

COVID-19 RISK ASSESSMENT

Published: 3 April 2020

RISK SUMMARY:

This assessment is undertaken based on the information available on 3 April 2020.

This is a rapidly evolving situation and there remains limited information available to inform this risk assessment. Therefore, the level of uncertainty is **HIGH** and this assessment takes a precautionary approach.

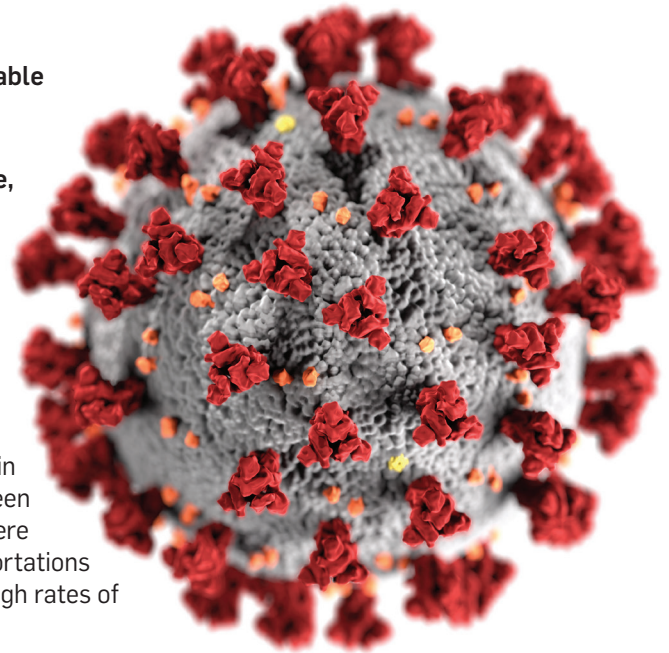


Photo: CDC Atlanta



IMPORTATION RISK:

Even with the containment measures in place in other countries and the border measures and containment measures currently in place in New Zealand, the likelihood of cases having been imported into New Zealand remains **HIGH**. There also remains a **HIGH** likelihood of further importations from any further returning travellers, due to high rates of infection worldwide.



ASSESSMENT OF RISK OF TRANSMISSION WITHIN NEW ZEALAND:

Most cases in New Zealand to date are linked to international travel and subsequent close contact, there is accumulating evidence of limited community transmission but at this time no evidence of widespread sustained community transmission in New Zealand.

Based on the current domestic situation, the global situation, the available evidence, including limited evidence of pre-symptomatic spread and super spreader events the likelihood of limited transmission in New Zealand is **VERY HIGH**, the likelihood of sustained transmission is **MODERATE-HIGH** and the likelihood of widespread outbreaks is **LOW-MODERATE**. This assessment assumes that cases are detected in a timely manner and that infection prevention and control measures are implemented promptly.

However, if the virus is not rapidly detected, infection control measures are not in place, or if there is significant transmission from asymptomatic or mild cases, the likelihood of further transmission in community settings would be considered **VERY HIGH**.



PUBLIC HEALTH IMPACT OF COVID-19 IN NEW ZEALAND:

The impact on the sector and the public from this issue and the preparedness work around COVID-19 is already significant. The public health impact is considered **HIGH** both for public health staff, the wider health sector and the community.

PUBLIC HEALTH RISK:

Given the assessment of the likelihood of importation, the likelihood of transmission in New Zealand and the public health impact, the overall public health risk from this event is considered **HIGH**.

RISK ASSESSMENT REFERENCE SCALE:

VERY LOW/NEGLIGIBLE to **VERY HIGH**

NOTES:

ESR are also producing an intelligence update every 48 hours. This more comprehensive assessment will be updated when there is significant new information that impacts the risk assessment.

