COVID-19 Epidemics

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(Ex Minister of Health, Taiwan/ Ex Director General of CDC, Taiwan)
Contents

1. The Spread of Wuhan Pneumonia (COVID-19)
2. The Results of COVID-19 Infection
3. How to Control the Epidemics
4. How to Protect Yourself and the Institution
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美國國家衛生研究院旗下的國家生物醫學成像資源研究 13 日公布新型冠狀病毒影像，圖片來源：中央社數位 NIAID flickr 購買
COVID-19 Occurred in China

2019/12/1 1st Case at Wuhan, China
2019/12/31 Report to WHO
2020/1/20 Admit human to human transmission
COVID-19 Pandemics

2020/1/19 South Korea
2020/1/20 USA, Taiwan
2020/1/23 Wuhan Shock down 5 Million people left
2020/1/23 France
2020/1/26 Germany
2020/1/29 Italy
2020/1/30 UK
Coronavirus Cases: 858,892

Deaths: 42,158

Recovered: 178,100
<table>
<thead>
<tr>
<th>ACTIVE CASES</th>
<th>CLOSED CASES</th>
</tr>
</thead>
</table>
| **638,634**  
Currently Infected Patients | **220,258**  
Cases which had an outcome: |
| **605,736** (95%)  
in Mild Condition | **178,100** (81%)  
Recovered / Discharged |
| **32,898** (5%)  
Serious or Critical | **42,158** (19%)  
Deaths |

*Show Graph*
Total Cases

(Linear Scale)

Source: Worldometer - www.worldometers.info
Total Deaths

Total Deaths

(Linear Scale)
Daily Cases (worldwide)
Taiwan up to 2020/3/31:
322
Deaths: 5
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Coronavirus Incubation Period:

Last updated: March 12, 15:00 GMT

2 - 14 days

Possible outliers: 0 - 27 days
Findings from the Wang et al study published on JAMA and based on 138 hospitalized patients

**Common symptoms included:** [2]
(Wang et al study)

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>98.6%</td>
</tr>
<tr>
<td>Fatigue</td>
<td>69.6%</td>
</tr>
<tr>
<td>Dry cough</td>
<td>59.4%</td>
</tr>
</tbody>
</table>

The median time observed:
from **first symptom** to **Dyspnea** (Shortness of breath) = **5.0 days**
from **first symptom** to **Hospital admission** = **7.0 days**
from **first symptom** to **ARDS** (Acute Respiratory Distress Syndrome) = **8.0 days** (when occurring)
80% of cases are mild

Based on all 72,314 cases of COVID-19 confirmed, suspected, and asymptomatic cases in China as of February 11, a paper by the Chinese CCDC released on February 17 and published in the Chinese Journal of Epidemiology has found that:

- **80.9% of infections are mild** (with flu-like symptoms) and can recover at home.
- **13.8% are severe**, developing severe diseases including pneumonia and shortness of breath.
- **4.7% as critical** and can include: respiratory failure, septic shock, and multi-organ failure.
- In about 2% of reported cases the virus is fatal.
- Risk of death increases the older you are.
- Relatively few cases are seen among children.
Coronavirus (COVID-19) Mortality Rate (case by fatality)

- 3.4% Mortality Rate estimate by the WHO as of March 3
- Mortality Rate in China as of Feb. 20 (3.8% nationwide, 5.8% in Wuhan, 0.7% other areas)
- Mortality Rate in China as of Feb. 4 (2.1% nationwide, 4.9% Wuhan, 3.1% Hubei, and 0.16% other provinces) reported by the NHC of China
- Study providing a tentative mortality rate of 3%
- Death rate among patients admitted to hospital (HFR): 15%
- Days from first symptom to death: 14 days
- Comparison with other viruses
- How to calculate the mortality rate during an outbreak
COVID-19 Fatality Rate by COMORBIDITY:

<table>
<thead>
<tr>
<th>PRE-EXISTING CONDITION</th>
<th>DEATH RATE confirmed cases</th>
<th>DEATH RATE all cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular disease</td>
<td>13.2%</td>
<td>10.5%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>9.2%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Chronic respiratory disease</td>
<td>8.0%</td>
<td>6.3%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>8.4%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Cancer</td>
<td>7.6%</td>
<td>5.6%</td>
</tr>
<tr>
<td>no pre-existing conditions</td>
<td></td>
<td>0.9%</td>
</tr>
</tbody>
</table>

*Death Rate* = (number of deaths / number of cases) = probability of dying if infected by the virus (%). The percentages do not have to add up to 100%, as they do NOT represent share of deaths by condition.
## Sex ratio

