

Epidemiological Findings of Cases of Novel Influenza A (H1N1) Virus Infection in Mainland China

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Background

- Novel H1N1 virus was identified in two children in southern California in mid-April
- Retrospectively, the cause of outbreaks of respiratory illness in Mexico beginning in March
- June 11, WHO declared an influenza pandemic, the first in 41 years
- Enhanced national surveillance for suspected novel H1N1 patients began on April 30 in China

Case Definitions

- Suspected case: febrile acute respiratory illness **and** one of the following
 - Illness onset within 7 days of travel to an area with one or more confirmed cases of novel H1N1 virus infection
 - Within 7 days of close contact with a confirmed novel H1N1 case-patient
- Confirmed case: febrile acute respiratory illness and laboratory evidence of novel H1N1 virus infection diagnosed by rRT-PCR testing of respiratory specimens

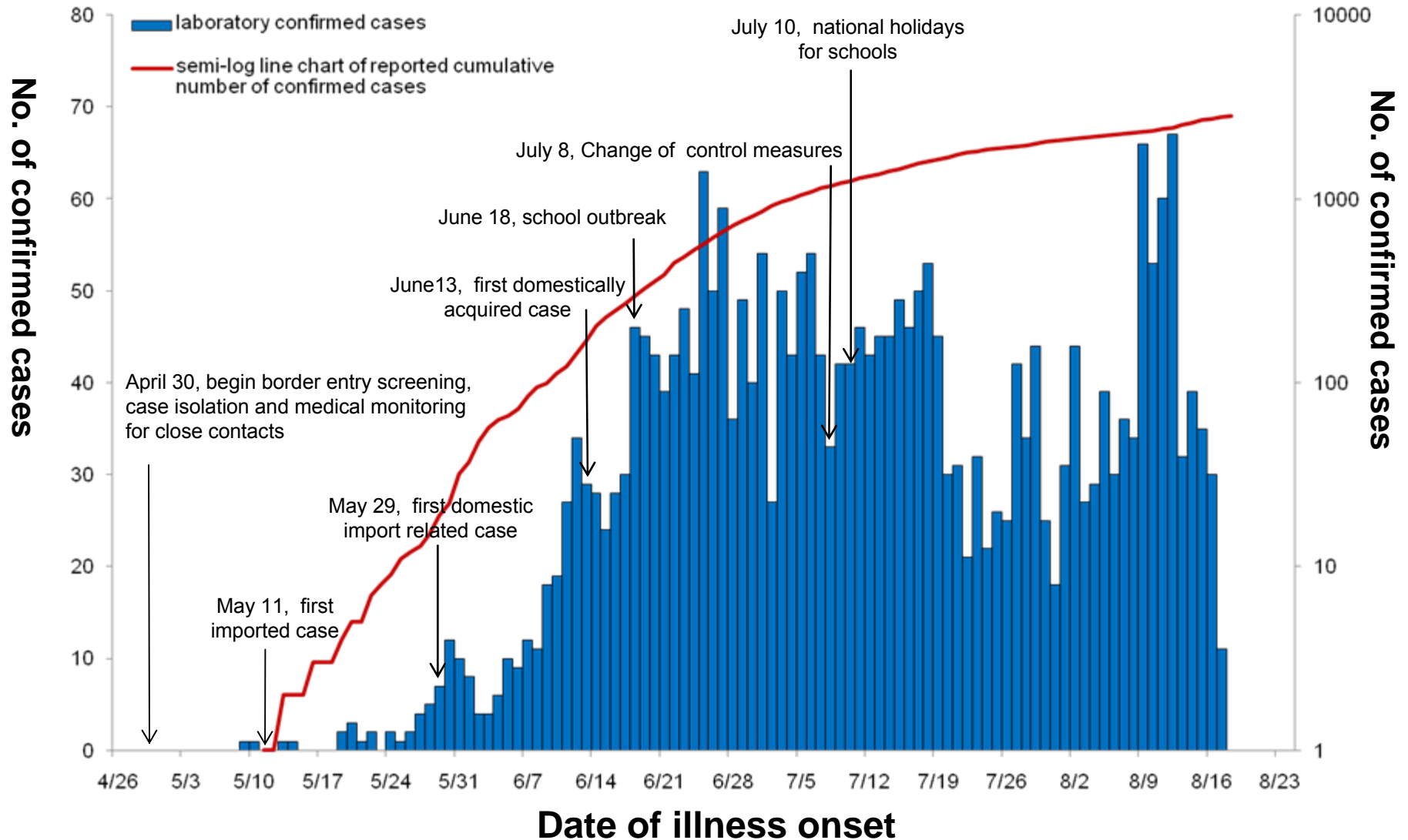
National Surveillance System

- All suspected case-patients were admitted to designated hospitals for respiratory isolation
- Respiratory specimens were collected and tested by rRT-PCR
- Testing done at BSL 2 facilities at provincial CDCs and confirmed at NIC
- Close contacts were identified and quarantined at home or at designated hotels, and monitored daily for fever and respiratory symptoms for 7 days, April 30-July 8

Case Detection

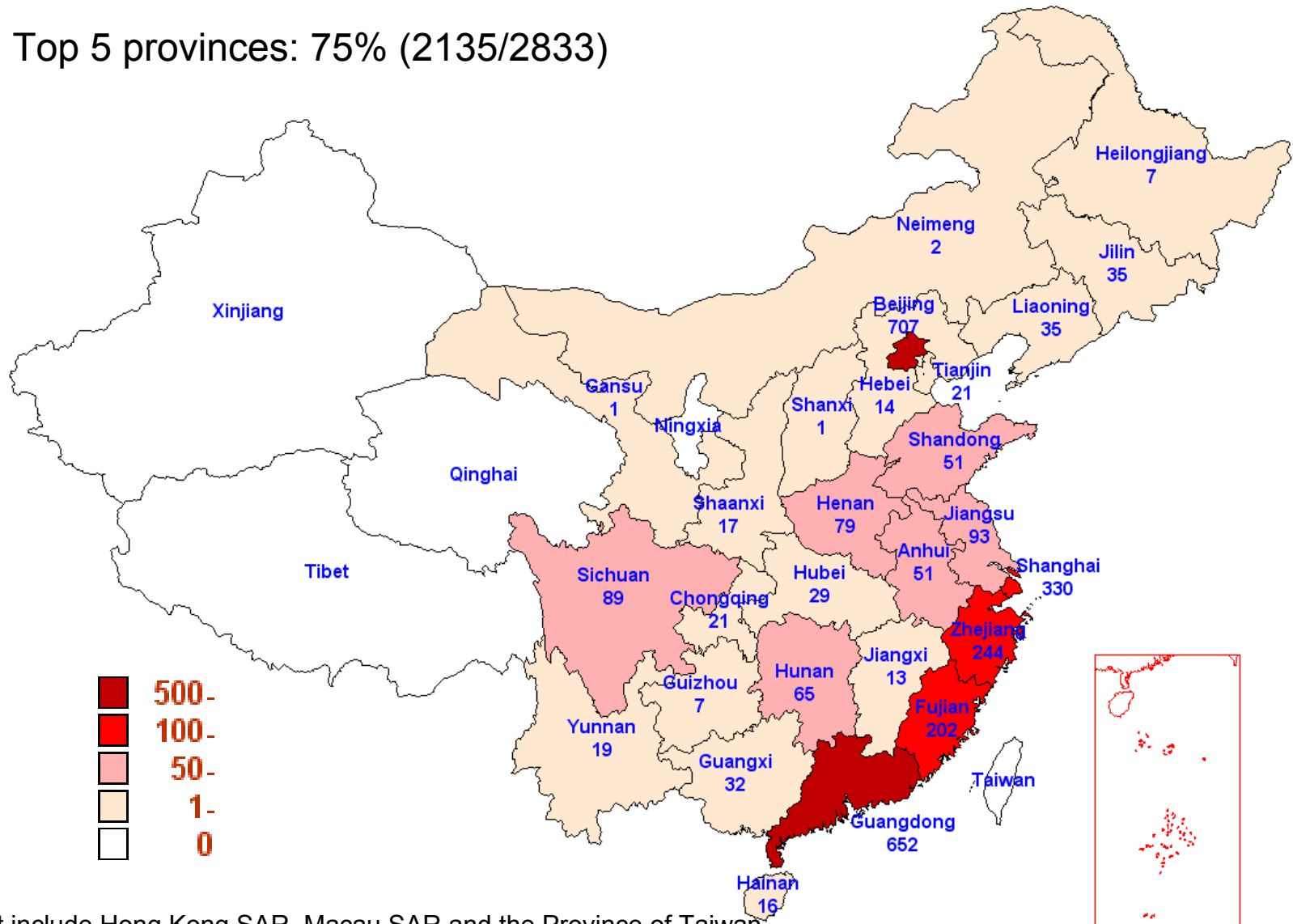
- Active surveillance
 - Border Entry Screen: health declaration form and by infrared thermal scanner at international ports of entry
 - Medical observation for close contacts
- Passive surveillance
 - Clinicians at hospitals
 - Enhance surveillance for outbreaks
 - Sentinel ILI surveillance