This assessment is based on the ECDC risk assessment methodology.⁽¹⁾

This assessment is reviewed by the ESR incident management team. This team includes epidemiologists, health intelligence analysts, public health medicine specialists, a clinical virologist, laboratory scientists, informaticians and bioinformaticians. The team has in-depth experience in leading, and supporting national and local communicable disease responses, including emerging infectious diseases, such as SARs, influenza, MERS, zika and Ebola. The team has extensive experience in providing fit-for-purpose health intelligence services during response situations.

This assessment is also circulated to the Ministry of Health Technical Advisory Group.

EVENT BACKGROUND/SUMMARY:

On 31 December 2019 a cluster of pneumonia cases of unknown aetiology was reported in Wuhan City, Hubei province, China. On 9 January 2020, the causative agent was reported to be a novel coronavirus.⁽²⁾

The Director General of the WHO declared that the novel coronavirus outbreak constituted a public health emergency of international concern on 30 January 2020,⁽³⁾ and on 11 March announced that it could be characterised as a pandemic.⁽⁴⁾

The WHO have confirmed that the disease caused by this novel coronavirus is to be called COVID-19 and the International Committee on Taxonomy of Viruses have designated the official name for the causative virus to be SARS-CoV-2.⁽⁵⁾

As of 2 April the WHO assessment of the risk of this event remains **VERY HIGH** at the global level.⁽⁶⁾ At that time there had been 896,450 confirmed cases of COVID-19 reported worldwide, with 45,526 deaths.⁽⁶⁾ The United States of America is currently the country with the highest number of reported cases to date (187,302), followed by Italy (110,574) and Spain (102,136).⁽⁶⁾ Countries which reported over 1000 new cases in the prior 24 hours included Italy, Spain, Germany, France, the United Kingdom, Turkey, Belgium, the Netherlands, Iran, the United States of America, Canada and Brazil.⁽⁶⁾

As of 09:00, 3 April 2020, there have been 772 confirmed and 96 probable cases reported in New Zealand. Most cases in New Zealand to date are linked to international travel (49%) and close contact with cases (33%). There is accumulating evidence of limited community transmission (1% classified as potential community transmission) but at this time no evidence of widespread sustained community transmission in New Zealand. The source for 17% of cases remains under investigation. Cases have been reported in every District Health Board, and there have been 19 reported outbreaks comprised of 318 cases (ESR intelligence, 3 April). There has been one death reported to date.

HAZARD IDENTIFICATION

There is accumulating information on the epidemiological and clinical characteristics of SARS-CoV-2 infection, though there is still significant uncertainty and further information is needed. There is currently no vaccine or specific treatment available, although a number of investigational approaches are being explored^(7,8), including antiviral therapies and convalescent plasma. There are no controlled data to support the use of any specific agents at this time. National and International guidance to date is based largely on management and control of other respiratory illnesses.

Spectrum, severity of disease and vulnerable populations

The spectrum of symptomatic infection ranges from mild to critical.⁽⁷⁻¹³⁾ The three major patterns of clinical course of infection at this stage seem to be mild illness with upper respiratory tract symptoms, non-life threatening pneumonia and severe pneumonia with acute respiratory distress syndrome that begins with mild symptoms for 7-8 days followed by rapid deterioration to requirements for high and intensive dependency care.⁽¹⁴⁾

According to the report from the WHO–China Joint Mission on COVID-19, among 55,924 cases, the most common signs and symptoms were fever (87.9%), dry cough (67.7%), fatigue (38.1%), sputum production (33.4%), shortness of breath (18.6%), sore throat (13.9%), headache (13.6%) and myalgia or arthralgia (14.8%).⁽¹²⁾ Less common symptoms have included rhinorrhoea and gastrointestinal symptoms such as nausea and diarrhoea.

