemic



# What is different in this pandemic?

- First large scale response under the revised International Health Regulations (2005) framework
- Global sharing of information (and viruses) through expert networks
- Significant previous preparedness efforts including in the area of risk communication
- Access to antibiotics, antiviral, vaccine and high quality health care (ICU)
- Early detection and response at international level

# Concluding Observations

- Certain events correctly anticipated
  - Eventual emergence of pandemic & more rapid spread than past
- Certain events theoretically acknowledged but a surprise
  - Start in North America
  - Origin of pandemic virus from swine H1 viruses
- Certain events simply surprising
  - Effectiveness of one vaccine dose

# Concluding Observations

- Preparedness was crucial
  - Major difference from the past
- Preparedness remains significantly incomplete
  - Need to learn from this pandemic
- Flexibility & adaptation are essential
- Impact of control measure on the spread and severity are being assessed



**Thank you!**