



# Pandemic influenza A(H1N1) in South Africa: First 100 Case Investigations and Epidemiology to 1 December 2009

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# Introduction

- Rapid global transmission of pandemic influenza H1N1 following 1<sup>st</sup> human cases in USA and Mexico in April 2009
- Importation into South Africa and local transmission was inevitable
- Introduction of a novel pathogen into a naive (susceptible) community provides rare opportunity to study:
  - Transmissibility
  - Epidemiological features
- Important to document to inform public health interventions (e.g. vaccination)



# Methods

- Case finding, surveillance systems, laboratory testing and diagnostic strategies varied over time
- From 28 April 2009: Initially intense active case-finding and testing of all suspected cases:
  - Recent onset of fever ( $\bullet 38^{\circ}\text{C}$ ) + influenza-like illness (ILI) + travel to an area with confirmed community wide outbreaks within 7 days / close contact with a suspected / confirmed case
- Laboratory testing by National Influenza Centre at NICD using real-time PCR

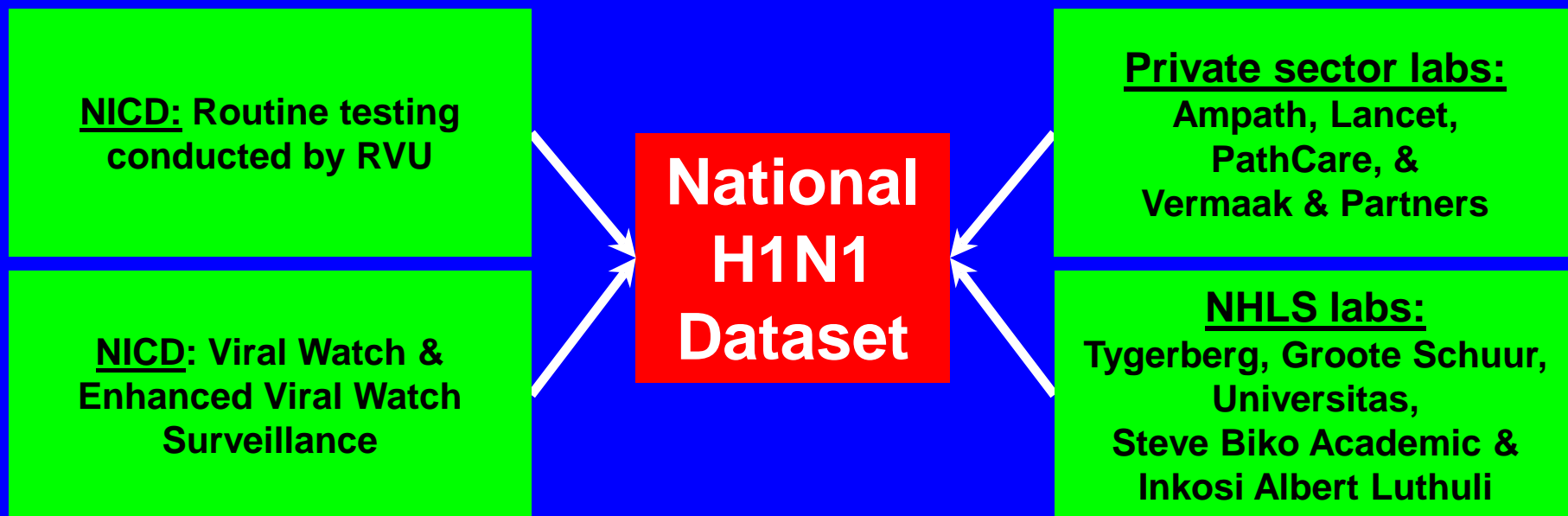


# Methods: First 100 Cases

- Objective (as per WHO recommendation):
  - To describe clinical and epidemiological features (e.g. secondary attack rate, serial time interval) of the 1<sup>st</sup> 100 confirmed cases
- Following case confirmation:
  - Cases interviewed telephonically utilising detailed standardised questionnaire
  - 14 day telephonic follow-up interviews

# Methods: National Data

- Strategy of universal testing of all ILI unsustainable and unnecessary
- After first 100 confirmed cases, change to test only patients with moderate to severe disease where a laboratory diagnosis would assist in clinical management, (e.g. hospitalisations, fatalities, unusual clinical patterns)
- Decentralise laboratory testing: NICD → Public (NHLS) and Private sectors

