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COVID-19, Australia: Epidemiology Report 4:

Reporting week ending 19:00 AEDT 22 February 2020

COVID-19 National Incident Room Surveillance Team

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Weekly epidemiological report

COVID-19, Australia: Epidemiology Report 4:

Reporting week ending 19:00 AEDT 22 February 2020

COVID-19 National Incident Room Surveillance Team

Summary

This is the fourth epidemiological report for coronavirus disease 2019 (COVID-19), reported in Australia as at 19:00 Australian Eastern Daylight Time [AEDT] 22 February 2020. It includes data on COVID-19 cases diagnosed in Australia, the international situation and a review of current evidence.

Keywords: SARS-CoV-2; novel coronavirus; 2019-nCoV; coronavirus disease 2019; COVID-19; acute respiratory disease; case definition; epidemiology; Australia

The following epidemiological data are subject to change both domestically and internationally due to the rapidly evolving situation. Australian cases are still under active investigation. While every effort has been made to standardise the investigation of cases nationally, there may be some differences between jurisdictions.

In Australia:

- 22 COVID-19 cases were notified up until 19:00 AEDT 22 February 2020;
- The first 15 cases are all considered to have had a direct or indirect link to Wuhan, Hubei Province, China;
- The seven most recent cases were among the 'Diamond Princess' passengers repatriated on a flight from Japan to the Northern Territory on 20 February 2020;
- Zero deaths were reported; and
- On 20 February 2020, the Australian Health Protection Principal Committee (AHPPC) issued a statement recommending that the current travel restrictions for mainland China remain in place for a further seven days.

Internationally:

- 77,794 infections have been confirmed globally, with 2,359 deaths;
- The majority of confirmed infections (98%; n = 76,288) and deaths (99%; n = 2,345) have been reported in mainland China;
- On 19 February 2020, the case reporting from Hubei Province was revised to remove cases that have been diagnosed clinically without laboratory confirmation;
- Fourteen deaths were reported outside mainland China – four in Iran (Islamic Republic of), two each in Hong Kong SAR, Republic of Korea and from the 'Diamond Princess' cruise ship, and one each in France, Japan, the Philippines and Taiwan; and
- Republic of Korea has reported a substantial increase in confirmed cases. There were 318 confirmed cases in the current reporting week compared to four cases reported in the preceding week.

Domestic cases

There were 22 confirmed cases reported in Australia as at 19:00 AEDT 22 February 2020 (Table 1). Seven of the 22 confirmed cases were among the 'Diamond Princess' passengers (n = 164) repatriated on a flight from Japan to the Northern Territory on 20 February 2020. The remaining cases were reported in New South Wales (n = 4), Victoria (n = 4), Queensland (n = 5) and South Australia (n = 2).

As at 19:00 AEDT 22 February 2020, details were not available for the seven cases from the 'Diamond Princess'. The following is therefore a summary of the first 15 cases reported in Australia. The first case in Australia reported onset of signs and symptoms on 13 January 2020 (Figure 1). The median age of cases was 43 years (range 8–66 years). The male-to-female ratio was 1.5:1. Fourteen cases (93%) reported fever and/or chills, 11 cases (73%) reported cough, and two cases were reported to have pneumonia. Eleven (73%) of the 15 cases were hospitalised for clinical management and infection control. The remaining cases were assessed to be well enough to self-isolate at home. At the time of reporting, ten of these cases were reported to have recovered. No deaths were reported.

Evidence of limited secondary transmission of COVID-19 in Australia is thought to have occurred for three cases who were part of a five person cluster identified in Queensland. The cluster of confirmed COVID-19 cases were part of a small group of nine people from mainland China that had been travelling together. The initial case among this group was isolated upon presentation to hospital, and all others in the travel group were also quarantined. Four members of this group were subsequently confirmed as cases. Of these, three cases were consistent with secondary transmission from the initial case due to their close contact prior to isolation. The remaining case had been in Wuhan, Hubei Province during the 14 days prior to illness onset and was considered a co-primary case.

