

ASIA PACIFIC CONFERENCE ON PUBLIC HEALTH 2011

Emerging and Re-emerging Diseases

By

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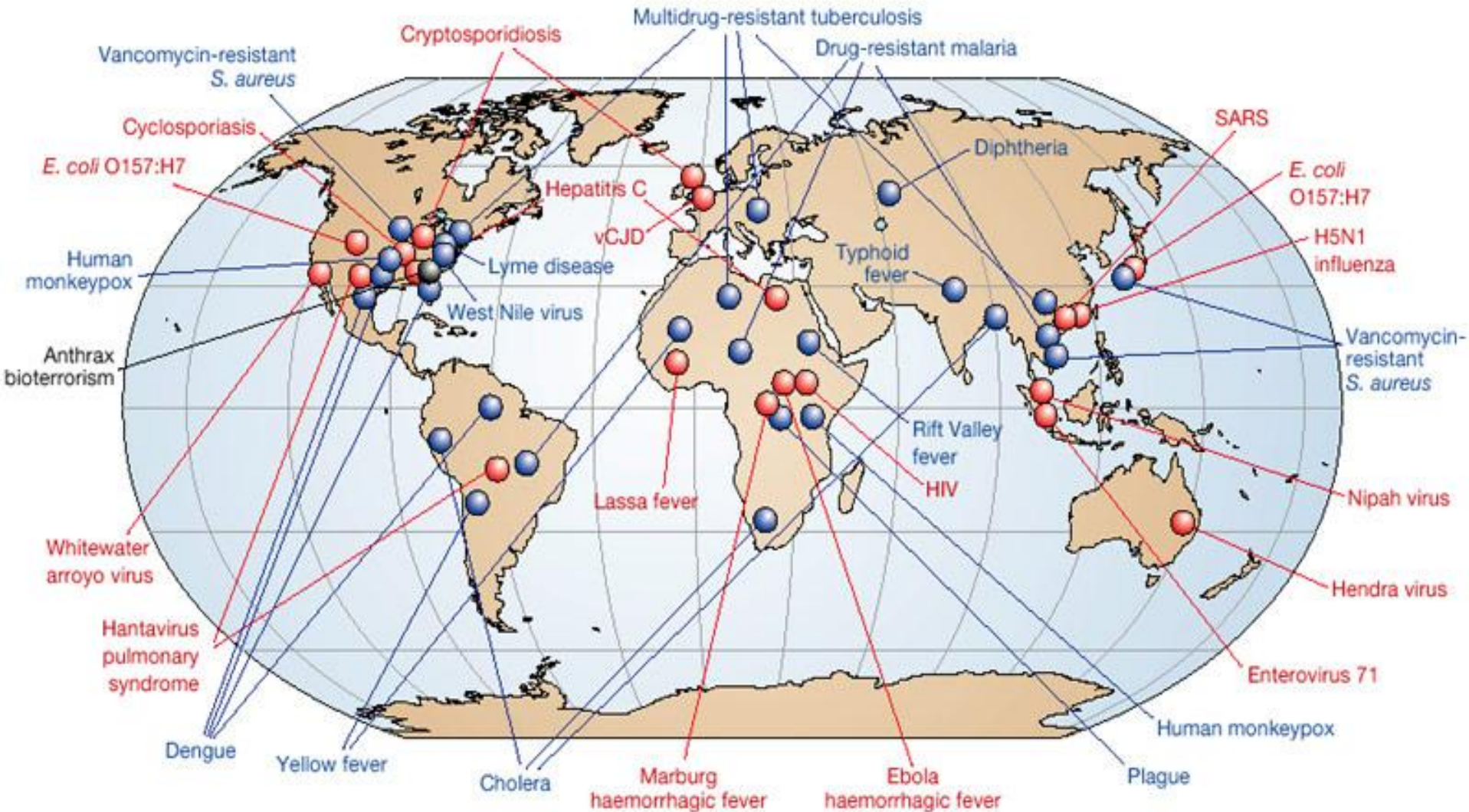


Outline

- Global examples of emerging infections
- Contributing factors
- Challenges
- Lessons learnt
- Way forward



Global distribution of emerging & re-emerging infections



Source: Morens et al. 2004. The challenge of emerging and re-emerging infectious diseases. *Emerg Infect Dis.* 430: 242-249