Although not highlighted in the initial cohort studies from China, smell and taste disorders have also been reported as common symptoms in patients with COVID-19, with 34% of cases in a survey of 59 patients with COVID-19 in Italy self-reporting either a smell or taste aberration and 19 percent reported both.⁽¹⁵⁾

In the WHO–China Joint Mission on COVID-19, disease was mild to moderate in 80% of 55,924 cases, 13.8% had severe

disease, 6.1% were critical.⁽¹²⁾ This pattern is consistent with other data including that from the Chinese Center for Disease Control and Prevention.⁽¹³⁾ Individuals at the highest risk for severe disease and death are people aged over 60 and those with underlying conditions such as hypertension, diabetes, cardiovascular disease, chronic respiratory disease, chronic kidney disease and cancer.^(12, 16, 17)

Health workers and carers are at high risk of infection,^(14, 18-21) although a retrospective analysis of 64 medical staff hospitalised with COVID-19 in Wuhan found the medical staff experienced relatively milder symptoms and had a favourable clinical course which is likely due in part to their younger age and fewer underlying diseases.⁽²²⁾

A study of 191 adult patients in Wuhan found the median time from illness onset to discharge was 22 days and the median time to death was 18.5 days.⁽¹⁶⁾ A study of outcomes in 52 critically ill adult COVID-19 cases in Wuhan found 61.5% of the critically ill patients had died at 28 days, the median duration of admission to intensive care to death was seven days. The non-survivors tended to be older (64.6 years versus 51.9 years), were more likely to develop ARDS (81% of non-survivors versus 45% of survivors) and more likely to require mechanical ventilation (94% versus 35%).⁽²³⁾

Published studies of early cases in China report admission to intensive care for between 5% and 26%.^(18, 21) Of the first patients in the US, no persons aged 19 years and under were admitted to ICU.⁽²⁴⁾ Among 355 patients who died with COVID-19 in Italy, the mean number of pre-existing comorbidities was 2.7, and only 3 patients had no underlying condition.⁽²⁵⁾

The disease is likely to be more severe in vulnerable older adults in residential care facilities. In a study of 167 cases of Covid-19 connected to a residential care facility in Washington, 101 residents, 50 visitors and 16 staff were affected, and 94.1% of residents had chronic underlying health conditions.⁽²⁶⁾ Hospitalisation rates for residents, visitors, and staff were 54.5%, 50.0%, and 6.0%, respectively, and the preliminary case fatality rate was 33.7% for residents and 6.2% for visitors, with no deaths among staff members.⁽²⁶⁾

Low rates of infection in children, and low risk of severe disease has been reported across countries. A pre-peer reviewed study using an age-structured dynamic transmission model applied to data from 6 countries found a strong age dependence in the probability of developing clinical symptoms, from 20% in those aged under 10 to 70% in those aged over 70.⁽²⁷⁾ Authors found the variation in age-specific severity was more likely to account for apparent low infection rates in children than age-specific variation in infection or the impact of mitigation strategies such as school closures.⁽²⁷⁾

Between Jan 17 and March 1, 661 COVID-19 cases were reported in Ningbo and Wenzhou in China, and of these cases, 36 (5%) were in children aged 1-16 years. Nineteen (53%) children were classified as having moderate infection, with pneumonia or influenza-like symptoms, 10 (28%) were asymptomatic and 7 (19%) had mild upper respiratory tract symptoms only. Compared to adult cases in the region, children were less likely to have fever (36% for children and 86% for adults), cough (19% and 62%), pneumonia (53% and 95%), and severe disease (0% and 23%).

Prior to the wide availability of COVID-19 testing, between March 12 and 16, a rapid sentinel surveillance study was carried out in Los Angeles to determine what proportion of mild, outpatient influenza like illnesses were caused by COVID-19.⁽²⁸⁾ Of 131 patients tested, 5% were positive for COVID-19, none had specific risk factors for infection, and all were well enough to have been active in the community throughout their infection.⁽²⁸⁾ Authors note that sentinel testing had revealed a third seasonal spike in influenza like illnesses during the weeks before the study, with declining influenza positivity,⁽²⁸⁾ likely due to unrecognised SARS-CoV-2.