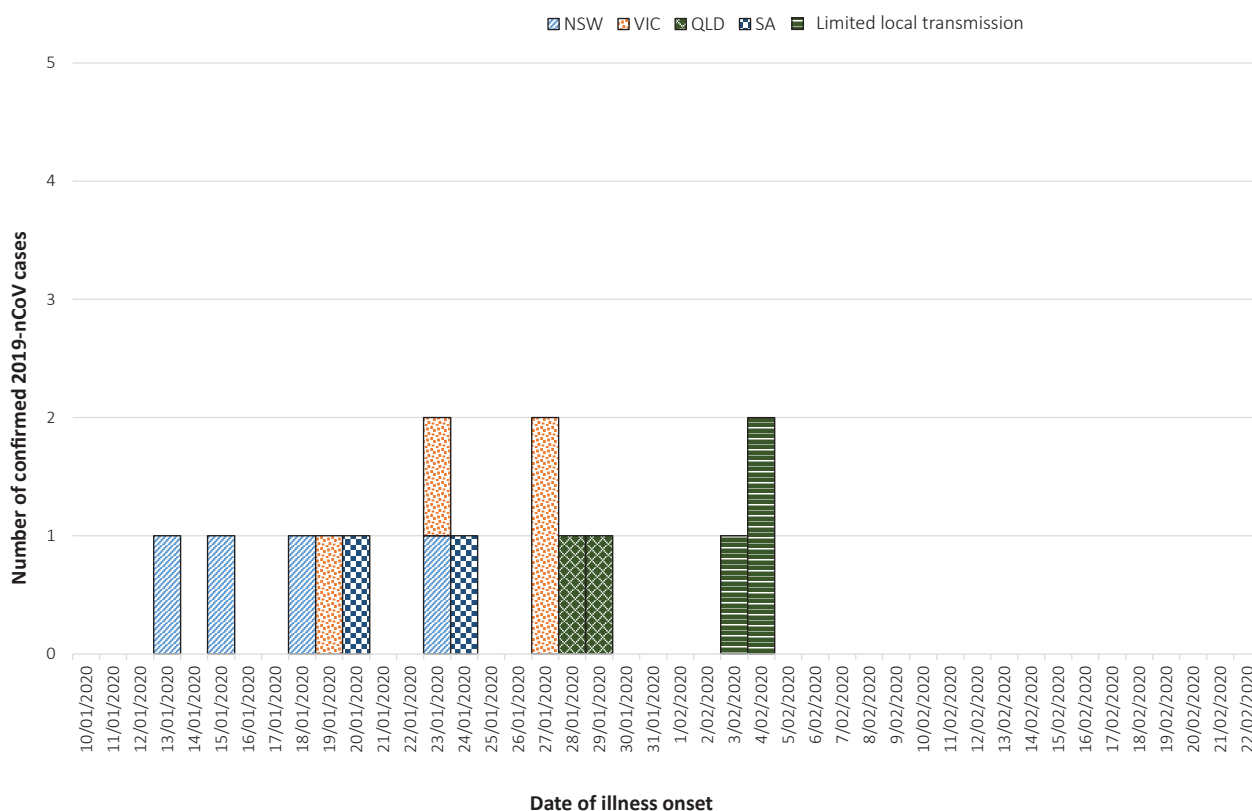
International cases

On 19 February 2020, the National Health Commission of the People's Republic of China removed the case classification of 'clinically diagnosed' that had previously been used for cases reported in Hubei Province. Confirmed cases are those testing positive by RT-PCR or gene sequencing.¹ This change in reporting has meant that some cases that had previously been clinically diagnosed would now be removed as they have since tested negative. This has resulted

Table 1: Cumulative notified cases of confirmed COVID-19 by jurisdiction, Australia, 2020 (n = 22)

Jurisdiction	This week (to 19:00 AEDT 22 Feb) No. of cases	Last week (to 19:00 AEDT 15 Feb) No. of cases	Total cases (to 19:00 AEDT 22 Feb 2020) No. of cases
NSW	0	0	4
Vic	0	0	4
Qld	0	0	5
WA	0	0	0
SA	0	0	2
Tas	0	0	0
NT	0	0	0
ACT	0	0	0
Repatriation (Diamond Princess)	7	0	7
Total cases	7	0	22

Figure 1: Confirmed cases of COVID-19 by date of illness onset, Australia 2020 (n = 15)^a



a Cases from the 'Diamond Princess' (n = 7) were not included.

in an apparent slowing of reported cases, especially from Hubei Province in the current reporting week.