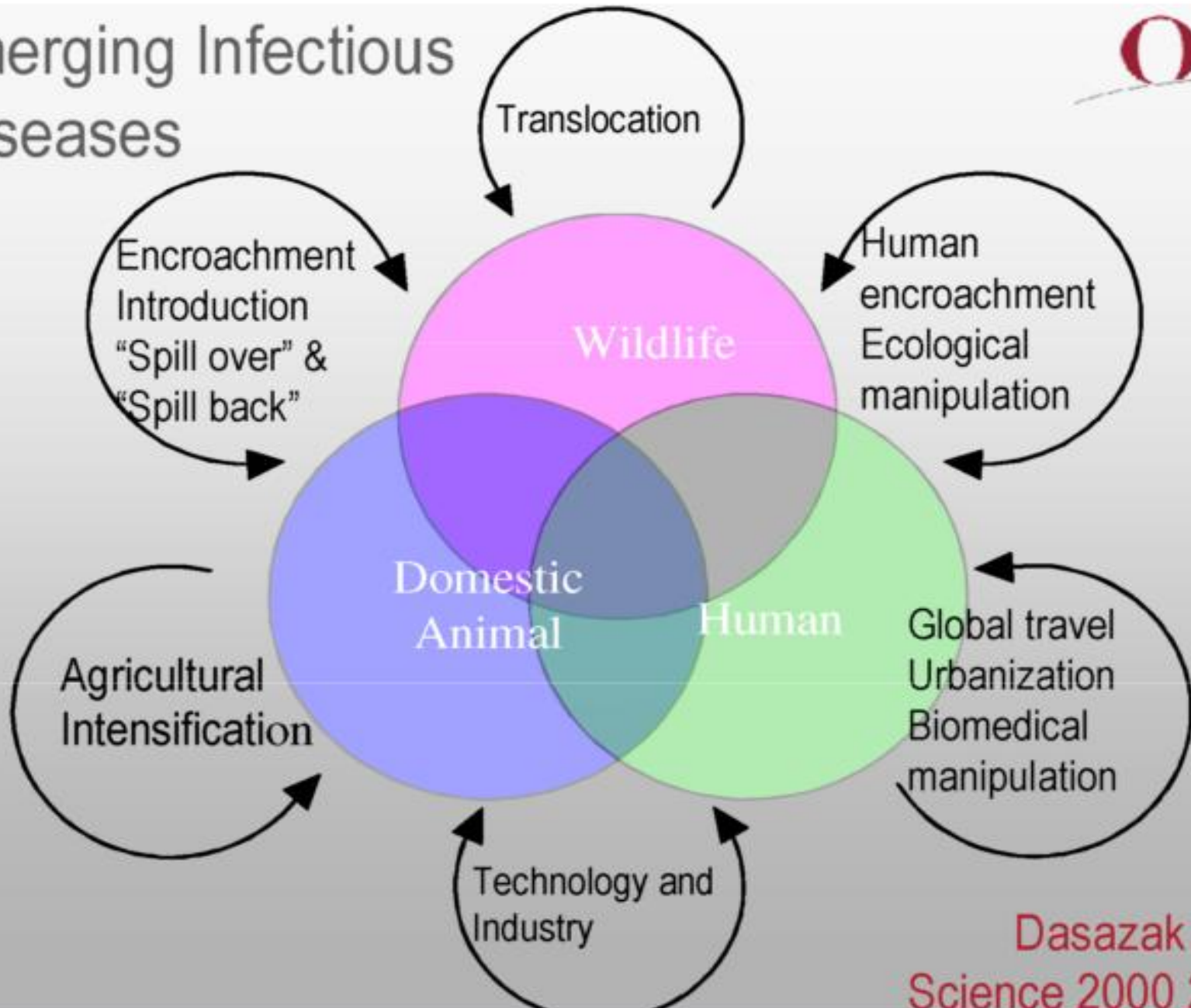
Emerging & Re-emerging?