<table>
<thead>
<tr>
<th>SEX</th>
<th>DEATH RATE confirmed cases</th>
<th>DEATH RATE all cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>4.7%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Female</td>
<td>2.8%</td>
<td>1.7%</td>
</tr>
</tbody>
</table>
# Age of Coronavirus Deaths

<table>
<thead>
<tr>
<th>AGE</th>
<th>DEATH RATE confirmed cases</th>
<th>DEATH RATE all cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>80+ years old</td>
<td>21.9%</td>
<td>14.8%</td>
</tr>
<tr>
<td>70-79 years old</td>
<td>8.0%</td>
<td></td>
</tr>
<tr>
<td>60-69 years old</td>
<td>3.6%</td>
<td></td>
</tr>
<tr>
<td>50-59 years old</td>
<td>1.3%</td>
<td></td>
</tr>
<tr>
<td>40-49 years old</td>
<td>0.4%</td>
<td></td>
</tr>
<tr>
<td>30-39 years old</td>
<td>0.2%</td>
<td></td>
</tr>
<tr>
<td>20-29 years old</td>
<td>0.2%</td>
<td></td>
</tr>
<tr>
<td>10-19 years old</td>
<td>0.2%</td>
<td></td>
</tr>
<tr>
<td>0-9 years old</td>
<td>no fatalities</td>
<td></td>
</tr>
</tbody>
</table>
Results of COVID-19 Infection

Guan et al. NEJM (2020)

Respiratory Symptoms

- 72.8% Pneumonia
  - 95.4% Recovery
  - 27.2% Death

- 4.6% ARDS
  - 59.5% Recovery
  - 40.5% Death

- 1.36%
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Routes of COVID-19 Transmission

1. Air: +/-
2. Droplet: +
3. Contact: +++

Never touch your mouth, nose or eyes with your fingers.
Asymptomatic Cases Can Transmit Virus

1. 60-80% are either mild or asymptomatic and not documented
2. The ability of transmission of undocumented cases is 55% of documented cases
3. Transmission from undocumented cases account for 80% of documented cases
How to Control the Epidemics

- Other Countries
- Family
- Community
- Hospital
Prevention & control of COVID-19

1. Close Border
   1) Isolation
   2) Quarantine

2. Hospital management
   1) Nosocomial Infection Control
   2) Early Detection

3. Mitigation Plan
   1) Population
      • Close School/Stores
      • Decrease Social Activities
   2) Personal
      • Mask, Hand Washing, Social Distance
   3) Environment
      • Cleaning Sanitation, Ventilation
## Home Isolation & quarantine

### CECC Measures for Following Up on Persons at Risk of Infection

03.23.2020

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Home Isolation</th>
<th>Home Quarantine</th>
<th>Self-health management</th>
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</table>
| **Groups of persons**           | Persons who had contact with confirmed cases | People with travel history | 1. Reported cases who have tested negative and met criteria for being released from isolation  
2. People reported and tested for COVID-19 under “COVID-19 Community-based Surveillance”  
3. People returning Taiwan from countries under level 1 and level 2 travel notice before March 19 |
| **Responsible authorities**     | Local health authorities | Local civil affairs bureau or borough chief | Central/Local health authorities |
| **Enforcement**                 | Home isolation for 14 days  
Active monitoring twice a day | Home quarantine for 14 days  
Active monitoring once or twice a day | Self-health management for 14 days |

**Notes concerning respective measures**

- Health authority will issue a “Home (Self) Isolation Notice”
- Health authority shall check health status of the individual twice a day.
- During the home isolation period, the individual is to stay at home (or designated location) and not go out, and may not leave the country or use public transportation.
- Symptomatic individuals will be sent to the hospital for medical attention.
- Individuals not adhering to the CECC’s prevention measures will be penalized under the Communicable Disease Control Act and, where circumstances warrant, be forcibly placed.

- Where the relevant authority has issued a Novel Coronavirus Health Declaration and Home Quarantine Notice, the individual is to wear a surgical mask and return home for home quarantine.
- The local borough chief or borough clerk shall call the individual every day during the 14-day period to ask about the individual’s health status, and shall record the information obtained.
- During the quarantine period, the individual is to stay at home (or designated location) and not go out, and may not leave the country or use public transportation.
- Symptomatic individuals will be sent to designated medical facilities for tests; the relevant health authority will also begin active monitoring.
- Individuals not adhering to the CECC’s prevention measures will be penalized under the Communicable Disease Control Act and, where circumstances warrant, be forcibly placed.