Case fatality

According to the WHO situation report of 2 April 2020, of the confirmed cases worldwide 5.1% have died.⁽⁶⁾

Case fatality rates vary widely between countries.⁽²⁹⁾ Published studies of early cases in China report mortality rates among hospitalised patients of 1.18- 4.3%, and 11%.⁽¹⁸⁻²¹⁾ The currently reported fatality rates are lower than those reported for MERS-CoV (34%) and SARS (10%).^(14, 30) Case fatality ratios depend in part on sensitivity of different surveillance systems to detect cases of differing levels of severity, and some early estimates of CFR in Wuhan were much higher, before milder cases were detected.⁽³¹⁾ A study published on 30th March estimated case fatality and infection fatality ratios using case data from mainland China and 37 other countries. When adjusted for demography and under-ascertainment of milder cases in Wuhan, the best estimate of the case fatality ratio in China was 1.38%, with substantially higher ratios in older age groups (0.32% in those aged <60 years compared to 6.4% in those aged ≥60 years), up to 13.4% in those aged 80 years or older. Estimates of case fatality ratio from international cases stratified by age were consistent with those from China (1.4% in those aged <60 years [n=360] and 4.5% in those aged ≥60 years). Authors estimated an infection fatality rate for China of 0.66% (0.39-1.33%), again with higher IFR for older ages.⁽³²⁾

Data from passengers on the Diamond Princess was used to estimate a CRF of 2.3% and an IFR of 1.2%. Comparing these deaths with the expected deaths in China the CRF and IFR were estimated to be 1.1% and 0.5%, respectively, in China.⁽³³⁾

Data from the first patients in the USA indicates that fatality was highest in patients aged 85 and over (10-27%), followed by 3-11% among patients aged 65-84 years, 1-3% for those aged 55-64 and <1% for those aged 20-54 years. No fatalities were recorded among persons 19 years and under.⁽²⁴⁾

The fatality rate in Italy has been higher than that observed in other countries, 7.2% based on data up to March 17.⁽²⁵⁾ This may be due in part to the older age distribution in the Italian population, the more stringent testing strategies used in Italy, prioritising cases with severe illness requiring hospitalisation, and the definition of COVID-19 related deaths as those occurring in patients who test positive for SARS-CoV-2 independently from pre-existing diseases that may have caused death.⁽²⁵⁾ A pre-peer reviewed paper suggests that the main reason for Italy's high fatality rate is a significant underestimation of the overall numbers of cases.⁽³⁴⁾

Asymptomatic infection

The potential for asymptomatic infection has been reported, for example, on the Diamond Princess, 51% of the cases were asymptomatic when the specimen was collected. However it is not always clear how many of these cases continued to be asymptomatic.⁽³⁵⁾

Based on screening of 565 Japanese citizens evacuated from Wuhan to Japan between 29 and 31 January it has been estimated that 90% of infections were not initially ascertained as cases (including mild and asymptomatic cases). This potential under-ascertainment needs to be considered when analysing confirmed case data from China including estimates of severity and mortality.⁽¹⁰⁾

A study of screening of evacuees returning from Hubei province to Germany concluded that symptom-based screening alone was ineffective. Screening for symptoms, known contact with cases and clinical signs of infection identified 10 passengers who were isolated, all of whom tested negative for SARS-CoV-2. Two throat swabs from the remaining 114 asymptomatic passengers were positive for SARS-CoV-2. Virus was isolated in culture for both samples, indicating potential infectivity.⁽³⁶⁾

Reproductive number

The reproductive number (R0) has been estimated to be between 2 and 3: Majumder et al. 2.0-3.1⁽³⁷⁾, Li et al. 2.2 (95% CI, 1.4 to 3.9)⁽³⁸⁾, Wu et al. 2.68 (95% CI, 2.47 to 2.86)⁽³⁹⁾, and Tindale et al. 1.87-1.97⁽⁴⁰⁾. ESR simulations using a combination of data points suggest a value of around 2.88 (95% CI, 1.85 – 3.73).