- New infections
 - newly recognized
 - newly evolved
- Known infections
 - rapidly increasing in incidence,
 - spreading to new geographic areas or populations

- WHO, 2004



Emerging Infectious Diseases



Daszak P. et.al.
Science 2000 287:443

Table 1. Examples of novel, emergent zoonotic virus diseases

Year of isolation	Place of isolation	Virus	Reservoir/spillover host
1991	Venezuela	Guanarito virus ²⁰	Rodents
1992	Slovenia	Dobrava virus ²¹	Rodents
1993	United States	Sin Nombre virus ²²	Rodents (<i>Peromyscus maniculatus</i>)
1994	Brisbane, Australia	Hendra virus ²³	Fruit bats (<i>Pteropus sp.</i>)/horses*
	Sao Paulo, Brazil	Sabia virus ²⁴	Rodents
1995	Florida, USA	Black Creek Canal virus ²⁵	Rodents
1996	Ballina, Australia	Australian bat lyssavirus ²⁶	Fruit and insectivorous bats
	Argentina	Andes virus ²⁷	Rodents
1997	Hong Kong (China)	Influenza H5N1 ²⁸	Wild birds/domestic poultry*
	Menangle, Australia	Menangle virus ²⁹	Fruit bats
	Saudi Arabia	Alkhurma virus ^{30,31}	Camels and sheep†
1999	Peninsular Malaysia	Nipah virus ^{32,33}	Fruit bats/pigs*
2000	Peninsular Malaysia	Tioman virus ³⁴	Fruit bats
2002–2003	China, Hong Kong (China)	SARS coronavirus ³⁵⁻³⁸	Bats/civets?*
2003–2004	Viet Nam, China	Influenza H5N1 ^{39,40}	Wild birds/domestic poultry*
2007	Melbourne, Australia	Dandenong arenavirus ⁴¹	Rodents?
	Peninsular Malaysia	Melaka virus ⁴²	Fruit bats?
	Uganda	Bundibugyo ebolavirus ⁴³	Fruit bats?/various animals (bush meat)*
2008	Lukasa, Zambia	Lujo virus ⁴⁴	Unidentified rodents
	Perak, Malaysia	Kampar virus ⁴⁵	Fruit bats?

* Spillover host; † Tick-borne

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Contributing factors

- Population movements and the effect of urbanization
- Changes in land use such as from deforestation, irrigated agriculture
- Animal-human-environment interface
- Increasing globalization of food, trade and commerce
- Increasing worldwide movement of goods and air travel
- Changes in human behaviour



Contributing factors

- Technology and industry
 - improved detection and diagnostic procedures.
 - changing techniques in food processing, organ transplantation,
- Microbial adaptation and changes
 - mutation, natural selection and evolution
 - inappropriate use of antibiotics leading to antimicrobial resistance
- Human susceptibility to infections such as from immunosuppression
- Breakdown in public health measures
- Climate changes, floods, drought, famine



Nipah Virus Outbreak

- Among pig-handlers
- September 1998 – May 1999
- Causative agent: A novel paramyxovirus i.e. Nipah virus
- Outcome:
 - 265 cases of acute encephalitis with 105 deaths
 - Mortality rate \approx 40%
 - 1.1 million pigs culled
 - Direct economic impact (Loss of \approx USD625 million)