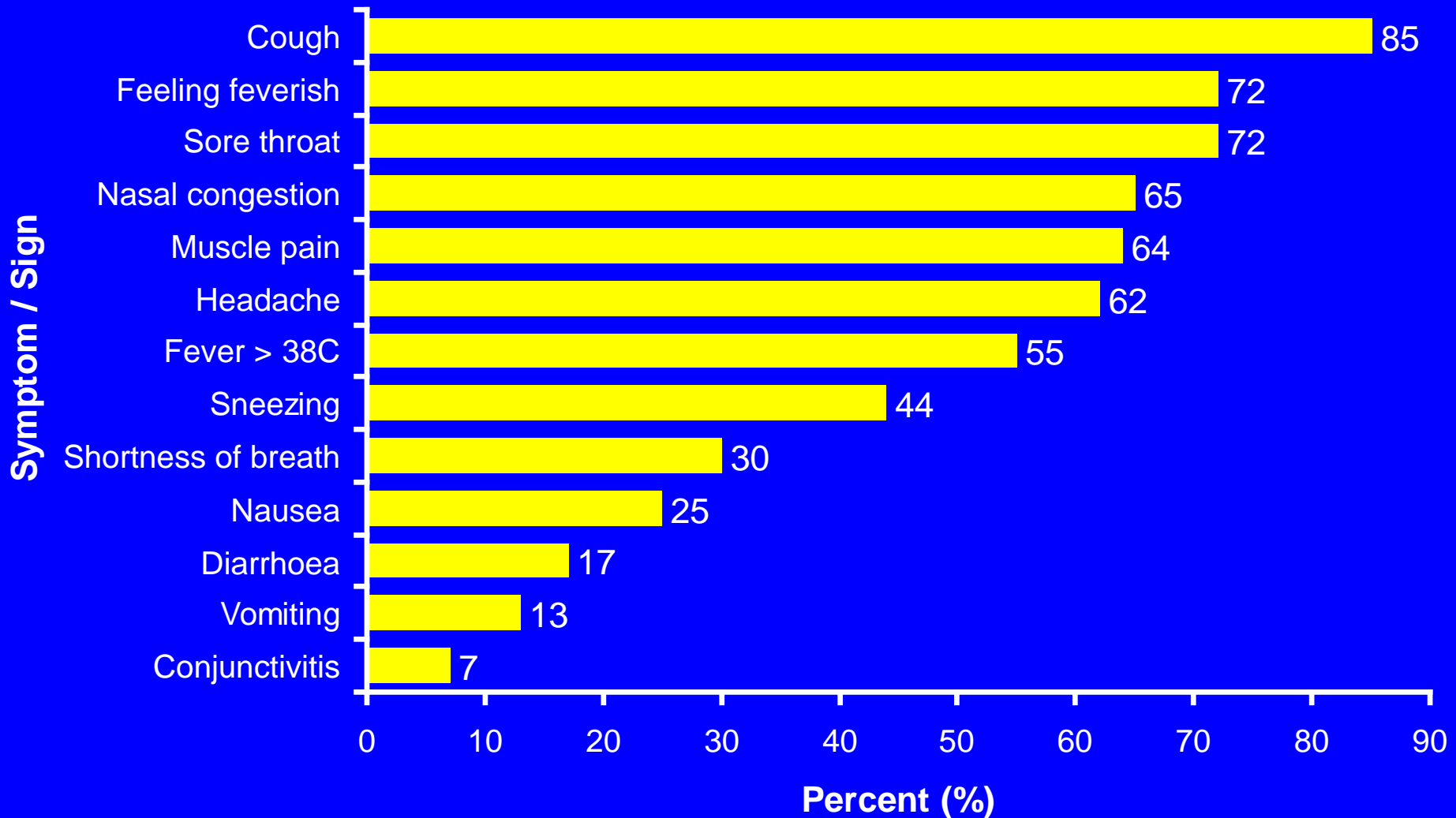


# Results: First 100 Cases

- 14 June 2009:
  - 1<sup>st</sup> confirmed cases detected
  - Young American male visiting SA, developed symptoms 1 day before arriving
- 24 June:
  - 1<sup>st</sup> locally acquired infection, contact with traveller
- 15 July:
  - Over 100 cases confirmed
  - 58% had no history of recent international travel – evidence of sustained local transmission
  - 11% were hospitalised, but only 3% due to complications

# Results: First 100 Cases

## Clinical symptoms and signs



# Results: First 100 Cases

## Household Secondary Attack Rate (SAR)

$$\text{SAR} = \frac{\text{\# of cases among contacts of index cases during the period}}{\text{total \# of contacts}} \times 100$$