Confirmed cases of novel H1N1 infection by date of illness onset (as of Aug 18, 2009, N=2833)

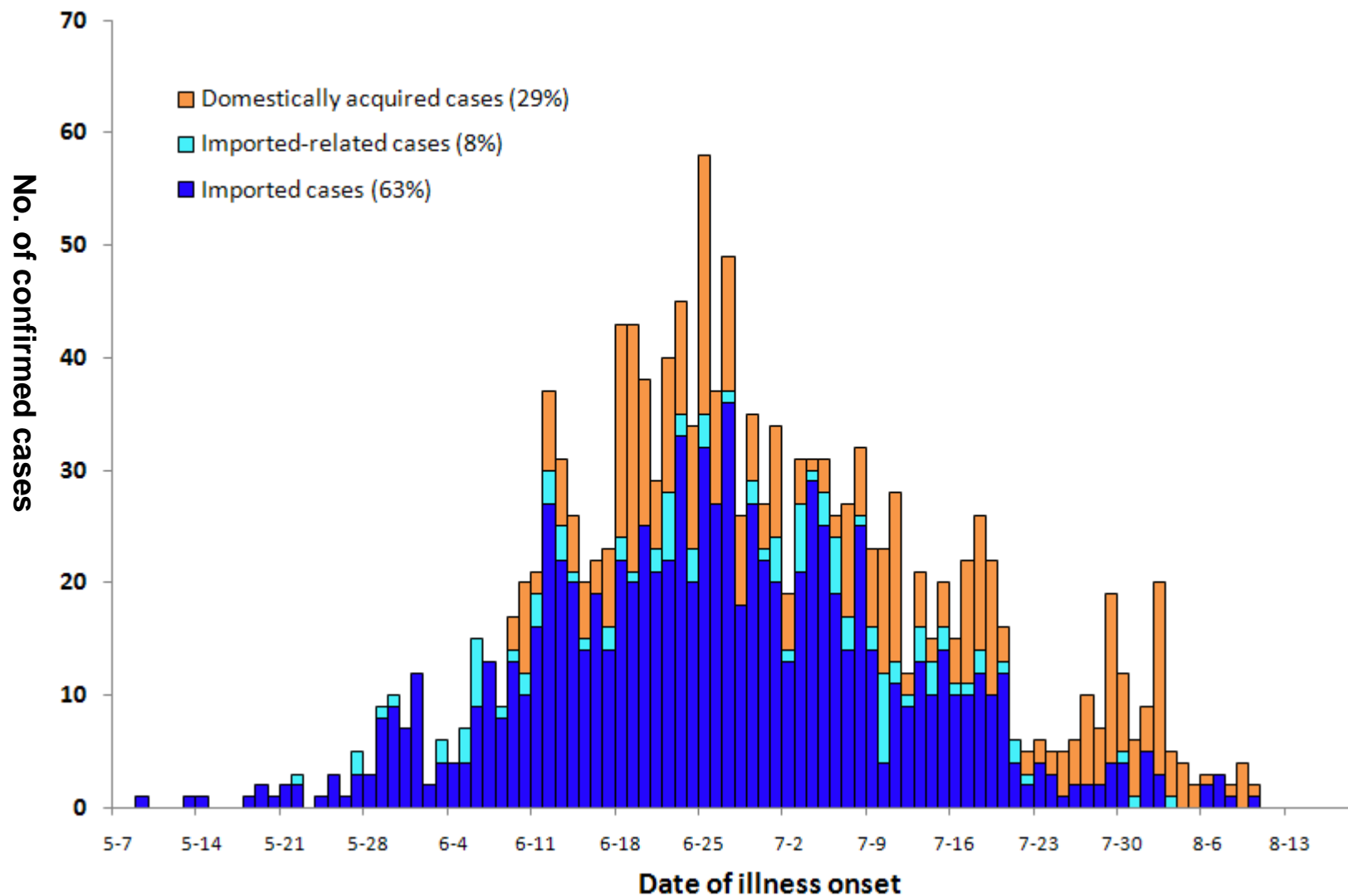