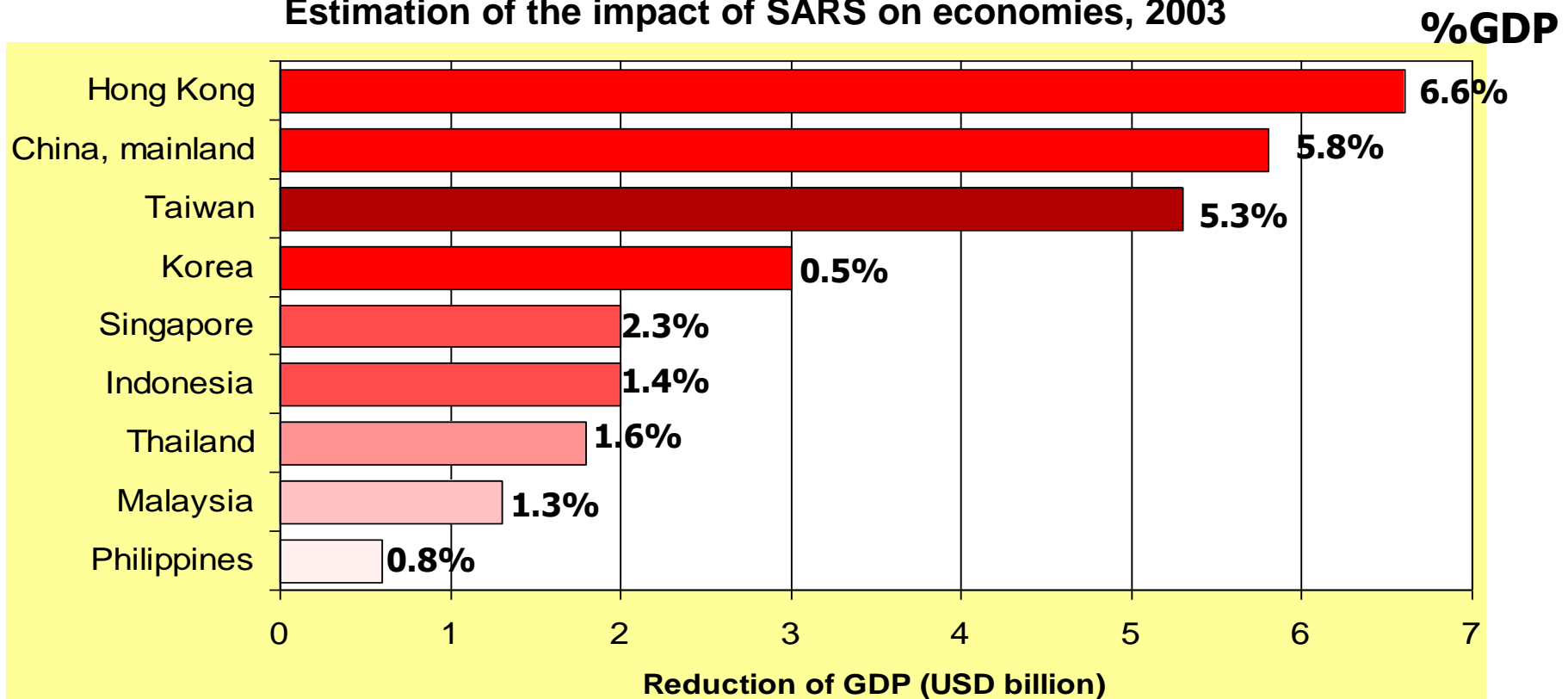


Severe Acute Respiratory Syndrome (SARS)

Impact

No. of probable cases (1/11/2002 – 31/07/2003), = 8,097 cases,
Deaths = 774 in 29 countries

Estimation of the impact of SARS on economies, 2003



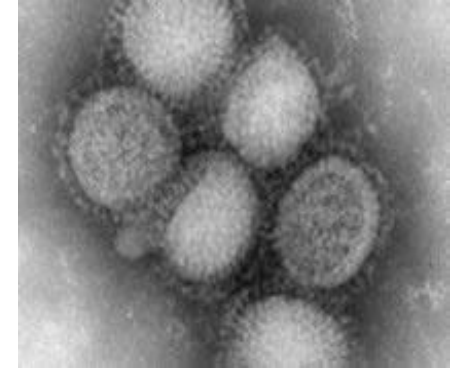
Avian Influenza H5N1

- Series of outbreaks in poultry population:
 - **August 2004:** Kelantan (5 districts)
 - **February 2006:** Federal Territory Kuala Lumpur
 - **March 2006:** Perak (3 districts) & Pulau Pinang (1 district)
 - **June 2007:** Selangor (1 district)
- No human cases of avian influenza