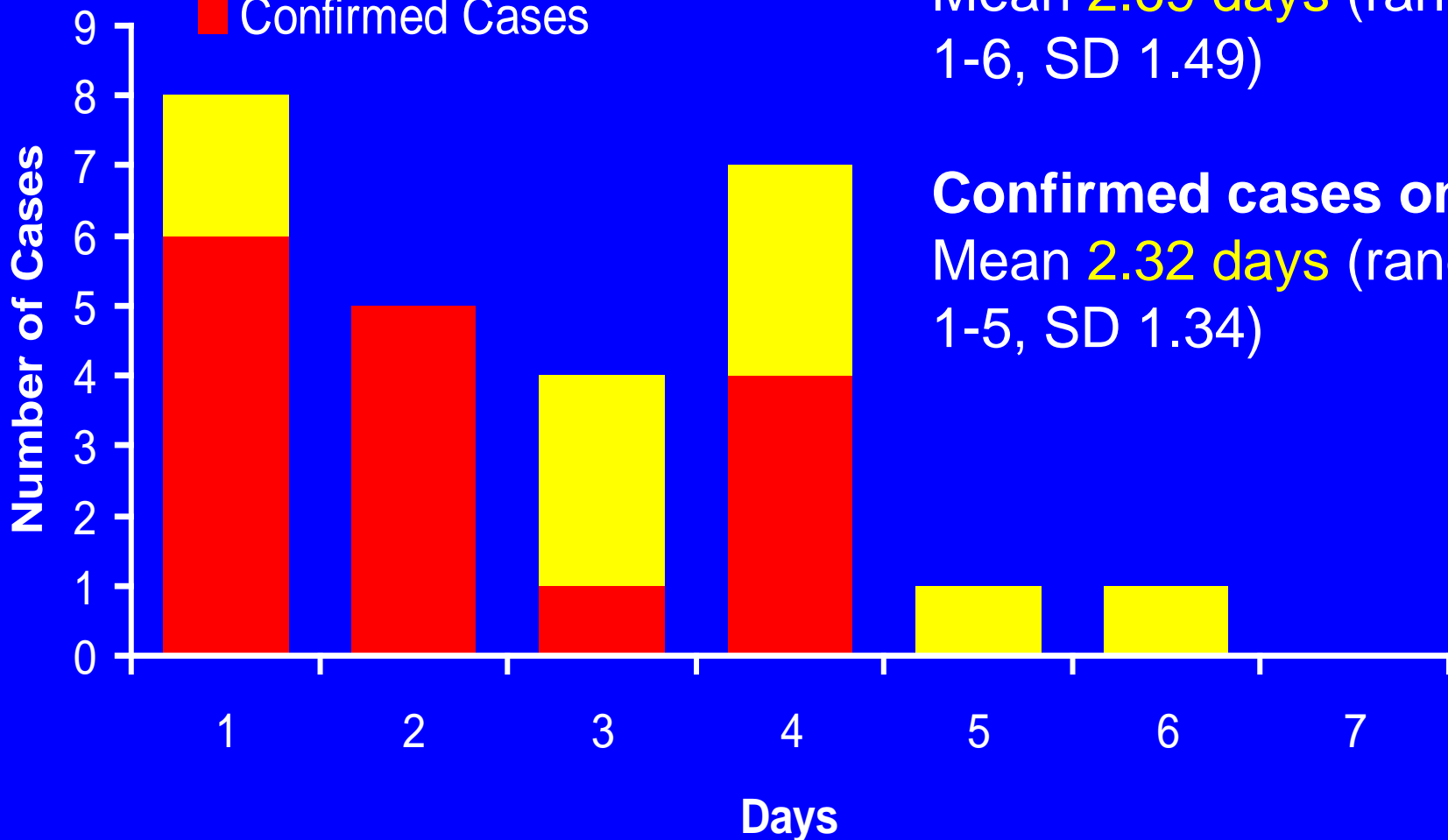
- 64 households included in the study
- 158 susceptible individuals
- 16 confirmed cases
- 11 suspected cases
- Household SAR (confirmed + suspected):  
–  $27/158 = \underline{17\%}$