As at 19:00 AEDT 22 February 2020, the number of confirmed COVID-19 cases was 77,794 globally (Table 2). Mainland China reported 98% of cases (n = 76,288) and 2,345 deaths. Thirty-one countries and Special Administrative Regions outside of mainland China reported 872 confirmed COVID-19 cases. An additional 634 confirmed cases were associated with the cruise ship 'Diamond Princess'. Fourteen deaths were reported outside mainland China: four in Iran (Islamic Republic of), two each in Hong Kong SAR, Republic of Korea and from the 'Diamond Princess' cruise ship, and one each in France, Japan, the Philippines and Taiwan.² Seventeen countries (Australia, Egypt, France, Germany, Iran, Israel, Italy, Japan, Malaysia, Republic of Korea, Singapore, Spain, Thailand, UAE, UK, USA and Vietnam) reported possible or confirmed limited local transmission.²

There is growing evidence of sustained local transmission in some countries. Over the reporting week, the Republic of Korea had a large increase in confirmed cases from 4 to 318.³ Cases were primarily from two clusters, one linked to a church group and the other linked to a hospital.⁴ Japan also reported an increase in confirmed cases over the reporting week, with the majority not linked to travel to Hubei Province.⁵ Since the last reporting week, three new countries (Lebanon, Iran and Israel) have reported cases of COVID-19. Iran reported 18 cases and four deaths.²

Background

The World Health Organization (WHO) declared the outbreak of COVID-19 a Public Health Emergency of International Concern (PHEIC) on 30 January 2020.⁶ Cases were initially associated with exposure to a wet market, located in Wuhan, Hubei Province, China, indicating a possible zoonotic source. Sustained

Table 2: Cumulative confirmed cases of COVID-19 globally, 2019–2020

Country / Special Administrative Region	This reporting week (to 19:00 AEDT 22 Feb 2020)	Last reporting week (to 19:00 AEDT 15 Feb 2020)	Total cases (from Dec 2019) ^a
Mainland China	9,796	31,946 ^b	76,288
Cruise ship quarantined in Japanese waters	416	154	634
Republic of Korea	318	4	346
Japan	64	16	105
Singapore	19	34	86
Hong Kong	12	30	68
Thailand	1	2	35
United States of America	20	3	35
Taiwan	8	2	26
Malaysia	1	6	22
Australia	6 ^c	0	21 ^c
Iran (Islamic Republic of)	18	0	18
Germany	0	2	16
Vietnam	0	3	16
France	1	5	12
United Arab Emirates	3	1	11
Macau	0	0	10
Italy	6	0	9
United Kingdom	0	6	9
Canada	1	0	8
India	0	0	3
Philippines	0	0	3
Russian Federation	0	0	2

Country / Special Administrative Region	This reporting week (to 19:00 AEDT 22 Feb 2020)	Last reporting week (to 19:00 AEDT 15 Feb 2020)	Total cases (from Dec 2019) ^a
Spain	0	1	2
Belgium	0	0	1
Cambodia	0	0	1
Egypt	0	1	1
Finland	0	0	1
Israel	1	0	1
Lebanon	1	0	1
Nepal	0	0	1
Sri Lanka	0	0	1
Sweden	0	0	1
Total	10,692	32,216	77,794

a Data taken from WHO Situation Reports.

b Includes clinically diagnosed cases (n = 16,522) in Hubei Province, China.

c This is different to the case numbers reported in previous sections of this report (i.e. Table 1), which may be due to the internal cut-off times used by WHO for reporting.

human-to-human transmission is now occurring in the majority of provinces outside of Hubei Province in China. In an effort to contain the spread of the virus, Chinese authorities imposed a lockdown on the city of Wuhan on 23 January 2020 – suspending all public transport including international flights – and extended the measure to neighbouring cities in Hubei Province over subsequent days.⁷