Map of confirmed cases of Novel H1N1 infection by province (N=2833)*

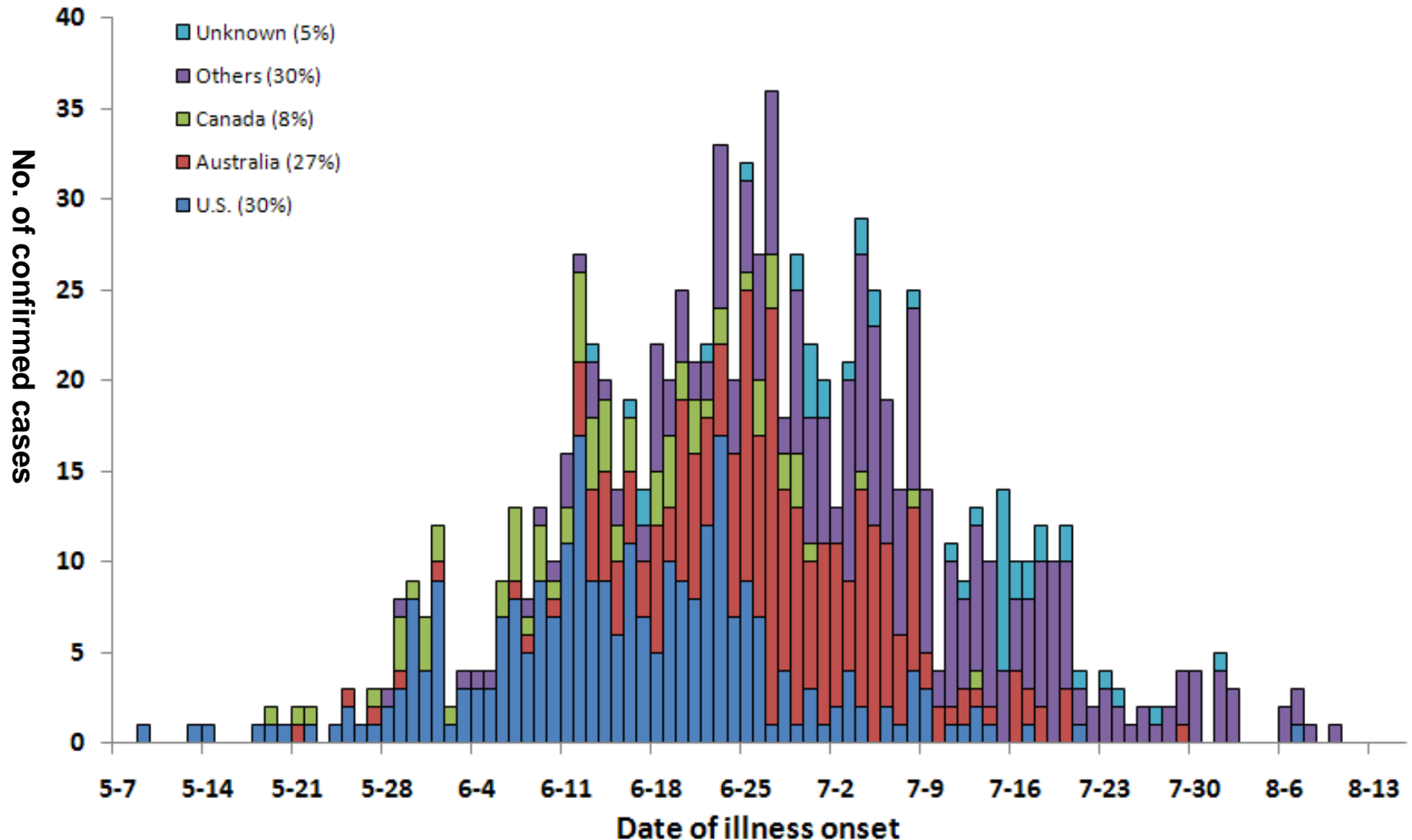
Top 5 provinces: 75% (2135/2833)