Incubation period

The incubation period is thought to be within 14 days after exposure, with most cases occurring between 4 and 6 days after exposure.^(21, 38, 41) For example one study estimated the incubation period at 5.2 days (with the 95th percentile of the distribution at 12.5 days,⁽³⁸⁾ and another at 6.4 with a range of 2.1-11.1 days⁽¹⁷⁾, which supports using 14 days as an operational definition for contact tracing and monitoring. These estimates are also supported by other modelling work and the WHO-China joint mission.^(12, 42) ESR simulations using a combination of data points indicates an estimated incubation period of approximately 7.25 days (95% CI, 2.8 – 12.2 days).

It should be noted that occasionally longer incubation periods have been reported.^(19, 21)

Infectious period

Shedding of the COVID-19 virus is highest in upper respiratory tract (nose and throat) early in the course of the disease, particularly in the first three days from symptom onset, and it is likely that people are more infectious at this point than later in the disease.⁽⁶⁾

Viral load was studied in daily samples from two patients in Beijing after their hospitalisation, and viral loads in throat and sputum samples peaked 5–6 days after onset (SARS viral load peak was around 10 days after onset), with sputum samples generally showing higher viral loads. No viral RNA was detected in the urine or stool samples. Respiratory samples were also collected from 80 other cases at different stages of infection. Overall, viral load was high early after symptom onset, and respiratory samples from two individuals showed a positive RT-PCR result a day before symptoms onset. Stool samples from 9 out of 17 confirmed cases were positive on RT-PCR, and although viral loads were lower than in respiratory samples, authors recommended precautionary measures should be considered when handling faecal samples.⁽⁴³⁾

A study of 191 adult patients found that the median duration of viral shedding in survivors was 20.0 days (range 8-37 days).⁽¹⁶⁾

Transmission

Data from published epidemiology and virologic studies indicate that COVID-19 is primarily transmitted from symptomatic people to others who are in close contact through respiratory droplets, by direct contact with infected persons, or by contact with contaminated objects and surfaces (fomites).⁽⁶⁾ Airborne spread is not believed to be a major driver of transmission (outside of aerosol generating procedures in healthcare).⁽⁴⁴⁾ Faecal-oral transmission does not appear to be a driver of

transmission,⁽¹²⁾ though gastrointestinal symptoms have been reported in in some cases.^(18, 19, 21, 43)

In China, human to human transmission occurred commonly within families, with a secondary attack rate in households of 3-10%. Extensive and comprehensive contact tracing has been undertaken in China with between 1% and 5% of identified contacts subsequently becoming laboratory confirmed cases. Testing at fever clinical and from routine ILI/SARI surveillance systems detected only very few COVID-19 cases.⁽¹²⁾

While initially the link to the seafood market led to investigations being focused on possible zoonotic transmission, further analysis of the epicurve from the initial cases supports substantial person to person transmission from December 2019.⁽⁴⁵⁾

As with SARS and MERS-CoV (where approximately 10% of the cases have been associated with super spreaders)⁽⁴⁶⁾ there is a potential for super spreaders for SARS-CoV-2. To date there have been reports from China of one case infecting 14 healthcare workers.^(47, 48)

There is evidence that people without symptoms have transmitted disease, with virus detected at similar levels in individuals without symptoms,⁽¹¹⁾⁽⁴⁹⁾ with a recent study for example describing a cluster of 7 cases across 2 families in China including multiple episodes transmission from cases without symptoms.⁽⁵⁰⁾ The estimated serial interval was shorter than the estimated incubation periods in Singapore and Tianjin, China, further evidence of likely pre-symptomatic transmission.⁽⁴⁰⁾ However the WHO draws an important distinction between pre-symptomatic and asymptomatic transmission.⁽⁶⁾

The vast majority of cases described went on to develop symptoms, and WHO states that there are few reports of laboratory-confirmed cases who are truly asymptomatic, and to date, there has been no documented asymptomatic transmission.⁽⁶⁾ The WHO-China joint missions concluded that asymptomatic transmission does not appear to be a major driver of transmission.⁽¹²⁾

