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MEDICINE

Pandemic Influenza Preparedness in the Asia-Pacific Region: from strategy to operation

6th August 2009

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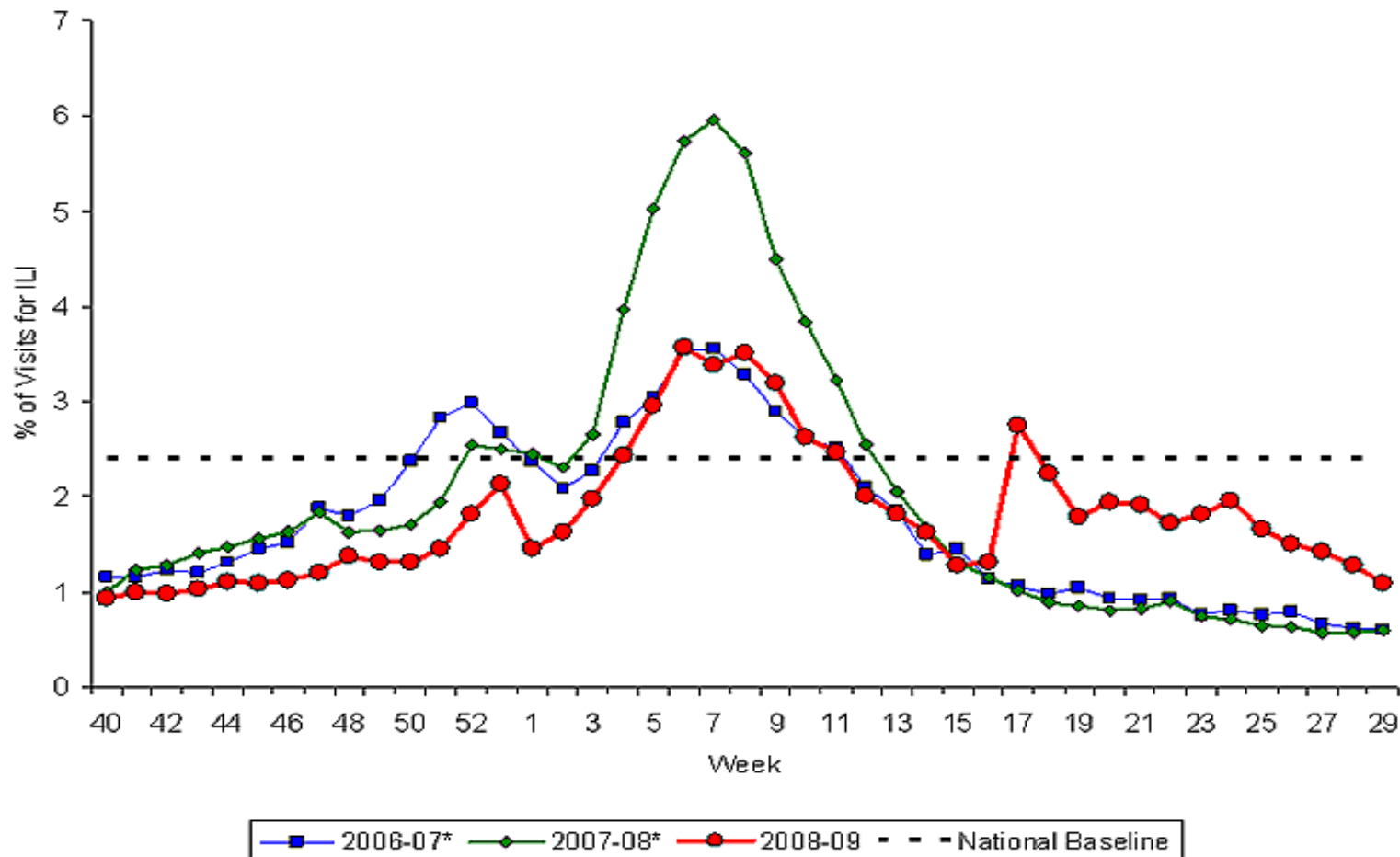


Pandemic (H1N1) 2009

- Where are we now?
- What will be the impact?
 - Public health
 - Economic
- Are we prepared for the near future?
- Future challenges?

USA: Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), National Summary 2008-2009 and Previous Two Seasons

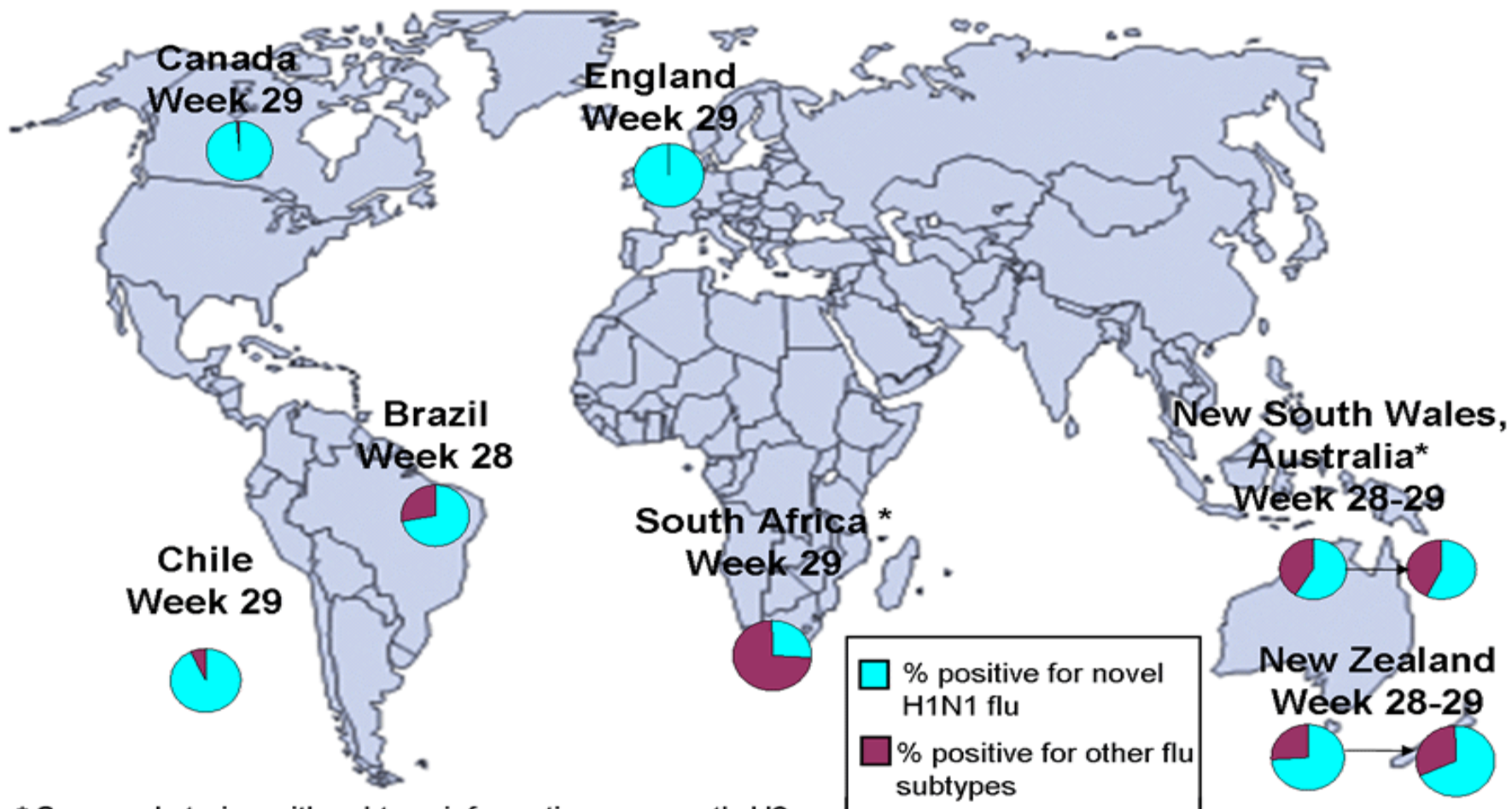
(Posted July 31, 2009, 1:30 PM ET, for Week Ending July 25, 2009)



*There was no week 53 during the 2006-07 and 2007-08 seasons, therefore the week 53 data point for those seasons is an average of weeks 52 and 1.