**Legal basis**

- Article 48, Communicable Disease Control Act
- Paragraph 1, Article 13, Special Act for Prevention, Relief and Revitalization Measures for Severe Pneumonia with Novel Pathogens

- Article 58, Communicable Disease Control Act
- Paragraph 2, Article 13, Special Act for Prevention, Relief and Revitalization Measures for Severe Pneumonia with Novel Pathogens

- Article 48, Communicable Disease Control Act; Article 58, Communicable Disease Control Act
- Article 67, Communicable Disease Control Act; Article 69, Communicable Disease Control Act
# Home Isolation & quarantine

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The Effect of Isolation & quarantine

Epidemic Curve

- Isolation: 50%
- Isolation + quarantine: 90%

- No isolation no quarantine
- No isolation quarantine
- Quarantine 50%
- Quarantine 70%
- Quarantine 90%

Infection numbers vs. time from the first wave of infection.
Host infection Control
成大醫院住院大樓實施門禁管制。（圖／翻攝自成大醫院臉書）
Big Activities & Prande

- Number of potential infections
- Crowd density
- Disease transmission rate
- Activity exposure time

New infections
Risk assessment of large-scale party events and processions

Case regeneration

Increase crowd distance +

Prevention (Fever Screening, Isolation, Mask,及 Wash Hand) percentage

1300 infected
2 million people gathering
Social distance infection risk estimation

High risk of infection

Low risk of infection

Infection radius

Alert radius
Decrease the Transmission in Big Activities & Prande

1. Fever Screening
2. Contact Surveillance
3. Increase Social Distance
『古芬蘭式社交』-減低傳染接觸
(Conventional Social Distancing with Finnish Contact)

社交距離 (Social Distancing)

芬蘭人-
“距離就是禮貌”，排隊至少隔1米
Distance is Politeness, 1 meter place

https://kknews.cc/world/4n35bb3.html
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Be INFORMED
Be PREPARED
Be SMART
Be SAFE

Be READY to fight
#COVID19

For the latest health advice, go to:
www.who.int/COVID-19
Be SUPPORTIVE
Be CAREFUL
Be ALERT
Be KIND

Be READY to fight
#COVID19

For the latest health advice, go to:
www.who.int/COVID-19
Be READY for #coronavirus

WHO is giving advice on how to protect ourselves & others:

Be SAFE from coronavirus infection
Be SMART & inform yourself about it
Be KIND & support one another

Learn more about #COVID19 & share with your loved ones: www.who.int/COVID-19
Be **SAFE** from #coronavirus

if you are 60+ or if you have an underlying condition like:

- Cardiovascular disease
- Respiratory condition
- Diabetes

by avoiding crowded areas or places where you might interact with people who are sick.

Learn more to Be **READY** for #COVID19:  
[www.who.int/COVID-19](http://www.who.int/COVID-19)
Be **KIND** to support loved ones during #coronavirus

- Check in regularly especially with those affected
- Encourage them to keep doing what they enjoy
- Share WHO information to manage anxieties
- Provide calm and correct advice for your children

Learn more to Be **READY** for #COVID19: www.who.int/COVID-19
Be **KIND** to address stigma during #coronavirus

- Share the latest facts & avoid hyperbole
- Show solidarity with affected people
- Tell the stories of people who have experienced the virus

Learn more to Be **READY** for #COVID19: www.who.int/COVID-19
Be **KIND** to address fear during #coronavirus

- Show empathy with those affected
- Learn about the disease to assess the risks
- Adopt practical measures to stay safe

Learn more to Be **READY** for #COVID19: [www.who.int/COVID-19]
Be **SMART** if you develop shortness of breath:

- Call your doctor
- Seek care immediately!

Learn more to Be **READY** for #COVID19:
www.who.int/COVID-19
Be **SMART** & inform yourself about 
#coronavirus

- Follow accurate public health advice from WHO & your local health authority
- Follow the news on latest coronavirus updates
- To avoid spreading rumors, always check the source you are getting information from
- Don’t spread rumors

Learn more to Be **READY** for #COVID19: 
www.who.int/COVID-19

[Images of United Nations and World Health Organization logos]
Wash your hands

Wash your hands with soap and running water when hands are visibly dirty

If your hands are not visibly dirty, frequently clean them by using alcohol-based hand rub or soap and water
Protect yourself and others from getting sick

Wash your hands

- after coughing or sneezing
- when caring for the sick
- before, during and after you prepare food
- before eating
- after toilet use
- when hands are visibly dirty
- after handling animals or animal waste
Protect others from getting sick

When coughing and sneezing, cover mouth and nose with flexed elbow or tissue

Throw tissue into closed bin immediately after use

Clean hands with alcohol-based hand rub or soap and water after coughing or sneezing and when caring for the sick

World Health Organization
Protect others from getting sick

Avoid close contact when you are experiencing cough and fever

Avoid spitting in public

If you have fever, cough and difficulty breathing seek medical care early and share previous travel history with your health care provider
God Bless You
God Bless the World
Taiwan for Who
Who for Taiwan