# Results: First 100 Cases

## Serial Interval estimate

■ Suspected Cases  
■ Confirmed Cases



**Confirmed + ILI cases:**  
Mean **2.69 days** (range 1-6, SD 1.49)

**Confirmed cases only:**  
Mean **2.32 days** (range 1-5, SD 1.34)



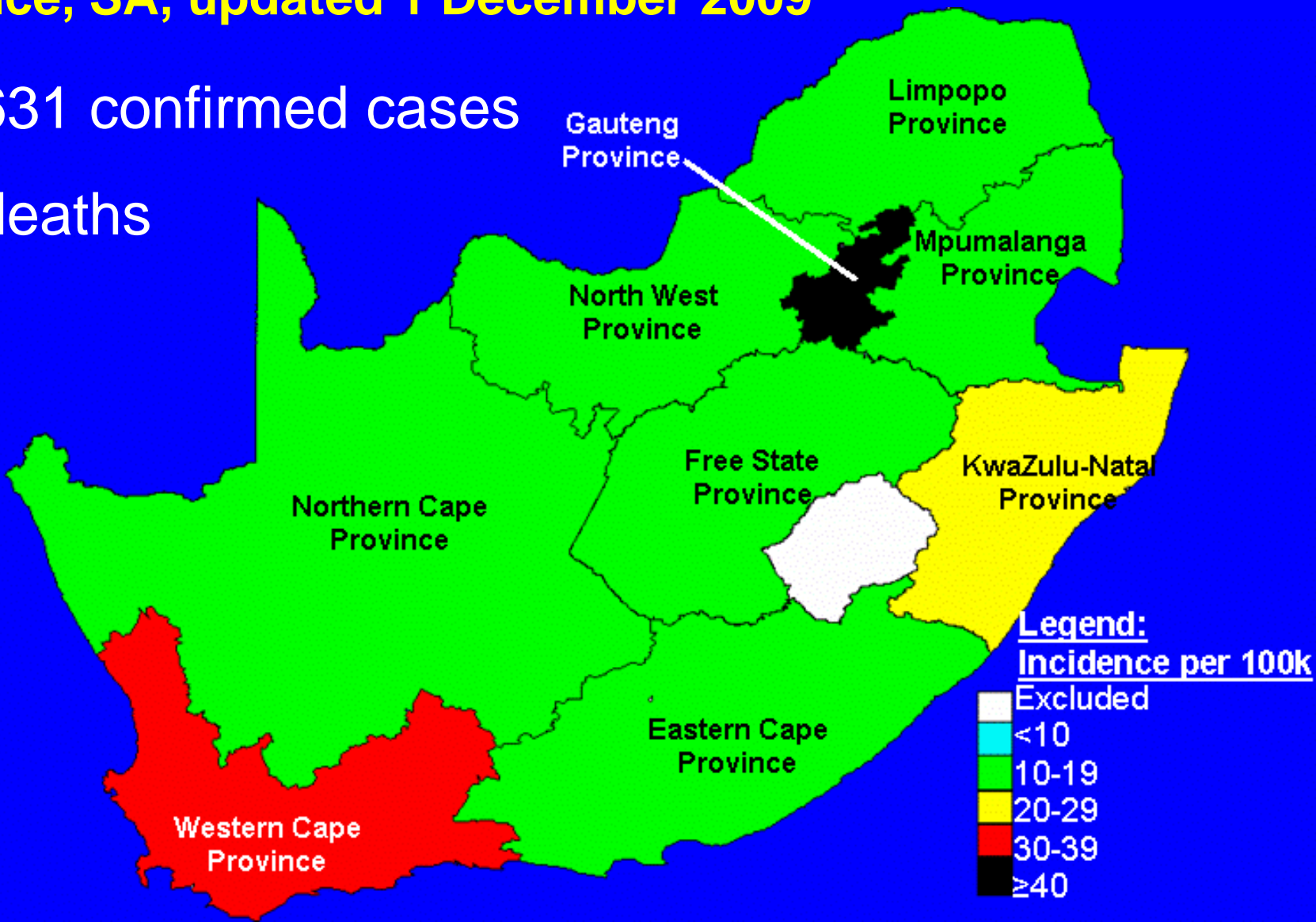
# Results: National Data



Incidence of pandemic influenza A(H1N1) 2009 cases by province, SA, updated 1 December 2009