International co-circulation of pandemic (H1N1) 2009 and seasonal influenza

(As of July 28, 2009; posted July 31, 2009, 11:00 AM ET)



* Seasonal strains with subtype information are mostly H3

Surveillance: information for action



	Mexico, late April 09	UK, May 09	US, late June 09
Confirmed	~ 800 cases	~ 100	28,000
Estimate	23,000	30,000	1 million

B.Z. Toons

by Brian Zaikowski

www.bztoons.com



I got you a bunch of stuff. This is just the tip of the iceberg.



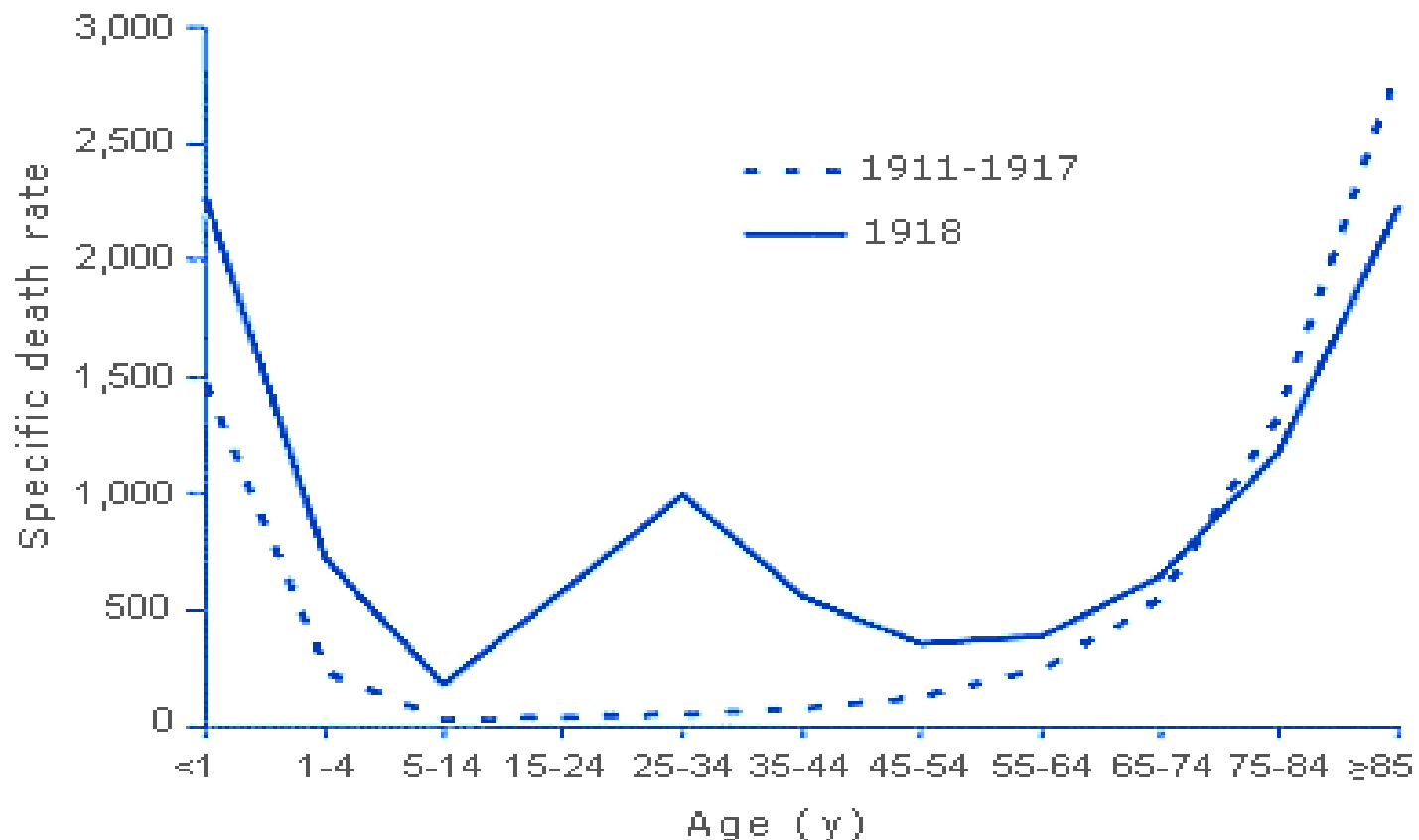
What will the impact be?



Estimates of PH impact

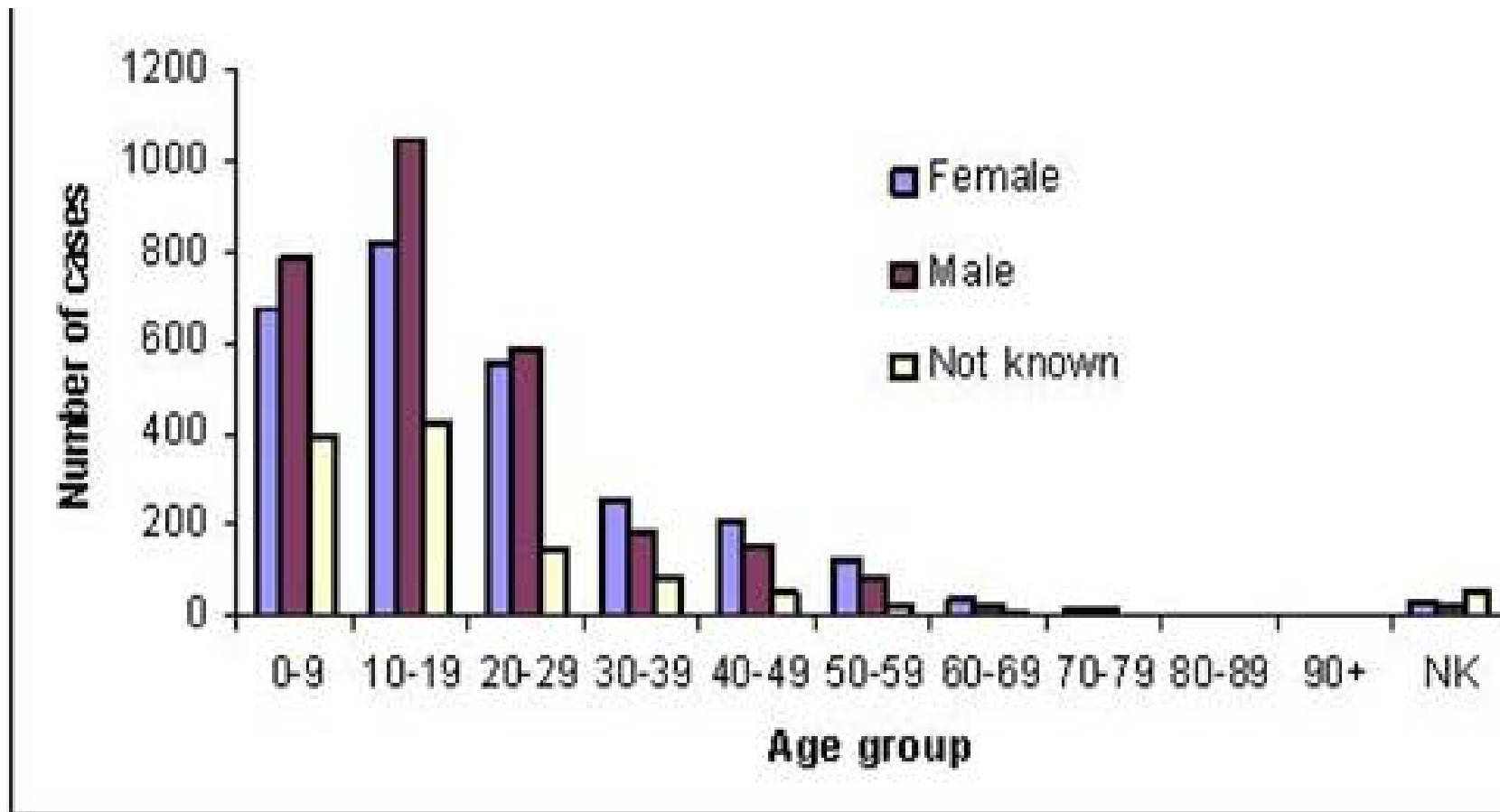
	Seasonal Flu	H1N1		
Case fatality rate (CFR)	0.004%-0.03%	0.4% (0.3%-1.5%)	Mexico, late April	Fraser et al, Science, 2009; 324: 1557-61
		0.0004%-0.06%	Canada, late June	Wilson, et al, Eurosurveillance, 2009; 26: 1-4
Attack rate (AR)	5%-15%	22%-33%		
Deaths in a country with 10m	20 – 450 (up to 0.005%)	9 – 49,500 (up to 0.5%)		
Hospitalisation rate	? (~1%)	3.1%-9.8%	US, Canada, UK	Garske et al, BMJ, 2009; 339: 220-224