A pre-peer reviewed study in which 4950 close contacts of cases in Guangzhou were followed up and tested every second day until a positive result was obtained or quarantine was complete, found 126 (2.9%) were confirmed to be infected.⁽⁵¹⁾ Probability of infection in contacts increased with both age of contacts and severity of infection in cases, from 1.8% (0-17 years) to 4.2% (60 or over years), and from 0.33% for asymptomatic, 3.3% for mild, to 6.2% for severe or critical infection.⁽⁵¹⁾ Comparing different modes of contact, household contacts were found to be most at risk of infection (10.2%), with contact in healthcare settings and on public transport associated with infection rates of 1.0% and 0.1% respectively among contacts.⁽⁵¹⁾ Expectoration in source cases was associated with an increased risk of infection in close contacts (13.6%).⁽⁵¹⁾

Impact of non-pharmaceutical interventions

In response to the pandemic, many countries including New Zealand have implemented unprecedented interventions including case isolation, closure of educational facilities, banning of mass gatherings and/or public events, and most recently, widescale social distancing including local and national lockdowns.⁽⁵²⁾

While the effect of these measures in slowing the transmission of the virus is not yet possible to evaluate in many countries, with a lag of 2-3 weeks before changes are seen, it is clear that the virus spreads very quickly in the absence of effective mitigation measures.⁽⁵³⁾ Several studies have attempted to ascertain the impact of such interventions using modelling. The MRC Centre for Global Infectious Disease Analysis used a semi-mechanistic Bayesian hierarchical model to infer the impact of these interventions across 11 European countries.⁽⁵²⁾ Authors found that the slowing growth in daily reported deaths in Italy was consistent with a significant impact of interventions implemented several weeks earlier, with the effective reproduction number dropping to around 1 at the time of lockdown, and that overall other countries have reduced their reproduction number, but with a high degree of uncertainty.⁽³¹⁾

A study of control strategies employed in Wuhan used an age and location specific transmission model to assess progression of the Wuhan outbreak under different scenarios of public health interventions. It found that changes to contact patterns through closures of workplaces and educational facilities, and other social distancing measures, are likely to have substantially delayed the epidemic peak and reduced the number of COVID-19 cases in Wuhan.⁽⁵⁴⁾ It also found that if restrictions are lifted in March 2020, a second peak of cases might occur in late August, with a further 2 month delay if restrictions were lifted in April.⁽⁵⁴⁾

Risk of importation to New Zealand

As of 02 April 2020, over 200 countries and territories have reported cases of COVID-19 to WHO, the USA has reported the highest number of reported cases to date (187,302), followed by Italy (110,574) and Spain (102,136), and 12 countries reporting more than 1000 new cases in the 24 hours prior to the most recent WHO situation report.⁽⁶⁾ In New Zealand border restrictions have been in place for China since 02 February, were extended on 28 February to include travellers from Iran, a require travellers from a number of other countries with community transmission to self-isolate for 14 days on arrival.⁽⁵⁵⁾ From 15 March, all international arrivals, except from the Pacific Islands and Territories were required to self-isolate, and additional border measures came into effect on 26 March 2020, with only New Zealand residents and citizens (and their

children and partners) still permitted to enter New Zealand. Other countries have implemented significant travel restrictions and social distancing measures.

Assessment of importation risk: Even with the containment measures in place in other countries and the border measures and containment measures currently in place in New Zealand, the likelihood of cases having been imported into New Zealand remains **HIGH**. There also remains a **HIGH** likelihood of further importations from any further returning travellers, due to high rates of infection worldwide.⁽⁵⁶⁾

Risk of further spread in New Zealand

New Zealand has a four-level COVID-19 specific alert system. We are currently on **LEVEL 4: ELIMINATE**, and have been at this level since midnight on Wednesday 25th March. This level requires closure of educational facilities and non-essential businesses, with significant restrictions to movement including people being instructed to stay home, and if out locally to maintain a 2 metre distance from others.⁽⁵⁷⁾