12,631 confirmed cases

92 deaths

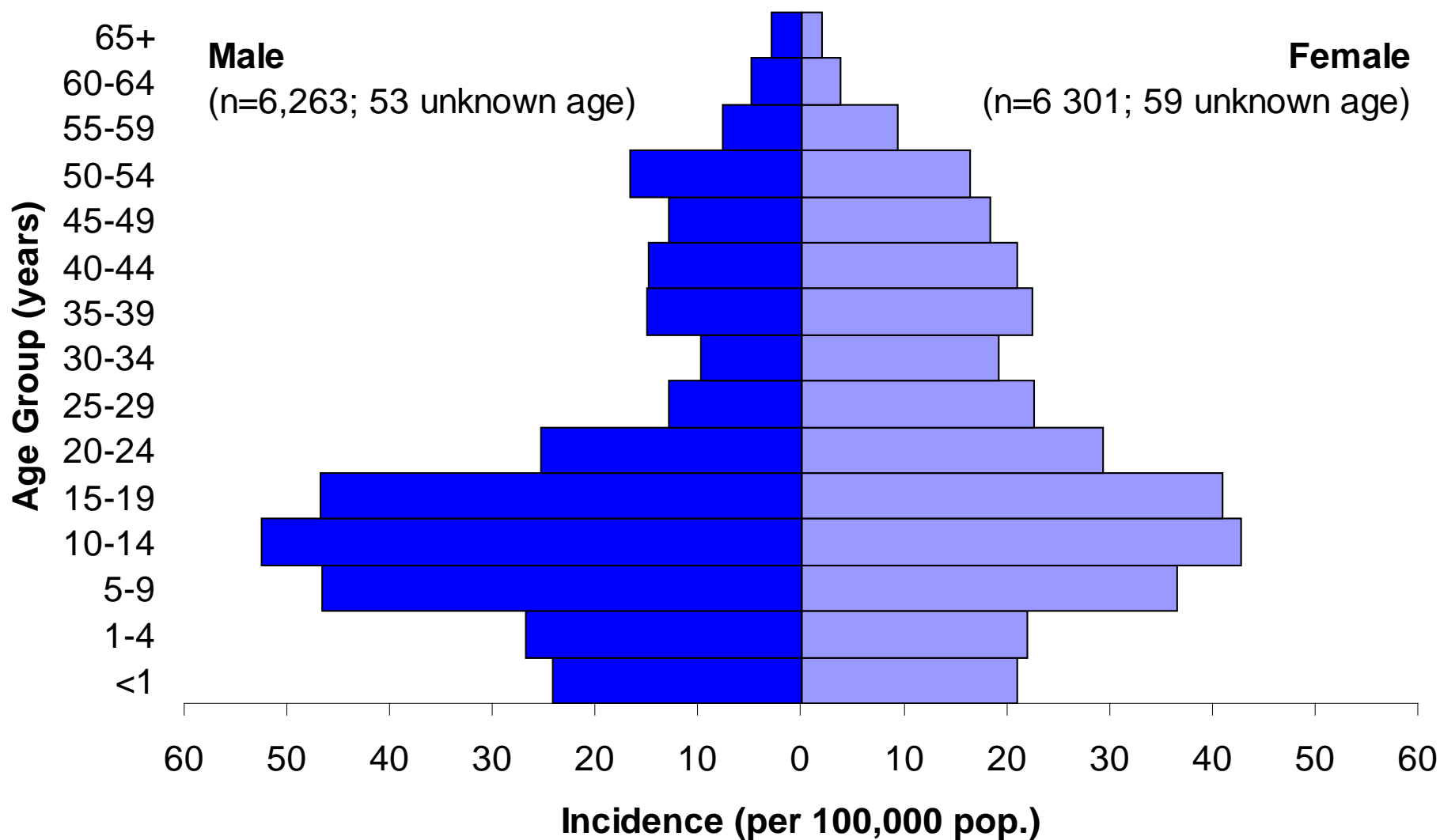




# Results: National Data