Death rates in the US from Flu, 1918



Source: CDC Emerging Infectious Diseases · Vol. 12, No. 1, January 2006
Link: <http://www.cdc.gov/ncidod/EID/vol12no01/05-0979.htm>

Age distribution, of H1N1 cases, UK, 1st July 2009



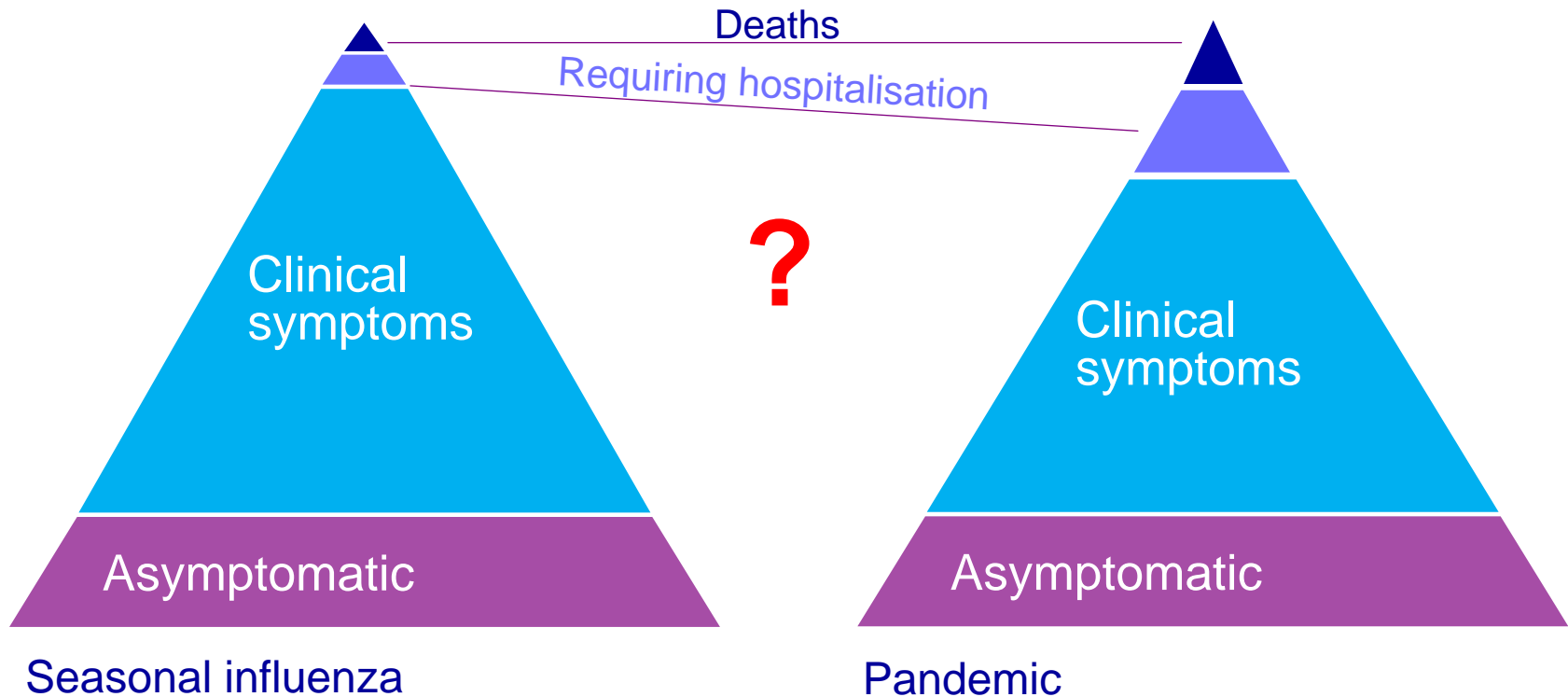
Influenza viruses: pathogenic potential



(Wang. Cell 2009: 137: 983-5)

	1918 H1N1	1957 H2N2	1968 H3N2	1997 Avian H5N1	2009 Swine H1N1
Transmission between humans	Yes	Yes	Yes	No	Yes
Causes human disease	Yes	Yes (mild)	Yes (mild)	Yes (severe)	Yes (mild)
Degree of immunity in popn.	No	?	?	No	?
Known molecular markers of pathogenicity (PB1-F2)	Yes	Yes	Yes	Yes	No