Following advice from the Australian Health Protection Principal Committee (AHPPC) to substantially reduce the volume of travellers coming from mainland China, additional border measures were implemented in Australia. From 1 February 2020, Australia denied entry to anyone who had left or transited through mainland China, with the exception of Australian citizens, permanent residents and their immediate family and air crew who have been using appropriate personal protective equipment.⁸ On 20 February 2020, AHPPC released a statement recommending current travel restrictions remain in place for a further seven days.⁹ AHPPC noted the continuing growth in COVID-19 cases and deaths in the Hubei Province of China, and acknowledged that, while there has been an apparent slowing in case numbers in other provinces of mainland China, it is unclear whether this slowing will continue as Chinese employees return to work after the holiday period. Border measures to screen flights and vessels from mainland China and for people who have come from or transited through mainland China were also recommended to continue.⁹

The current estimates on epidemiological parameters including severity, transmissibility and incubation period are uncertain. Estimates are likely to change as more information becomes available.

Severity

COVID-19 is a respiratory illness. The most commonly reported symptoms are fever, cough, fatigue and difficulty with breathing (dyspnoea).^{10–12} A large study of 44,672 confirmed cases in China found that 80.9% had mild dis-

ease, with no pneumonia or mild pneumonia.¹³ The disease appeared to affect primarily adults, with children aged less than 19 years making up only 2–3% of reported cases.^{10,13} Children also appeared to present with less severe disease.¹³

The case fatality rate (CFR) for China has been calculated at 2.3%, based on 44,672 laboratory-confirmed cases up to 11 February 2020. The calculated CFR was much higher in Hubei Province (2.9%) than in all other provinces (0.4%). The CFR increased with increasing age group, with the highest CFR observed among those aged 80 years or older at 14.8%. No deaths were reported in children aged less than 10 years. The CFR was calculated at 0.9% in those reporting no comorbidities and 10.5% in cases with cardiovascular disease; however, data on comorbidities was missing for 53% of confirmed cases. Cases classified as critical (respiratory failure, septic shock, and/or multi-organ failure) had a CFR of 49.0%.¹³ Critically ill patients who died have been shown to be older and more likely to have chronic comorbidities.¹² CFR estimates for regions outside mainland China are generally low; however, the clinical outcome for the majority of these cases is not yet known.¹⁴

There are increasing reports of COVID-19 cases who did not display any symptoms at the time of testing.^{13,15–17} However, it is not always clear how many continued to be asymptomatic. Among a cohort of travellers repatriated to Germany on 1 February 2020, two travellers who were tested positive for SARS-CoV-2 showed no symptoms at the time of testing. On review one was found to have a faint rash and mild sore throat (pharyngitis). Both remained well and with no fever (afebrile) for seven days following isolation.¹⁶ Fifty-one per cent (n = 318) of the confirmed cases on board the ‘Diamond Princess’ cruise ship as of 21 February 2020 showed no symptoms at time of specimen collection.¹⁷ Information about the development of symptoms in these cases after disembarkation was not available.

Transmission

The exact nature of transmission of SARS-CoV-2 is not well understood. Human-to-human transmission is currently suspected to be via droplets, contact and fomites, which is consistent with other coronaviruses.¹⁸ There have been multiple reports of clusters within family and closed social groups, which would support this hypothesis.^{10,15,17} The WHO has recently released protocols for research into community, household and health facility transmission and surface contamination to help further define transmission patterns of SARS-CoV-2.²

There continues to be a large variation in the basic reproductive number (R_0) calculated in various studies depending on the assumptions made and data set used. A recent review of 12 studies estimated the mean basic reproductive number (R_0) to be 3.28 and median R_0 to be 2.79, which exceeded the WHO preliminary R_0 of 1.4–2.5 (average 1.95).^{19,20}

A small study analysing viral load in nasal and throat swabs from 17 confirmed cases in Guangdong, China found higher viral loads detected soon after symptom onset, and in nasal compared to throat swabs.²¹ This is a shedding pattern similar to influenza illness rather than SARS-CoV. Whilst there is currently no published evidence of SARS-CoV-2 transmission from an asymptomatic case, there is some evidence of potential infectivity of asymptomatic cases based on viral load studies. For example, the viral load detected in an asymptomatic patient, from the Chinese cohort of 17 discussed above, was similar to that in the symptomatic patients.²¹ SARS-CoV-2 was also isolated from samples in cell culture from asymptomatic German nationals.¹⁶ The role played by asymptomatic cases in SARS-CoV-2 transmission is still unclear.