There is a high awareness of COVID-19 within the health sector and amongst the general public in New Zealand. There is guidance in place for case and contact management including infection control guidance.⁽⁵⁸⁾

The border measures in place in New Zealand were put in place in order to reduce the chances of SARS-CoV-2 spreading within New Zealand by reducing the number of potentially infected people arriving in NZ and asking those who do arrive to self-isolate for 14 days.⁽⁵⁵⁾

New Zealand has a strong public health capability but would have limited capacity for community cluster control if there is sustained person-to-person transmission within New Zealand and particularly if driven by asymptomatic/mild clinical illness spread.

New Zealand has developed the capability to rapidly test for SARS-CoV-2.

Assessment of risk of transmission within New Zealand: Most cases in New Zealand to date are linked to international travel and subsequent close contact, there is accumulating evidence of limited community transmission but at this time no evidence of widespread sustained community transmission in New Zealand.

Based on the current domestic situation, the global situation, the available evidence, including limited evidence of pre-symptomatic spread and super spreader events the likelihood of limited transmission in New Zealand is **VERY HIGH**, the likelihood of sustained transmission is **MODERATE-HIGH** and the likelihood of widespread outbreaks is **LOW-MODERATE**. This assessment assumes that cases are detected in a timely manner and that infection prevention and control measures are implemented promptly.

However, if the virus is not rapidly detected, infection control measures are not in place, or if there is significant transmission from asymptomatic or mild cases, the likelihood of further transmission in community settings would be considered **VERY HIGH**.

Public health impact of COVID-19 in New Zealand:

The impact on the sector and the public from this issue and the preparedness work around COVID-19 is already significant. The public health impact is considered **HIGH** both for public health staff, the wider health sector and the community.

CURRENT INTERNATIONAL RISK ASSESSMENTS

WHO

As of 2nd April, the WHO continue to consider the risk of this event is **VERY HIGH** at the global level.⁽⁶⁾ On 30 January 2020 a Public Health Emergency of International Concern (PHEIC) was declared,⁽⁵⁹⁾ and On 11 March 2020, the WHO characterised COVID-19 as a pandemic,⁽⁶⁰⁾ with the advice that a shift from containment to mitigation would be dangerous, and that this is a controllable pandemic.⁽⁶¹⁾

ECDC

The ECDC risk assessment of 25 March 2020 considers that the risk of severe disease associated with COVID-19 for people in the EU/EEA and UK is currently **MODERATE** for the general population and **VERY HIGH** for older adults and individuals with chronic underlying conditions.⁽⁵³⁾

This assessment is based on COVID-19 cases having been reported in all EU/EEA countries and the UK, while the overall 14-day cumulative incidence rate in these countries has increased from 3.3 cases per 100 000 population on 11 March to 36.1 cases per 100 000 population on 25 March 2020, with a growing number of cases without epidemiological links to explain the source of transmission. The evidence to date that COVID-19 infection causes mild disease (in about 80% of cases and most cases recover, 14% develop more severe disease and 6% experience critical illness, with severe illness and death

more common among the elderly and those with other chronic underlying conditions. These risk groups account for the majority of severe disease and fatalities to date.

The risk of occurrence of widespread national community transmission of COVID-19 in the EU/EEA and the UK in the coming weeks is considered moderate if effective mitigation measures are in place, and **VERY HIGH** if insufficient mitigation measures are in place. This is because there are rapidly growing numbers of cases in many countries, with nation-wide community transmission common. Mitigation measures to slow down transmission have been introduced at different points in the epidemic and at varying intensities across countries, and while the effect of these measures in slowing the transmission of the virus is not yet possible to evaluate, it is clear that the virus spreads very quickly in the absence of effective mitigation measures.