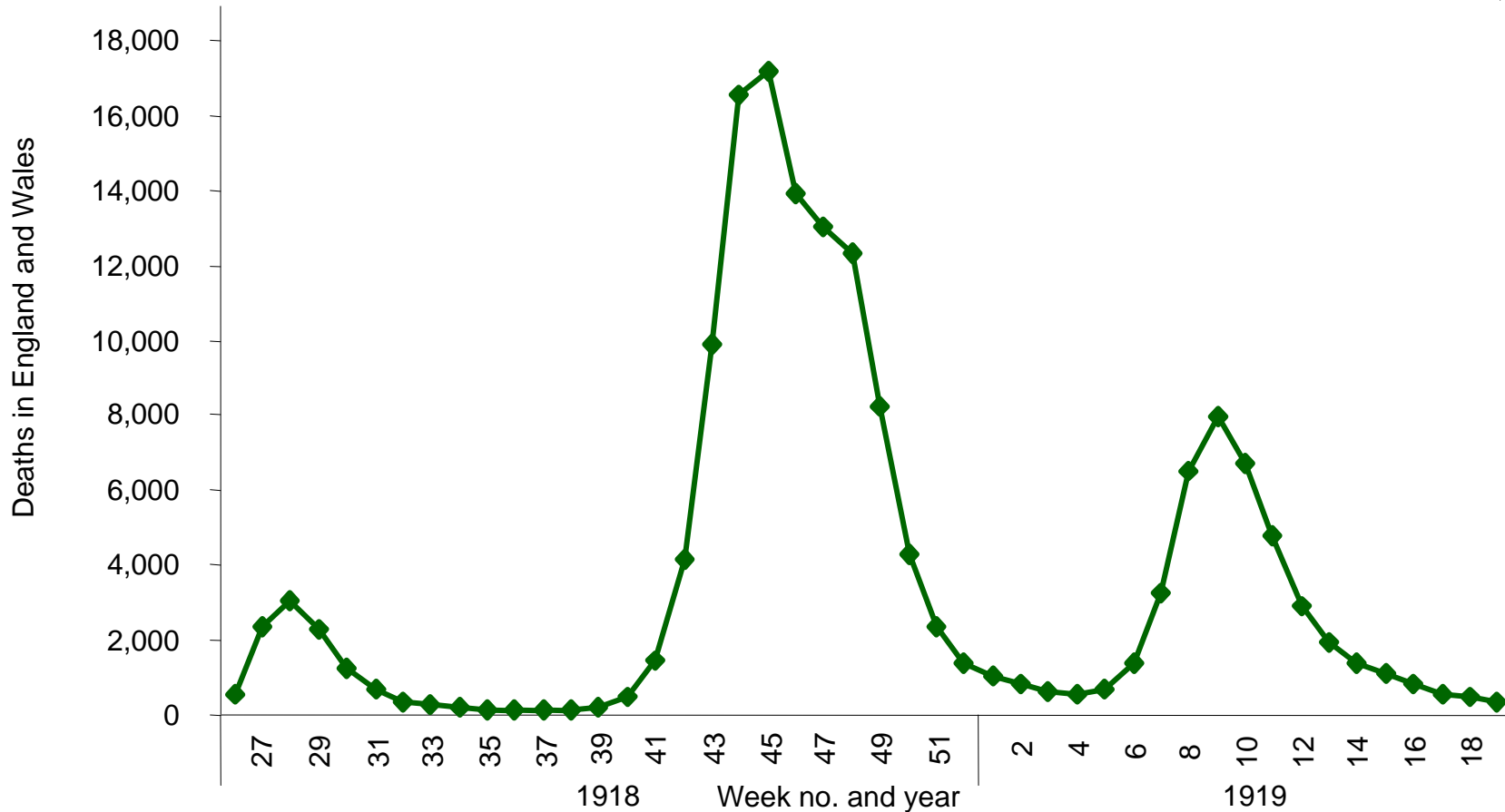
Schema of proportions of types of cases





One year hence?

1918/1919: 'Influenza deaths', England and Wales

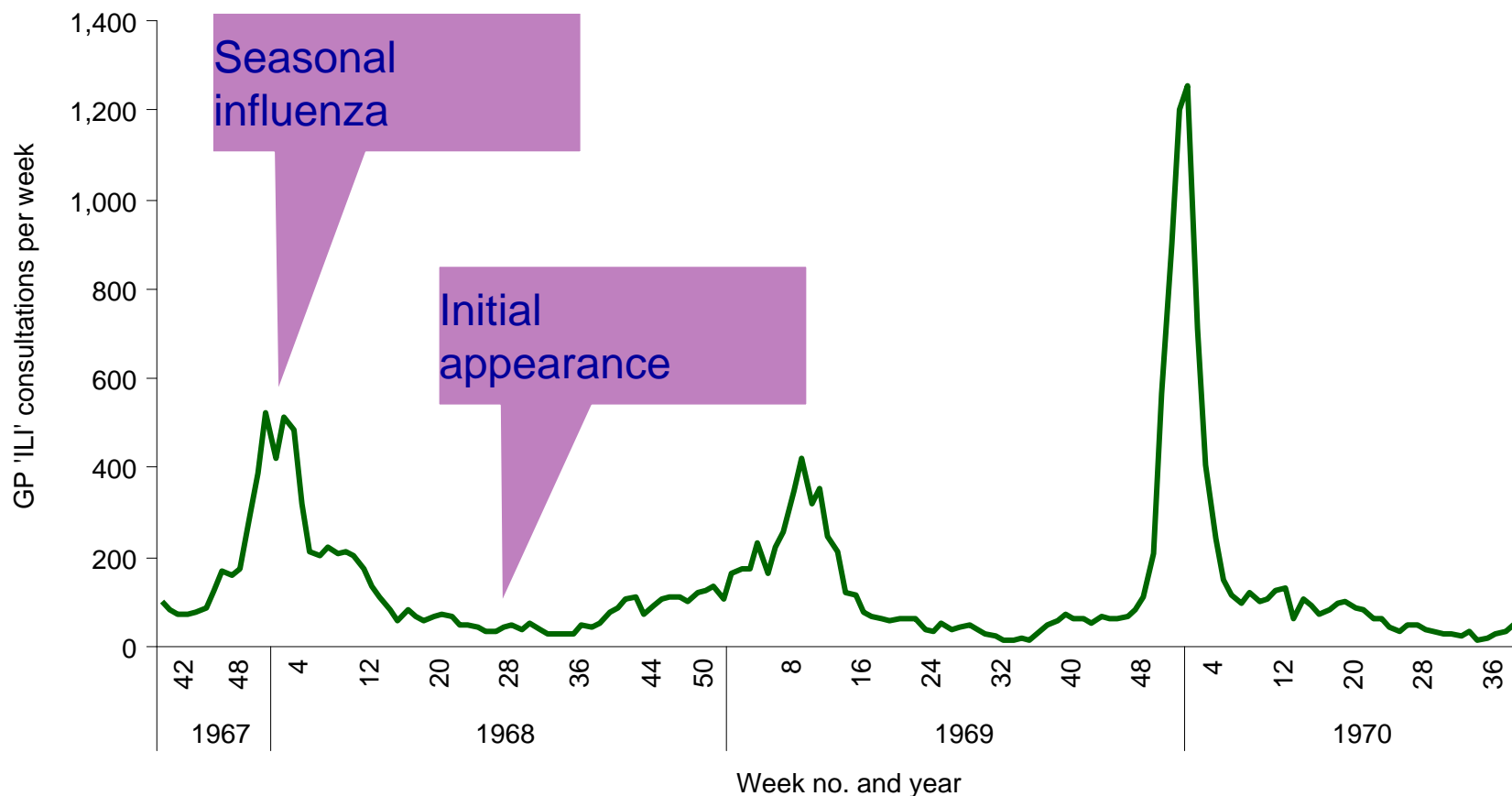


$R_0 = 2-3$ (US) Mills, Robins, Lipsitch (Nature 2004)
 $R_0 = 1.5-2$ (UK) Gani et al (EID 2005)
 $R_0 = 1.5-1.8$ (UK) Hall et al (Epidemiol. Infect. 2006)
 $R_0 = 1.5-3.7$ (Geneva) Chowell et al (Vaccine 2006)

1968/1969: GP consultations, England and Wales



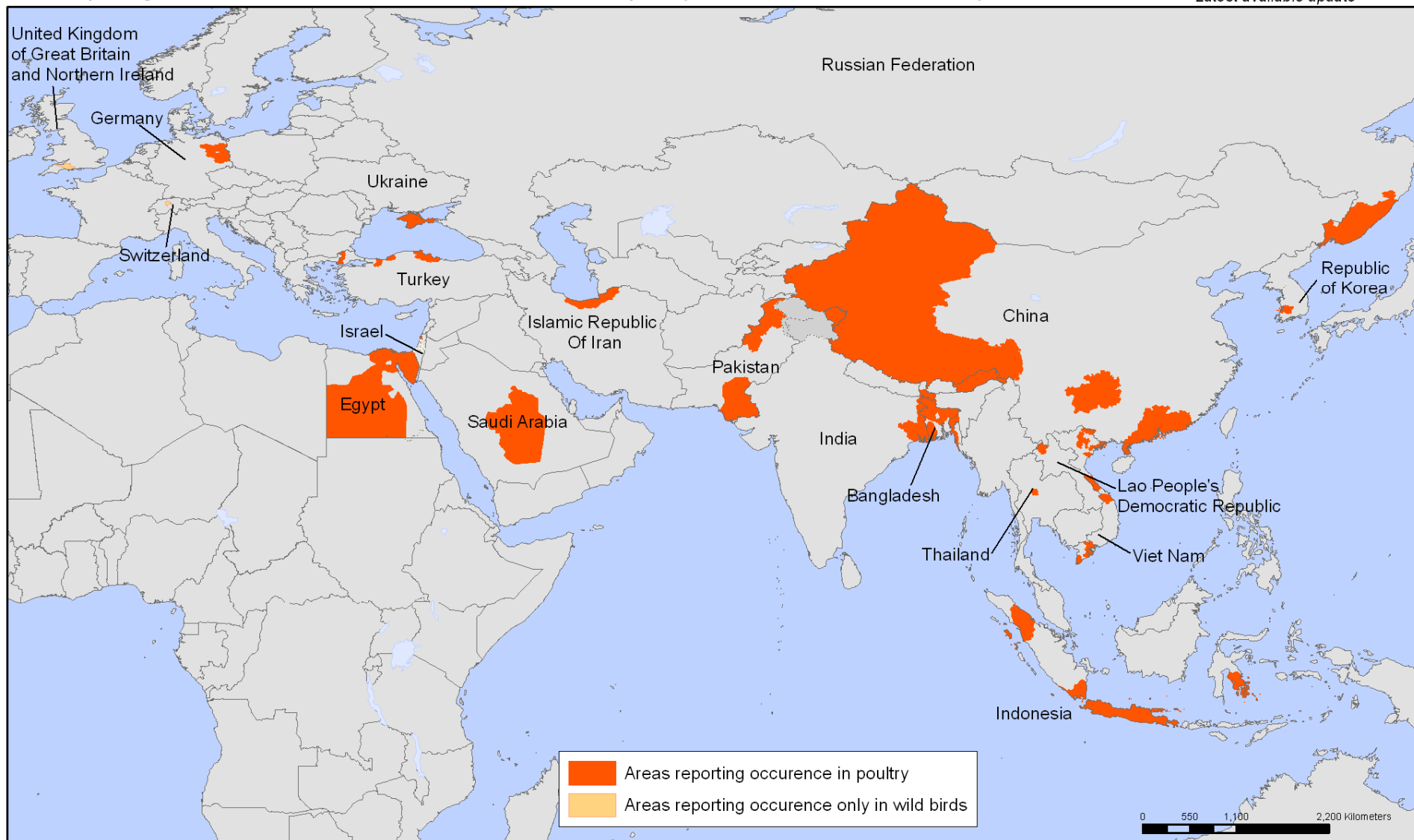
A(H3N2) – transmitted and affected all age groups