Confirmed cases of novel H1N1 infection with detailed infection source data (N=1455)

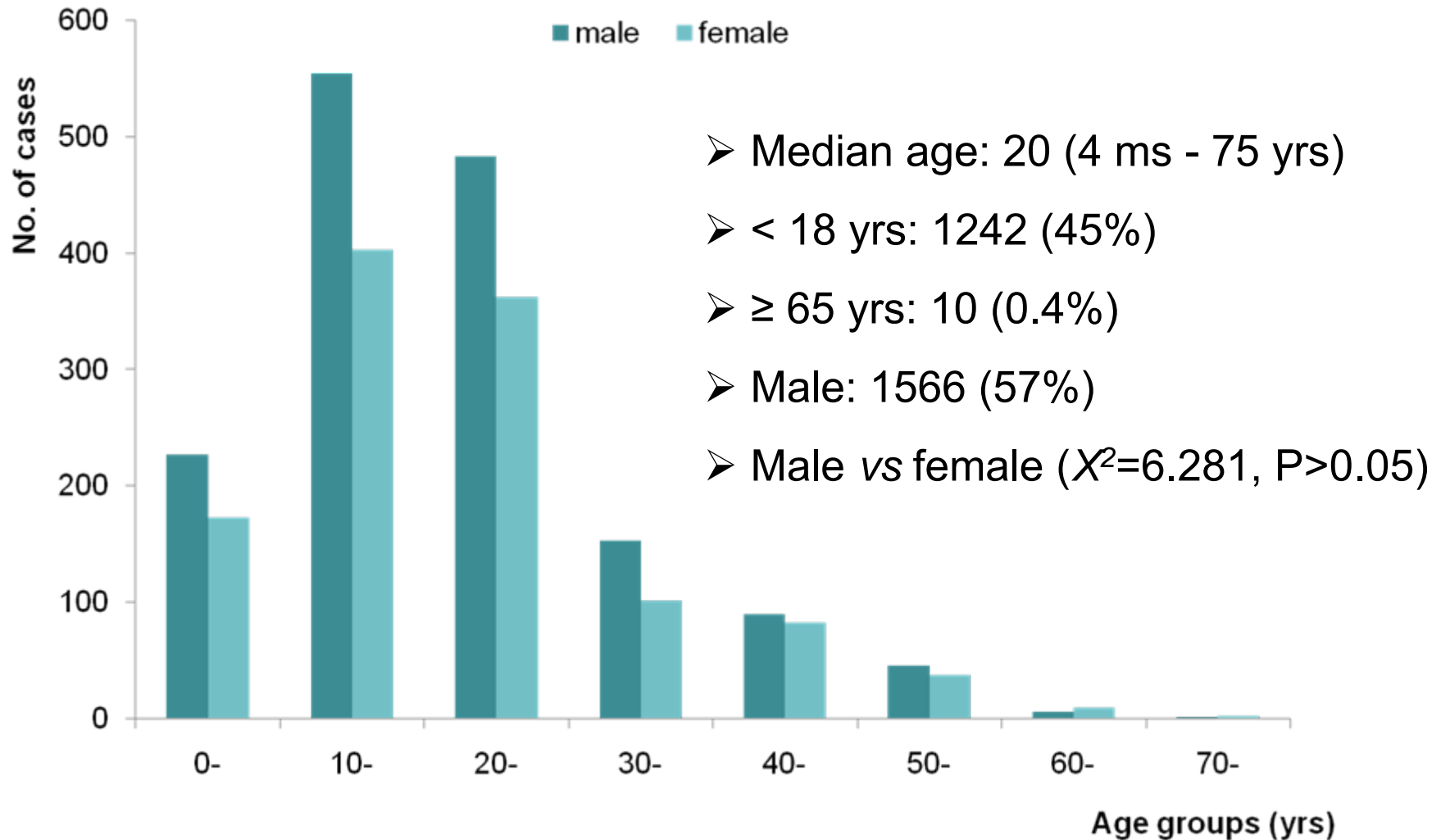


Imported cases of novel H1N1 infection by countries (n=27) and date of illness onset (N=920)