While diarrhoea has been reported as an uncommon symptom of COVID-19, a stool sample of a US case tested positive for SARS-CoV-2.^{10,22}

Should confirmation of enteric infection and faecal excretion of SARS-CoV-2 be confirmed, it may have implications for transmission control.

Incubation period

WHO has revised the key epidemiologic parameters of COVID-19 in collaboration with an international network of statisticians and mathematical modellers. These parameters were calculated using data captured from COVID-19 surveillance activities and early investigations. Preliminary estimates of median incubation period, based on seven published studies, are 5 to 6 days (ranging from 0 to 14 days).¹⁴ Patients with long incubation periods do occasionally occur and have been reported, however medical experts have described these patients as ‘outliers’ who should be studied further and do not represent a significant shift in thinking about the virus.

Recommendations for control

The Australian Government Department of Health and WHO recommend the general public reduce their exposure to and transmission of COVID-19 by:

- Frequently cleaning hands with soap and water or by using alcohol-based hand rub.
- When coughing and sneezing cover mouth and nose with flexed elbow or tissue – throw tissue away immediately and wash hands.
- Avoid close contact with anyone who has fever and cough.
- If you have a fever, cough and difficulty breathing seek medical care early and share previous travel history with your health care provider.

Treatment

Current clinical management of COVID-19 cases focuses on early recognition, isolation, appropriate infection control measures and provision of

Table 3: Australian COVID-19 case definition as of 22 February 2020²⁶

Version	Date of development	Suspect Case	Confirmed Case
1.9 ^a	21 February 2020	<p>If the patient satisfies epidemiological and clinical criteria, they are classified as a suspect case.</p> <p>Epidemiological criteria</p> <ul style="list-style-type: none"> • Travel to (including transit through) mainland China in the 14 days before the onset of illness. <p>OR</p> <ul style="list-style-type: none"> • Close or casual contact in 14 days before illness onset with a confirmed case of COVID-19. <p>Clinical criteria</p> <ul style="list-style-type: none"> • Fever <p>OR</p> <ul style="list-style-type: none"> • Acute respiratory infection (e.g. shortness of breath or cough) with or without fever. 	<p>A person who tests positive to a validated specific SARS-CoV-2 nucleic acid test or has the virus identified by electron microscopy or viral culture.</p>

a Version 1.9 update includes revised guidance on infectious period, contact management, and in special situation (cruise ship).

supportive care.²³ Whilst there is no specific antiviral treatment currently recommended for patients with suspected or confirmed SARS-CoV-2 infection, multiple drugs are being investigated. Experimental vaccines are also in development. University of Queensland researchers recently reported making significant advances towards a vaccine against SARS-CoV-2.²⁴

Virology

SARS-CoV-2, the virus that causes COVID-19, is 96% identical to the whole genome sequence of a known bat coronavirus (BATCoV RaTG13) and 79.5% identical to SARS-CoV-1. Like SARS-CoV-1, it attaches its spike (S) protein to the angiotensin-converting enzyme 2 (ACE-2) to enter and infect host cells located in the lower respiratory tract, with progressive respiratory failure due to alveolar damage.²⁵

Methods

Data for this report were current as at 19:00 hours AEDT, 22 February 2020.

This report outlines what is known epidemiologically on COVID-19 in Australia and from publicly available data from WHO Situation Reports, other countries' official updates and the scientific literature. Data on domestic cases

in this report were collected from the National Notifiable Diseases Surveillance System (NNDSS) and state and territory case investigation reports. The Communicable Diseases Network Australia (CDNA) developed the case definition for suspected and confirmed cases, which was modified at different time points in the epidemic (Table 3). CDNA developed national guidance on investigating suspected and confirmed cases of COVID-19. Based on this guidance, state and territory health department investigators conducted interviews of suspected cases to collect core and enhanced data for inclusion in the NNDSS. Data was analysed using Stata to describe the epidemiology of infections in Australia and the progress of the epidemic.

Data for the international cases of COVID-19 by country were compiled from the latest WHO Situation Report. Case definitions may vary by country making comparisons difficult. Rapid reviews of the current state of knowledge on COVID-19 were conducted from the literature using PubMed.

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