$R_0 = 1.5-2.2$ (World) Cooper et al (PLoS Med.2006)
 $R_0 = 2.2$ (UK) Gani et al (EID 2005)
 $R_0 = 1.3-1.6$ (UK) Hall et al (Epidemiol. Infect. 2006)

Areas reporting confirmed occurrence of H5N1 avian influenza in poultry and wild birds since 1 January 2008

Status as of 14 April 2008
Latest available update



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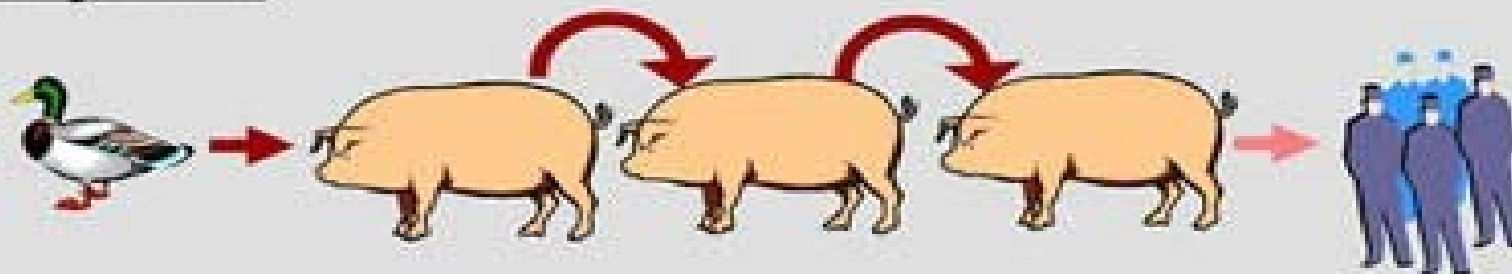
The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers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

Data Source: World Organisation for Animal Health (OIE) and national governments
Map Production: Public Health Mapping and GIS
World Health Organization