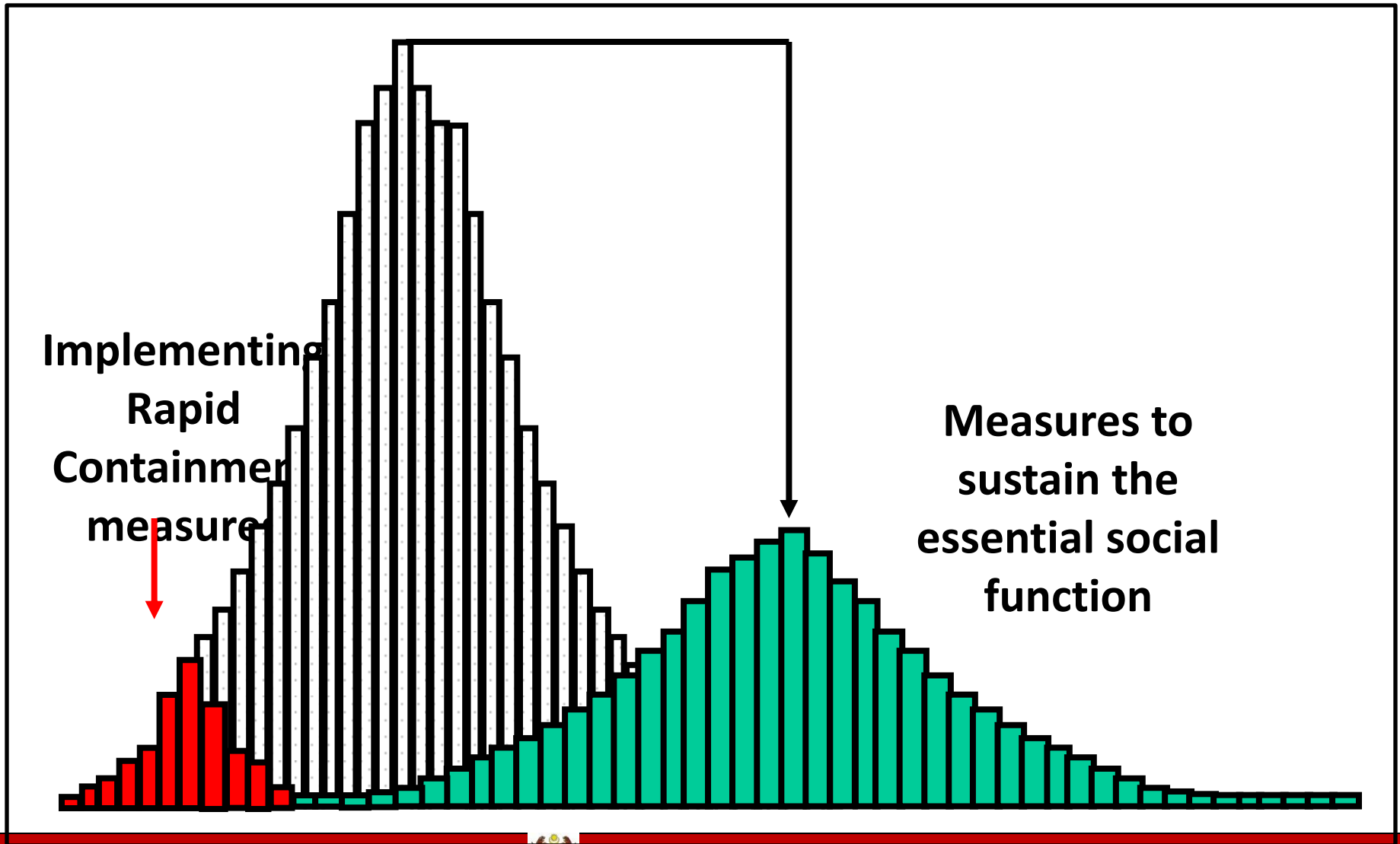


Pandemic H1N1 2009

- 12 April 2009: an outbreak of influenza-like illness in Veracruz, Mexico reported to WHO
- 15 May 2009: Malaysia's first laboratory confirmed case (imported case)
- 11 June 2009: WHO declares pandemic alert level phase 6
- 21 June 2009: Malaysia's first local transmission case reported



Pandemic Responses



Challenges

- Preparedness
- Early & accurate surveillance
- Rapid response
- Prevention and control measures
- Early identification of pathogen
- Multi-sectoral cooperation
- Political commitment to invest of the uncertainty
- Cross-border issues



Milestones

1999: Inter Ministry Committee on the Control of Zoonotic Diseases

2001: Infectious Disease Surveillance Section, Disease Control Division

2002: Epidemic Intelligence Programme (EIP) Malaysia

2006: National Influenza Pandemic Preparedness Plan (NIPPP)

2007: National Crisis Preparedness and Response Centre (CPRC)

2008: Risk Communication Work Plan



The Way Forward

- IHR 2005
- APSED 2010
- 'One Health' approach



Asia Pacific Strategy for Emerging Diseases (APSED) 2010

8 focus areas:

- Surveillance, risk assessment & response
- Laboratory capacity
- Zoonoses collaboration between animal and human health sectors
- Infection Prevention and Control
- Risk Communications
- Public health emergency preparedness
- Regional preparedness, alert and response
- Monitoring and evaluation



Conclusion

- Surveillance, early detection and rapid response are the keys to reducing the risks from emerging diseases.
- Way forward through the scope of IHR (2005) with the One Health approach of collaboration and continued core capacity building using the APSED Strategy.
- Strong political commitment and well-trained and committed health workers crucial.



Terima kasih