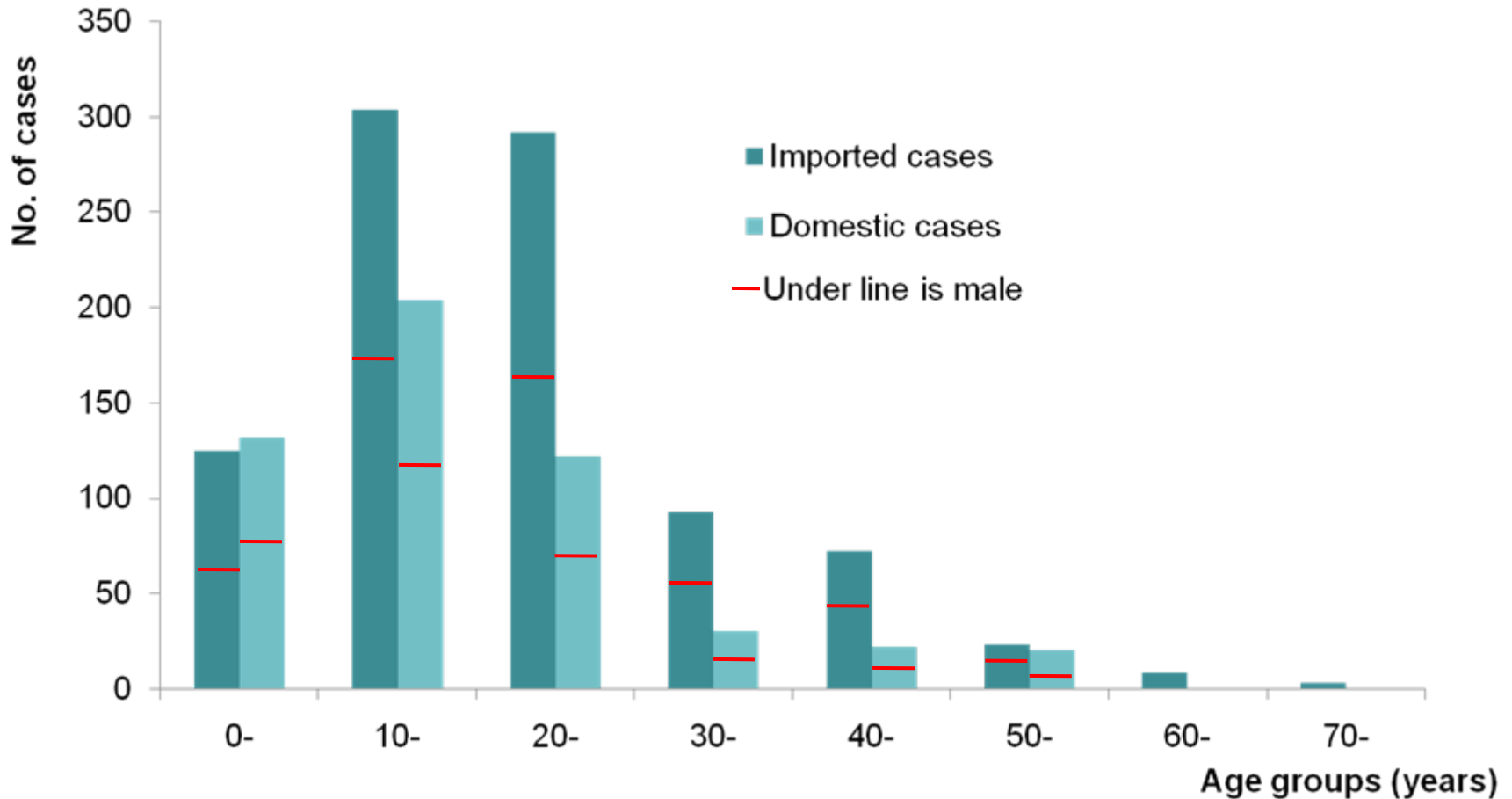


Note: “others” mainly referred to countries of Asia and Europe, such as Indonesia, Philippine, Singapore, Thailand, U.K. , etc.

Confirmed cases of novel H1N1 infection by age and sex (N=2741)



Imported (n=920) and domestically acquired (n=530) cases of novel H1N1 infection by age



Between imported and domestically acquired cases ($X^2=59.1$, $P<0.001$)

Occupational exposures

- Seven health care workers
 - Within 7 days before illness onset, provided care for confirmed cases, no PPE or only using surgical mask
- Five teachers in two summer camp outbreaks
 - Within 7 days before illness onset, living, eating and close contact with confirmed cases, no PPE
- Two flight crews
 - 2 days and 5 days before onset, respectively, provided face-face service on same flight with 2 confirmed case, no PPE
- Four train attendants in an outbreak
 - Within 7 days before onset, provided face-face service for 9 confirmed cases in the same carriage, no PPE

Case Detection at Border Entry Screening

Of 49,572,804 scanned persons, febrile respiratory cases:16,328 (329 per million); of them, confirmed H1N1 cases: 698 (14 per million)[†]

Cases detected (No. %)

May (n=35)	June (n=799)	July [‡] (n=1253)	August (n=654)	Total (N=2741)
10 (29)	254 (32)	231 (18)	203 (31)	698 (25)

[†]General Administration of Quality Supervision, Inspection and Quarantine of the P.R.China.
<http://www.aqsiq.gov.cn/> (accessed 13 Aug, 2009)

[‡]Control strategy was adjusted on 10 July, 2009, changing from quarantine disease to surveillance disease at BES

Case detection via medical monitoring of close contacts (as of August 10)

Of 20,329 close contacts exposed to 1455 cases under medical monitoring, confirmed H1N1 cases: 797 (30%, 797/2741)

No. of closed contacts	May (n=1,189)	June (n=14,730)	July* (n=4,110)	August* (n=300)	Total (N=20,329)