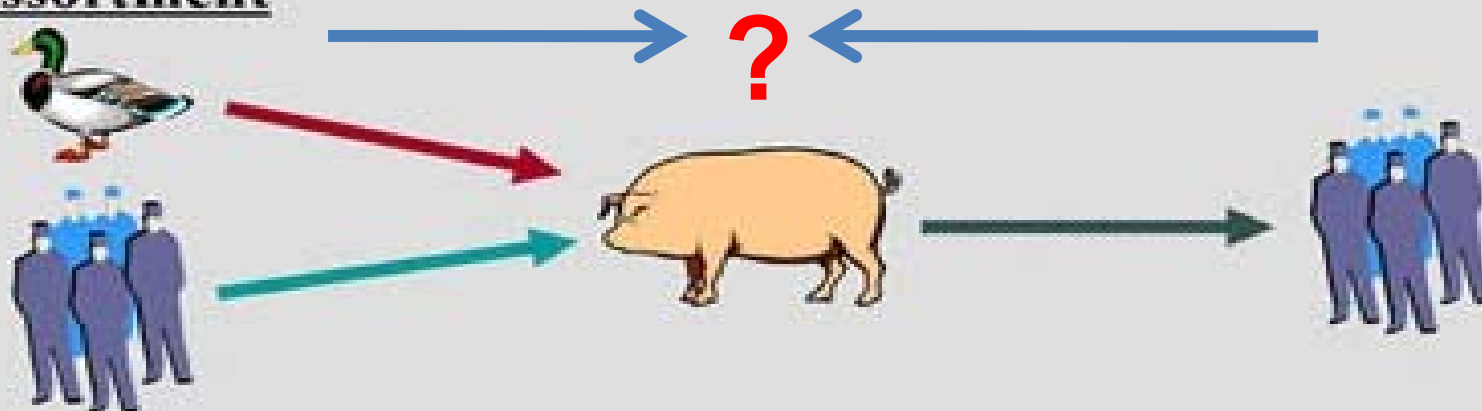
Direct Transmission



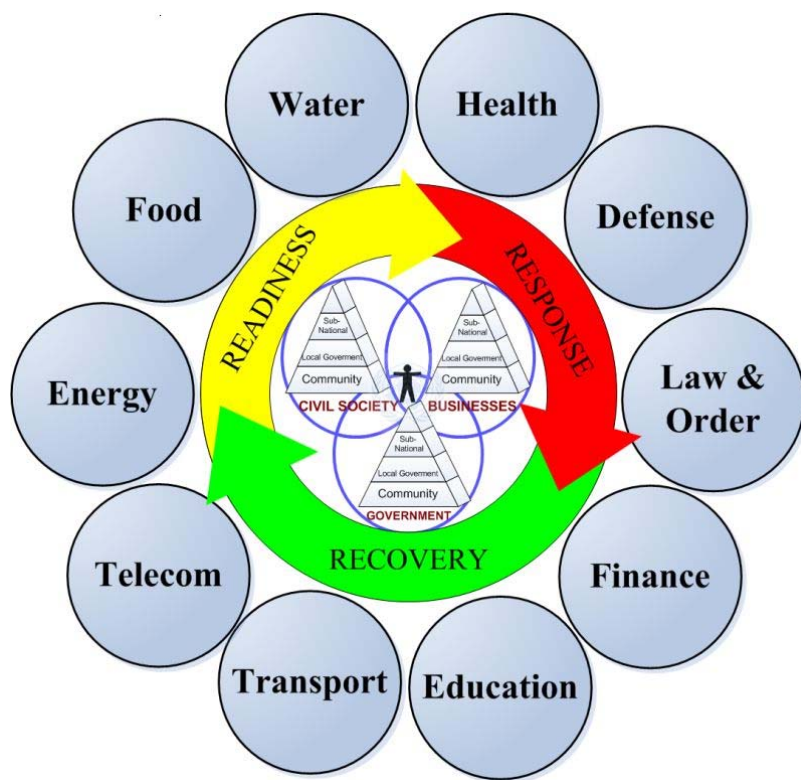
Adaptation



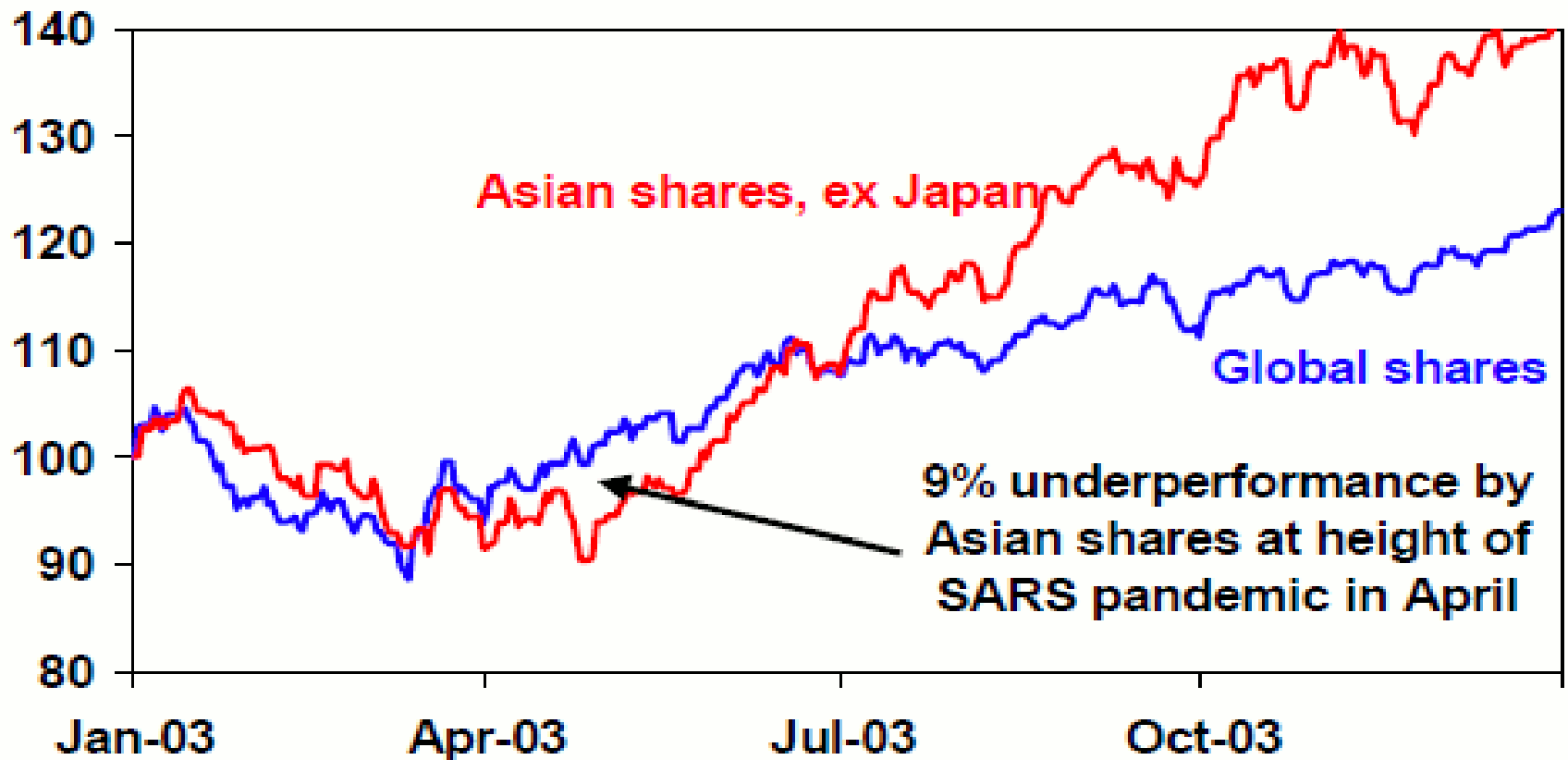
Reassortment



All sectors involved



SARS pushed Asian shares lower, but they turned as the number of cases peaked



WB 2008 predictions



Table 2 Possible economic impacts of flu pandemic

	<u>Mild</u>	<u>Moderate</u>	<u>Severe</u>
<i>(% change in GDP, first-year)</i>			
World	-0.7	-2.0	-4.8
High-income	-0.7	-2.0	-4.7
Developing	-0.6	-2.1	-5.3
East Asia	-0.8	-3.5	-8.7
Europe and Central Asia	-2.1	-4.8	-9.9
Middle-East & North Africa	-0.7	-2.8	-7.0
South Asia	-0.6	-2.1	-4.9
Deaths (millions)	1.4	14.2	71.1

Source: World Bank calculations based on McKibbin & Sidorenko (2006).



The future is uncertain

- Pandemics start slow
- Some pandemic viruses have waves that can get worse (1918 and 1968)
- Are older people resistant or is the virus not (yet) being transmitted among them?
- Will the virus exchange genes with viruses that are:
 - resistant: A(H1N1)-H247Y
 - more pathogenic A(H3N2) or A(H5N1)
- Economic impact dependent on reality, perceptions, and 'bounce'

Are we prepared for the next year?



MONDAY 13 JULY 2009 EVENING STANDARD

Business

IN TODAY'S SECTION

RESOLUTION REMAINS BULLISH ON HOPES FOR FRIENDS PROVIDENT TAKEOVER PAGE 35

'Will drivers buy the new Jaguar XJ? I think they will'
GIDEON SPANIER PAGE 38

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GPs call for calm as thousands seek swine flu advice

Anna Davis
Health Reporter

GP surgeries were today told to prepare for a "swine flu panic" as thousands seek advice after the death of the first otherwise healthy patient.

Practices across London are braced for a huge rise in the number of people worried about the condition.

It comes after the patient, believed to be a middle-aged man from Essex, died on Friday after contracting swine flu.

The victim, whose name and age have not been released, died at Basildon and Thurrock University Hospitals NHS Foundation Trust and was not suffering from any other health problems.

Dr Laurence Buckman, chair of the British Medical Association's GP committee, said: "We will see a rise in the number of people wanting to see a doctor.

"A lot of people will be scared as a result of this case. People will be more nervous and ask more questions. The vast majority will not need particular medical attention but will need to discuss this and want reassurance."

But Dr Buckman also called for calm amid reports that routine operations could be postponed and some Tube services suspended if rates of swine flu continue to rise.

Health bosses are also preparing to vaccinate the entire population against swine flu.

Transport for London bosses warned if swine flu reaches pandemic levels they may suffer staff shortages and have to cancel services.

But at a Whitehall meeting of emergency services and business chiefs, TfL bosses argued they would be able to cope as there would be fewer commuters using the Tube.

Health experts are already drawing up a list of patients who should be given priority for swine flu vaccinations, in what would be the biggest vaccination programme of the last 50 years.

Dr Peter Holden, the BMA's lead negotiator on swine flu, has called on the Government to implement its emergency plans on dealing with a swine flu pandemic immediately.

He said routine operations and preventive treatment will have to be effectively put on hold while the NHS deals with the outbreak. Dr Buckman said some GP surgeries were already struggling with the workload.

Orders have been placed to secure enough swine flu vaccines for the entire population under NHS plans to tackle the spread of the virus.

The Department of Health said the vaccine was still being developed but it expected supplies to start becoming available by early autumn. By the end of the year, about 60 million doses will be available.

It has emerged that two children who died from swine flu went to the same school for the disabled.

The children, aged seven and 11, were suffering from "complex special needs" and attended the Livity School, Lambeth.

Geraldine Lee, headteacher said: "We have a close bond with all our pupils and their families and we are all devastated."