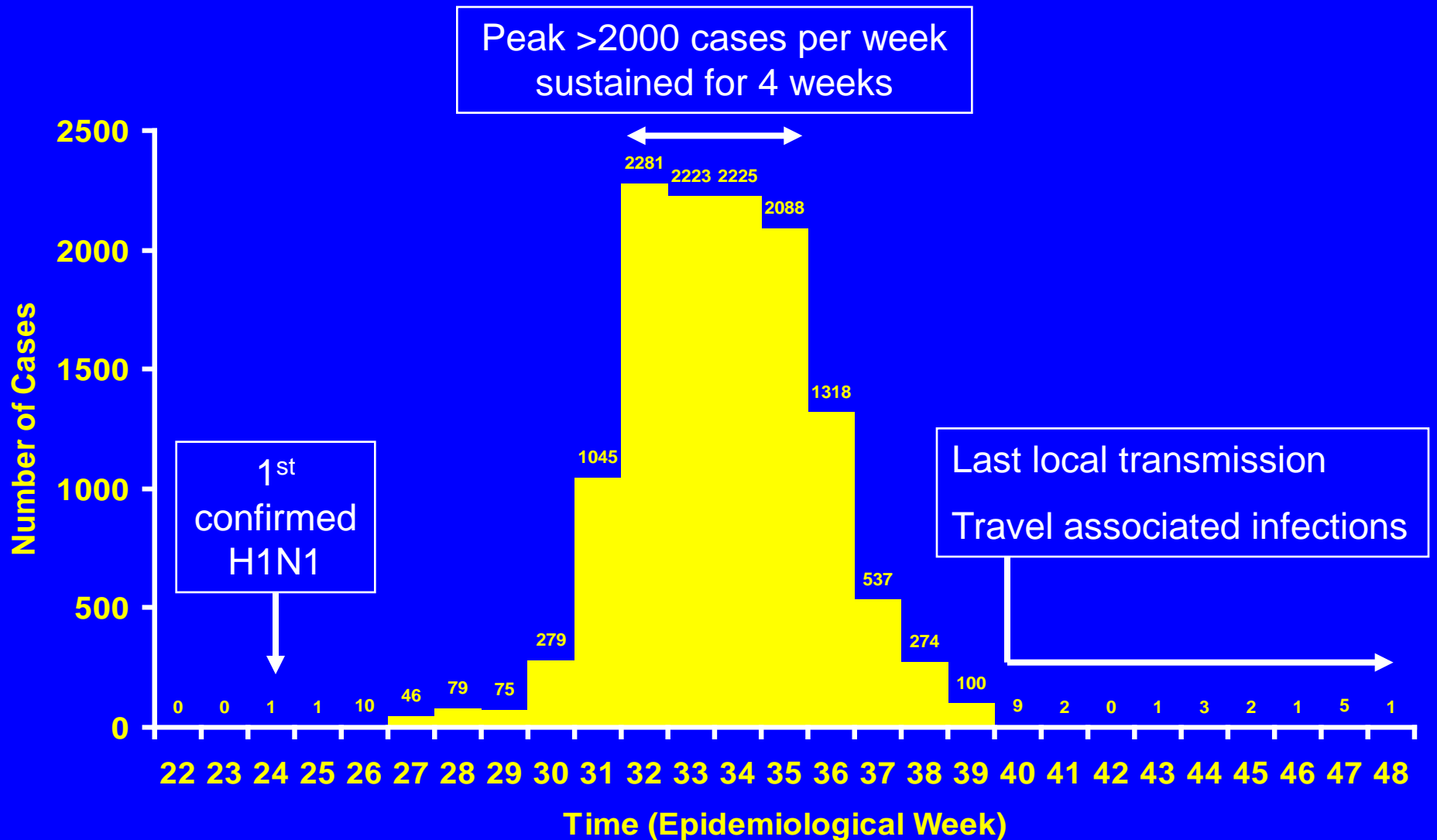
## Incidence of pandemic influenza A(H1N1) 2009 cases by age group and gender, updated 1 December 2009