The risk of healthcare system capacity being exceeded in the EU/EEA and the UK in the coming weeks is considered **HIGH**. ECDC analyses indicate if pandemic progresses remains on its current course without strong countermeasures, there is high probability that many EU/EEA countries will experience demands that far exceed currently available ICU capacity. In many areas healthcare staff are already under pressure and resources are strained, and sub-regions of Italy, France, the Netherlands and Spain have already reported healthcare system saturation due to very high patient loads requiring intensive care. If incidence increases quickly and if additional surge capacity is not ensured, the impact will be **VERY HIGH** and result in considerable additional morbidity and mortality in COVID-19 cases, with further exacerbation of the situation if substantial numbers of healthcare workers became infected with the virus.⁽⁵³⁾

US Centers for Disease Control and Prevention (CDC)

The CDC risk assessment considers that the potential public health threat posed by COVID-19 virus is **VERY HIGH**, both globally and to the United States.

The immediate risk of being exposed to this virus is still considered **LOW** for most Americans, but as the outbreak expands, that risk will increase, and instances of community spread are being reported in a growing number of states. People at elevated risk include those in places with community spread of the virus, healthcare workers caring for infected patients, close contacts of infection and travellers returning from areas with higher levels of community spread.⁽⁶²⁾ Those at higher risk of severe illness include older adults and people with chronic medical conditions.⁽⁶²⁾

Significant travel restrictions are in place for the USA; foreign nationals who have been in China, Iran, the United Kingdom, Ireland and any one of the 26 European countries in the Schengen Area within the past 14 days cannot enter the United States. U.S. citizens, residents, and their immediate family members who have been any one of those countries within in the past 14 days can enter but are subject to health monitoring and possible quarantine for up to 14 days.⁽⁶²⁾

The US government has issued advice around slowing the spread, this includes advice for older people and those with serious underlying health conditions to stay home and away from other people. There is also advice on working from home wherever possible, avoiding social gatherings of more than 10 people, avoiding restaurants, discretionary travel and avoiding visits to residential care facilities.⁽⁶³⁾ States have issued a range of instructions on social distancing and other containment measures.

Public Health England

On 12 March PHE raised their assessment of risk to the UK to **HIGH**.⁽⁶⁴⁾

As of 17 March the UK Foreign and Commonwealth Office advise against all non-essential travel worldwide for a period of 30 days.⁽⁶⁵⁾

On 13 March PHE withdrew the guidance for returning travellers⁽⁶⁶⁾ and replaced it with stay at home guidance.⁽⁶⁶⁾

The Health Protection (Coronavirus) Regulations 2020 were put in place to reduce the risk of further human-to-human transmission in this country by keeping individuals in isolation where public health professionals believe there is a reasonable risk an individual may have the virus.⁽⁶⁷⁾ People are now advised to stay at home at all times except to obtain food, for health reasons, or work if this cannot be done from home, and maintain a 2 metre distance from others outside the home at all times.⁽⁶⁸⁾

Australian Government advice

The Australian Government is advising people not to travel overseas at this time.⁽⁶⁹⁾ From 20th March, only Australian citizens, residents and immediate family members could travel to Australia and from 28th March all travellers arriving in Australia have been required to undertake a mandatory 14-day quarantine at designated facilities at their port of arrival.⁽⁷⁰⁾

In addition to the border control measure Australia has also announced limitations on public gatherings and other social distancing measures designed to slow progression of the outbreak and limit the burden on the health system.⁽⁷¹⁾

On 23 March AHPPC advised the discontinuation of all non-essential gatherings including the closure of pubs, clubs, hotels, cinemas, casinos, restaurants and cafes, places of worship, weddings and funerals, but did not recommend school closures at this time given the lack of evidence of significant disease in children and the lack of reported major disease spread in schools.⁽⁷²⁾

General advice from the Government to stay at home unless undertaking essential activities is expected to stay in place long term, with the recognition that local circumstances may prompt states and territories to introduce additional measures for a period to further control community transmission and local decisions should be on the advice of the local Chief Health Officer informed by the local epidemiology at the time.⁽⁷³⁾

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