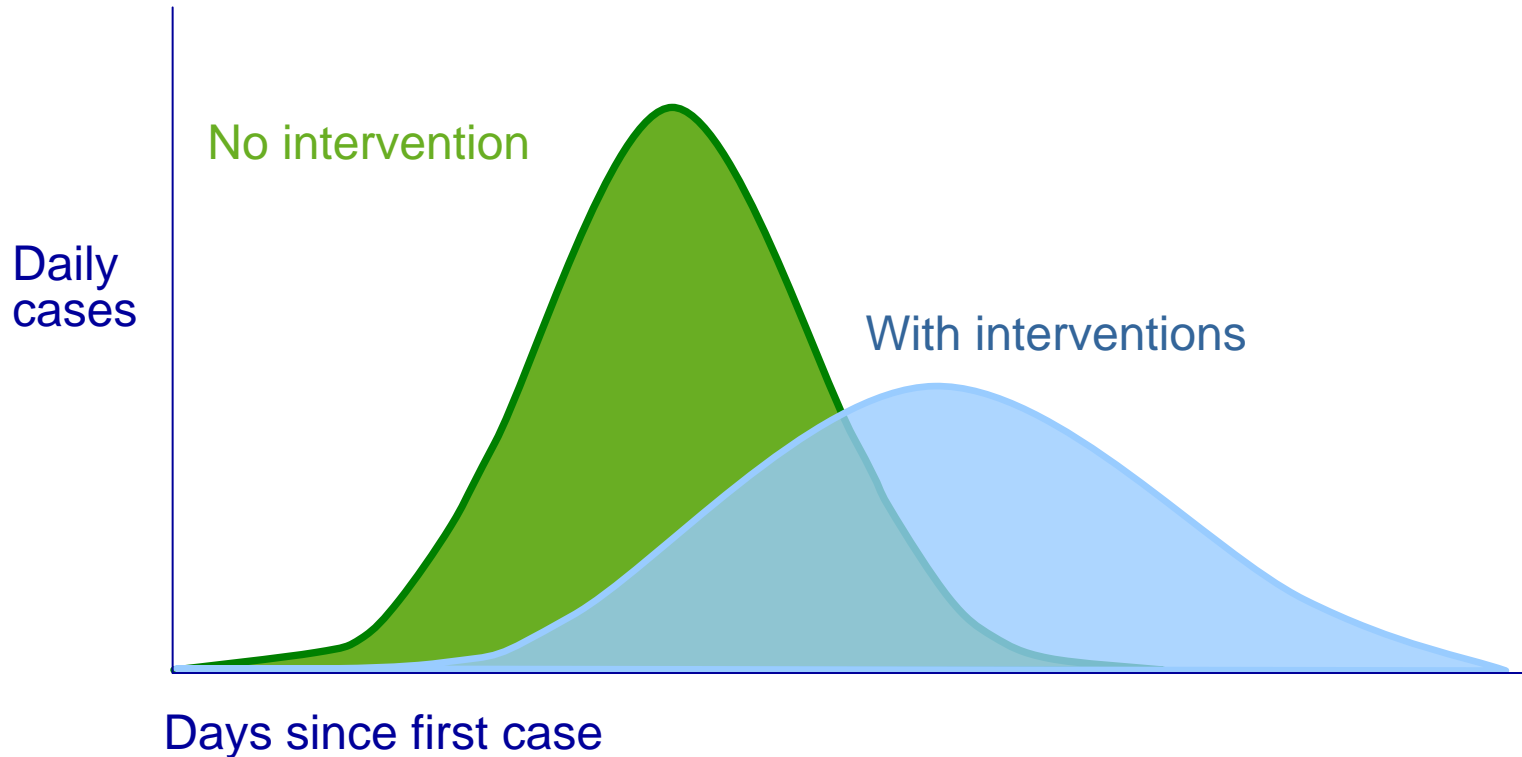
It was also reported that Gordon Brown's adviser on climate change, Michael Jacobs, has been infected. He may have contracted the virus during a recent visit to Mexico.

'People will be scared as a result of this case ... they will be nervous and will want reassurance'
Dr Laurence Buckman, BMA

Aims of early public health interventions



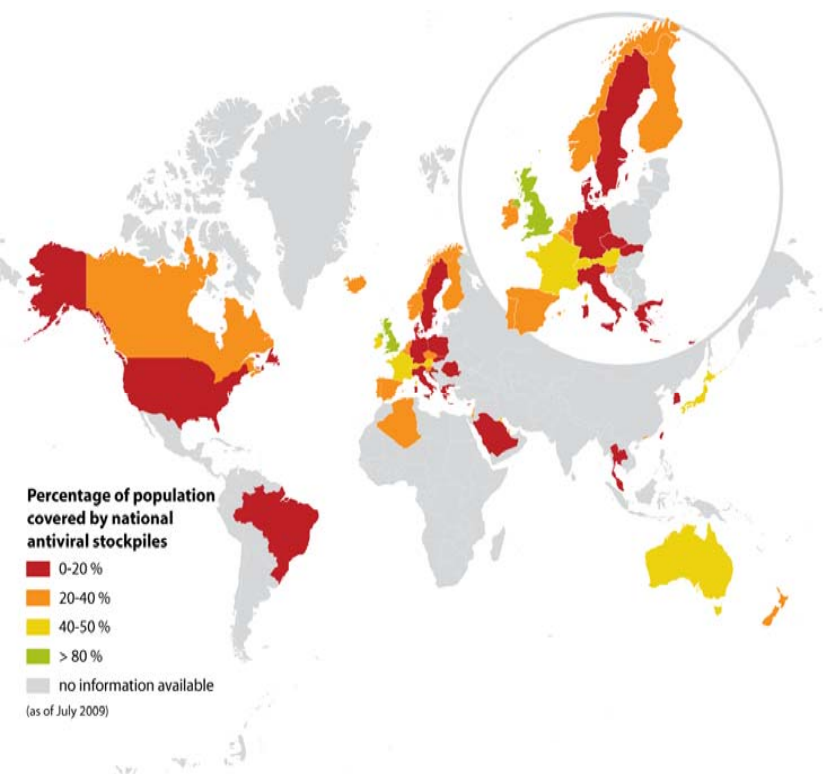
- Shift the epidemic curve to the right, reduce area under the curve
- Reduce peak burden on healthcare system and threat
- Buy time for vaccine development, production, and provision



Consequences of SARS and H5N1



- Global pandemic influenza preparedness efforts
 - IHR
 - National strategic planning
 - UNSIC
 - Regional responses
- Health systems planning/operational capacity strengthening
- Non-pharmaceutical interventions
- Antiviral stockpiling
- (Vaccines)



Vaccine Manufactures



Source: EVM Press Release 30 April 2004

Asia-Pacific

- In 2006, affluent countries and those impacted by SARS relatively better prepared strategically
- Operational challenges remain in low income countries
- Operational capacity: management + resources = PH equity, efficient, effective



Coker R, Mounier-Jack S. Pandemic influenza preparedness in the Asia-Pacific region. *Lancet* 2006; 368: 886-9.