# Results: National Data

## Epidemic curve: Pandemic influenza A(H1N1) 2009 cases by week, updated 1 December 2009

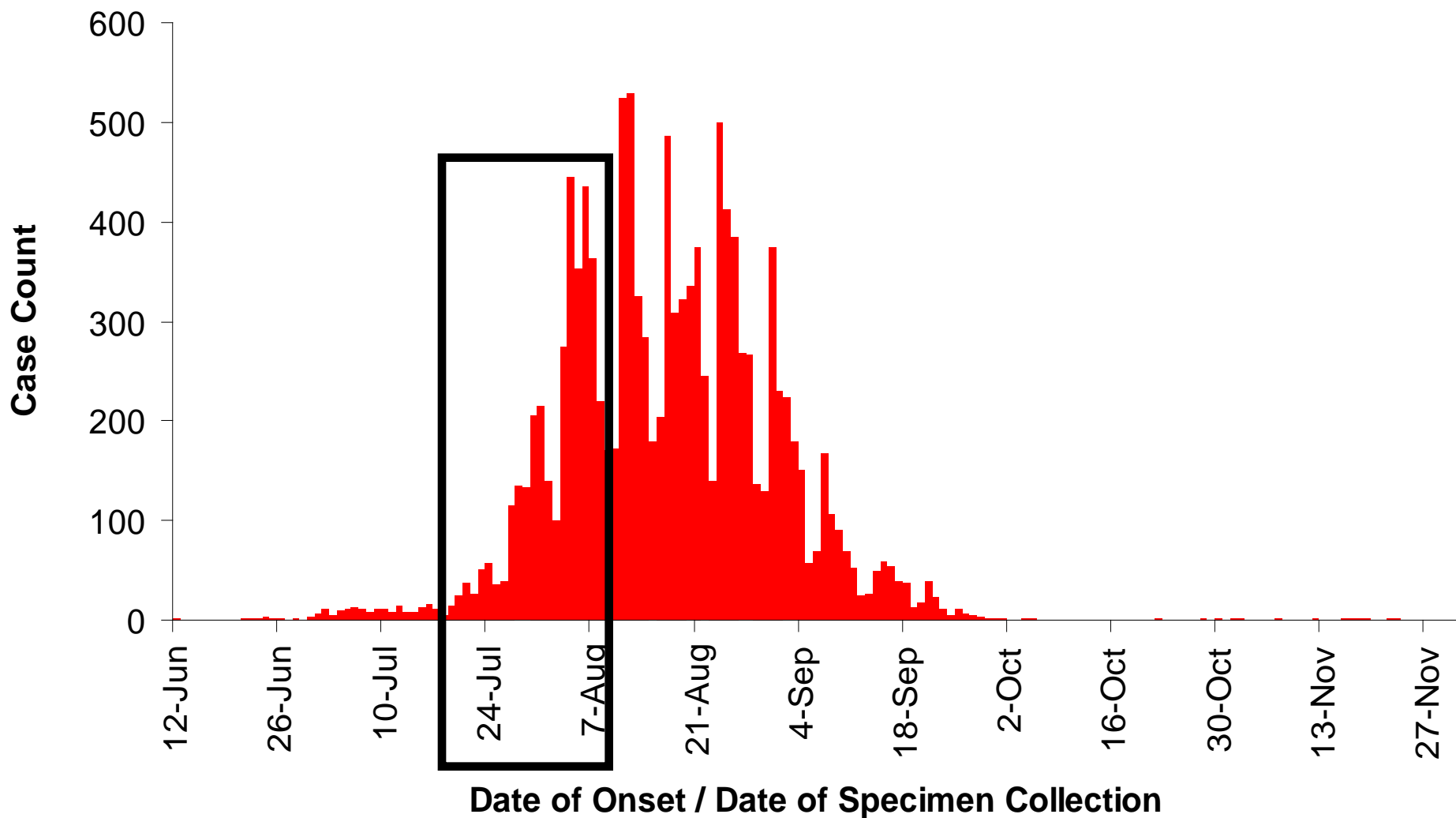




# Results: Estimating $R_0$



Epidemic curve: Pandemic influenza A(H1N1) 2009 cases by date, updated 1 December 2009