No. of confirmed cases (%)	5 (0.4)	330 (2.2)	195 (4.7)	18 (6.0)	797 (3.9)

* Control strategy was adjusted since July 8, changed medical monitoring for close contacts in designated places to self monitoring at home

Timeline of reporting and isolation

Time duration	Median (range) (days)
Between illness onset and report (n=2741)	2 (0, 38)
Between illness onset and respiratory isolation in hospital (n=1630)	1 (0, 15)

Conclusions

- Novel H1N1 cases identified in mainland China predominately reflected importation from other countries during this early stage
- The age profile of our cases reflects the younger ages of travellers, which is not representative of the general Chinese population
- Sustained community level transmission may have occurred in some areas with domestically acquired cases and local outbreaks

Conclusions (con.)

- Most of the confirmed case-patients were isolated soon after illness onset
- Some cases were detected at BES and among quarantined close contacts
- These measures appear to have helped delay the spread of novel H1N1 in China
- Once sustained community-wide transmission occurs, such measures will be ineffective preventing further spread

Limitations

- Impossible to identify all novel H1N1 cases
- Very difficult to identify clinically mild illness
- Active surveillance efforts focused on overseas travelers or those who had close contact with a confirmed case
- Under-detected sporadic, domestically-acquired cases, including ill persons who never presented for medical evaluation, and those with asymptomatic infection

Future Plans

- Switch the surveillance strategy from individual case surveillance to:
 - Sentinel virologic surveillance
 - Outbreaks or unusual clusters
 - SARI surveillance among inpatients of sentinel hospitals
 - Excess mortality
 - Representative population-based surveillance sites
 - Health care recourses

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