Health system resources in Thailand

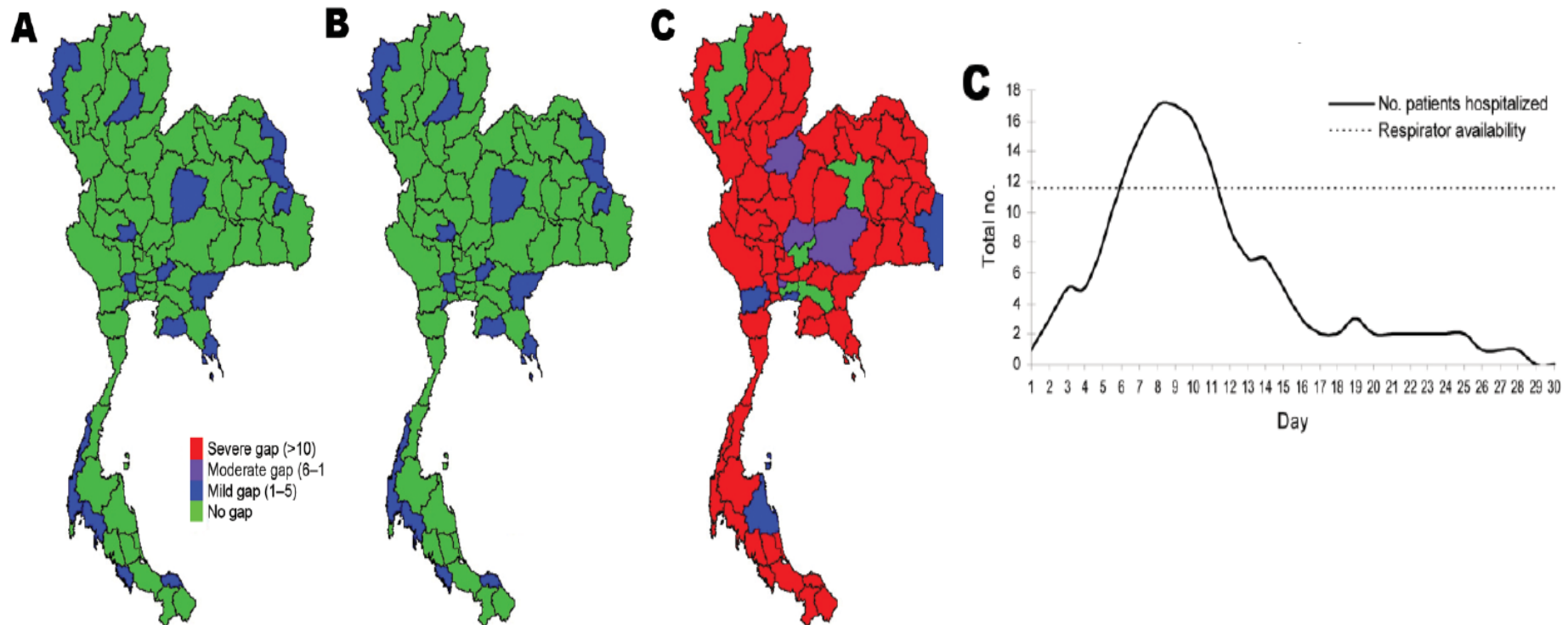
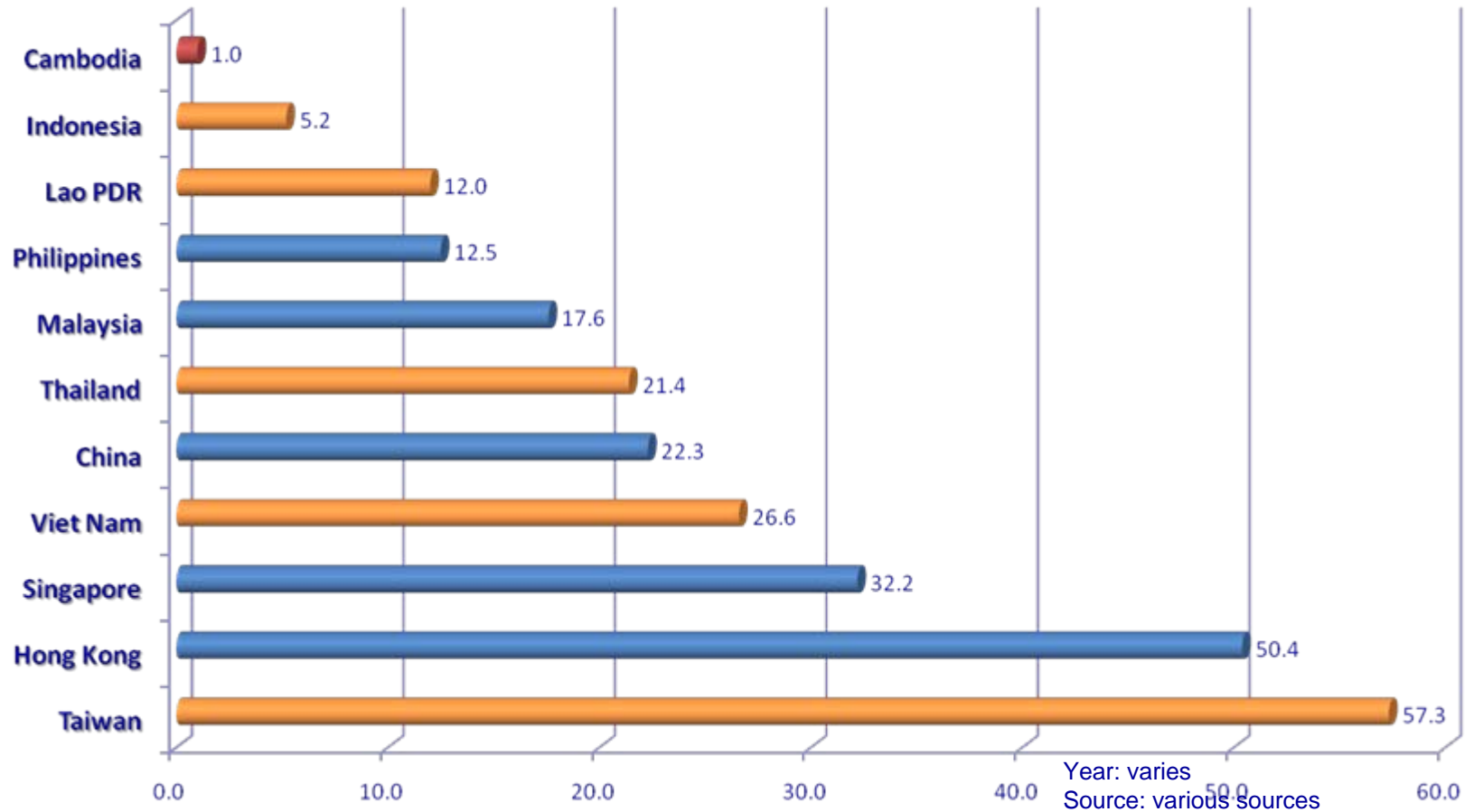


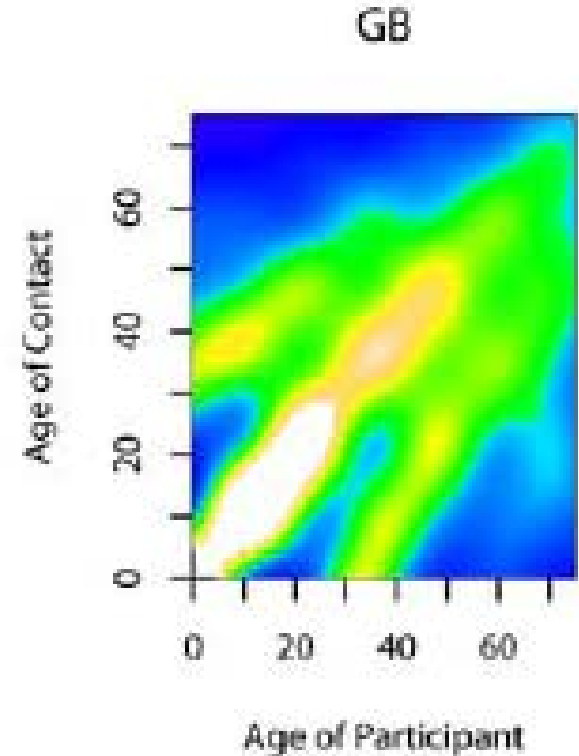
Figure 4. Gaps in health system resources (adult respirators) likely to occur for 3 scenarios of prepandemic influenza across provinces, Thailand. A) Scenario 1; B) scenario 2; C) scenario 3.

Profound differences in health system resources: hospital beds per 10,000





- Risk factors distribution, population pyramids, mixing
- Resources and interventions
- Managing resources effectively, efficiently and equitably
 - Health system
 - Other sectors
- Research to inform policy in a timely manner – *what* works and *how* can it be made to work?



Scarce resources and the value of lives



- National ethical and management dilemmas
 - First –come, first-served
 - The ‘worthy’ (eg old-soldiers)
 - The ‘necessary’ (eg health care workers)
 - Save the most lives
 - Save the most life-years
 - Prioritise those who’ve had the least chance to live through life’s stages (life cycle principle)



Global challenges: writ large in Asia-Pacific

- Risk factors, demographic characteristics, mixing, contact type
- Wide variations in capacity in the region
 - Access to scarce resources
 - Managerial and governance capacity
- Roles and responsibilities
 - countries, multilaterals, donors, funders, corporations
- Research to inform: who, when, where, and *how*?



In conclusion

Queue when waiting

Sundays on the road