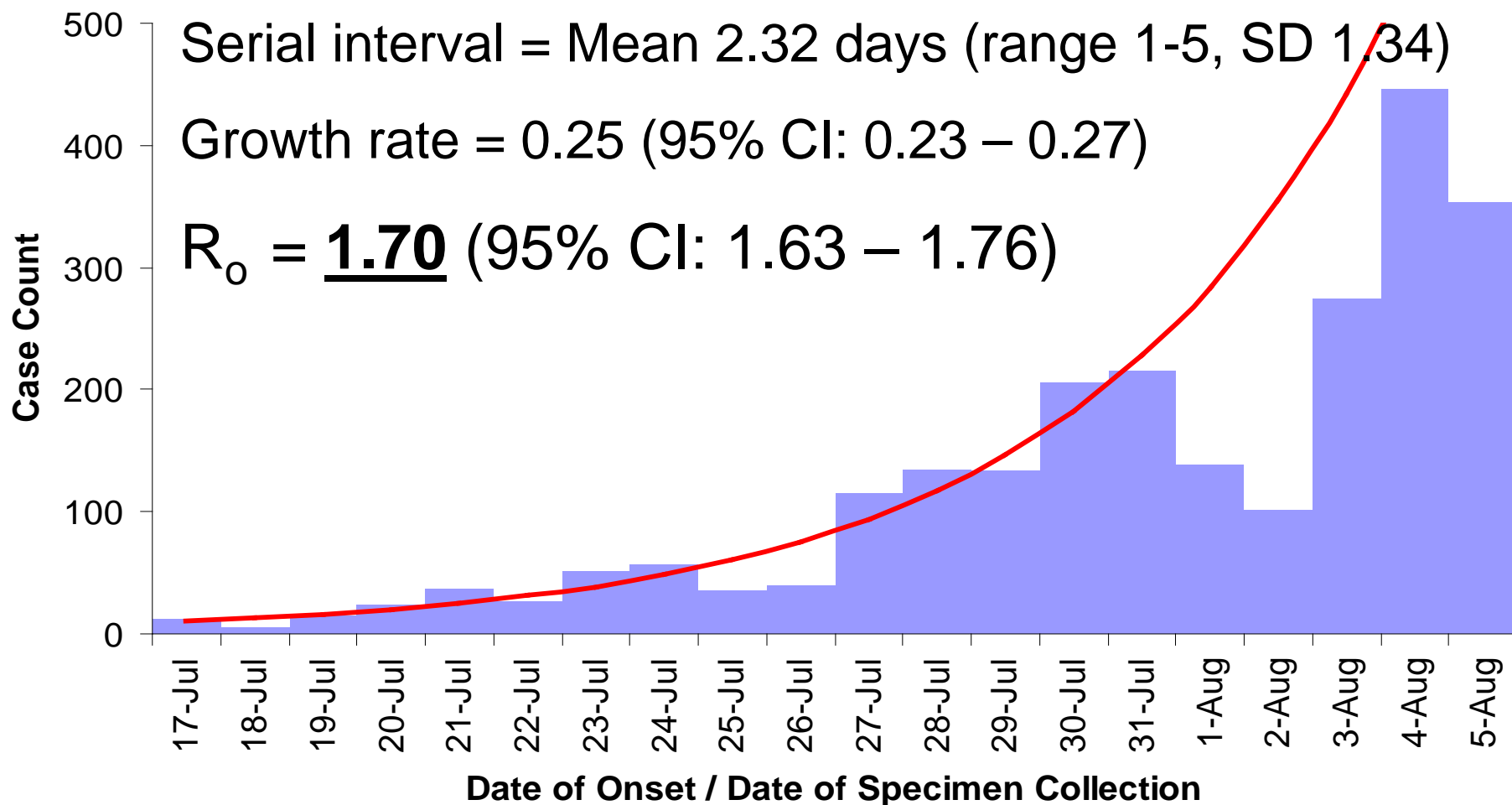




# Results: Estimating $R_0$



Epidemic curve: Pandemic influenza A(H1N1) 2009 cases by week, updated 1 December 2009



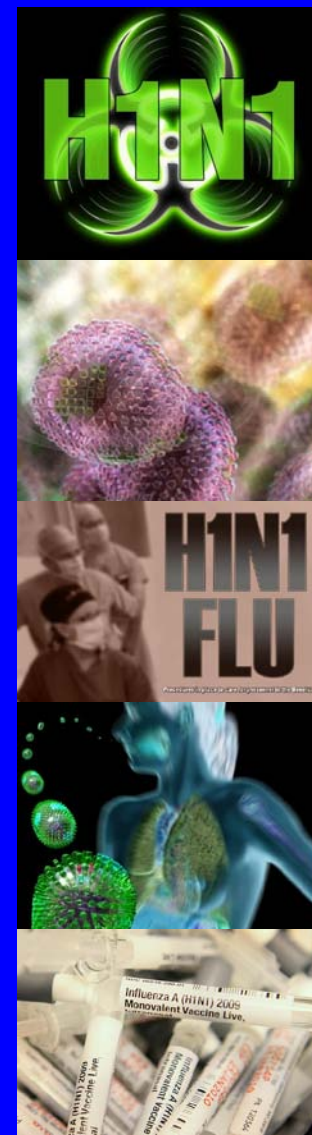
# Discussion

- First 100 case investigations successfully documented the H1N1 introduction
- Disease mild to moderate disease
- Important to take into account demographic and socioeconomic differences between the first 100 cases and general population
- SAR and  $R_0$  estimates comparable to data published from elsewhere:
  - Likely underestimate to due methods utilised
  - Highly transmissible
- Age of international travel



# Discussion

- Children and young adults most affected. Differs from most affected groups of seasonal influenza but characteristic of pandemic viruses
- Incidence has decreased significantly in recent weeks
- Continue to document imported disease, therefore vital that clinicians continue to be vigilant



# Conclusions



- Despite many limitations, laboratory-based surveillance has played, and will continue to play, an integral role in monitoring pandemic H1N1
- **Information for action:**
  - Planning the proposed vaccination campaign and other targeted interventions for 2010
  - Preparedness for further pandemics



# Acknowledgements



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  - Ampath – Drs. du Buisson, Bruinette, Kramer Inc. and Dr. Bouwer & Partners Inc.,
  - Lancet Laboratories,
  - PathCare Laboratories – Drs. Dietrich, Voigt, Mia and Partners,
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