



Novel Coronavirus (2019-nCoV) pandemic

EPIDEMIOLOGY II (CHS 335)

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Instructor: Mohamed Fawzy Hafez Farahat

Student information:

Student name	Student number
Abdulaziz Almasoud	438100073
Abdulaziz Altufail	438104798
Faisal Bin Salom	438103374
Mohammed Althubiani	438103484
Salman Alshehri	434106664

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What are Corona viruses?

- Corona viruses are a group of viruses that usually appear to affect human and other mammals 'respiratory tracts and guts.
- The viruses are closely associated with diseases like influenza, and common cold.²
- Corona viruses are named for the crown-like spikes covering their surface.³
 - First identified in the mid-1960s.³



Human Coronavirus Types:



- The seven coronaviruses that can infect people are:
 - I. Common human coronaviruses:
 - 229E (alpha coronavirus)
 - NL63 (alpha coronavirus)
 - OC43 (beta coronavirus)
 - HKU1 (beta coronavirus)

Individuals around the world are usually diagnosed with the 229E, NL63, OC43, and HKU1 human coronaviruses.³

Human Coronavirus Types:



MERS-CoV (causes Middle East Respiratory Syndrome, or MERS)

SARS-CoV (causes severe acute respiratory syndrome, or SARS)

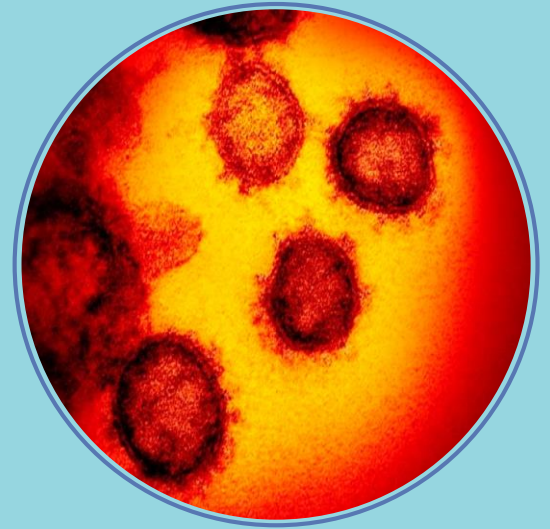
SARS-CoV-2 (causes coronavirus disease 2019, or COVID-19)

Corona viruses that infect animals may also evolve and make people sick and become a new corona virus in humans.

Recent examples are COVID-19, SARS-CoV and MERS-CoV, respectively.³

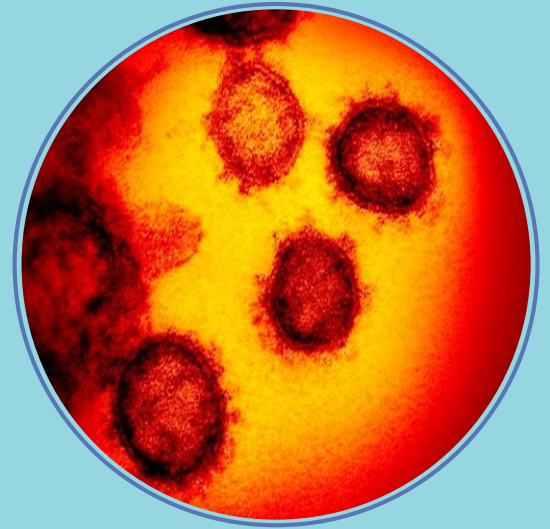
Background:

- The 2019–20 coronavirus pandemic is an ongoing pandemic of coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)¹
- The outbreak was first detected in December 2019, in Wuhan, Hubei Province, China. ¹



Background

- The outbreak was declared a public health emergency of international concern by the World Health Organization (WHO) on 30 January 2020 and recognized as a pandemic on 11 March 2020.^{[1](#)}
- Measures to avoid the spread of the virus include travel bans, quarantines, curfews, occupational danger regulations, postponements and cancellations of events, and closures of facilities.^{[1](#)}



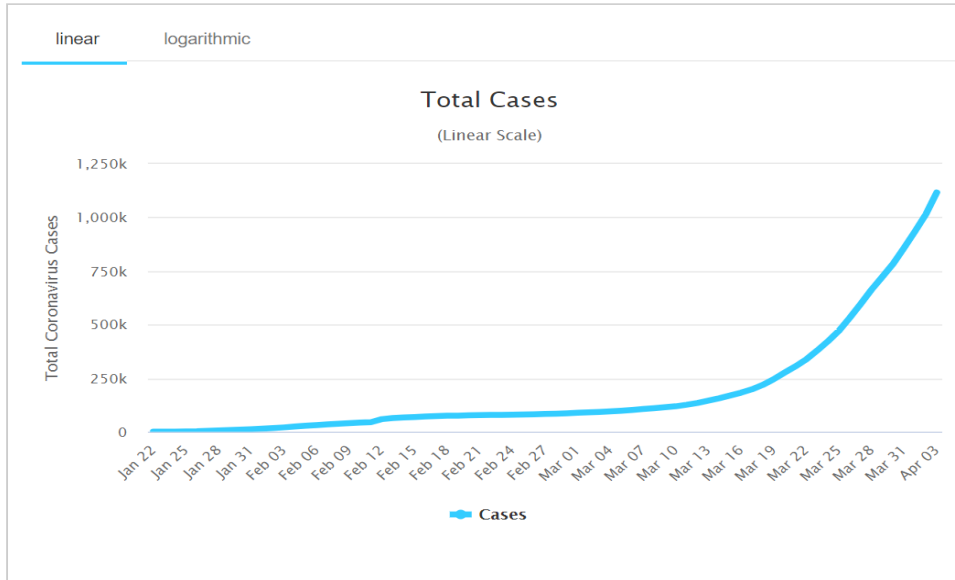
Recent statistics as of April 04, 2020, 07:19 GMT:

Currently Infected	Cases with Outcome
829,838	288,466
Mild Condition	Recovered/Discharged
790,434 (95%)	229,245 (79%)
Serious or Critical	Deaths
39,404 (5%)	59,221 (21%)

- <https://www.worldometers.info/coronavirus/coronavirus-cases/>

Recent statistics as of April 04, 2020, 07:19 GMT:

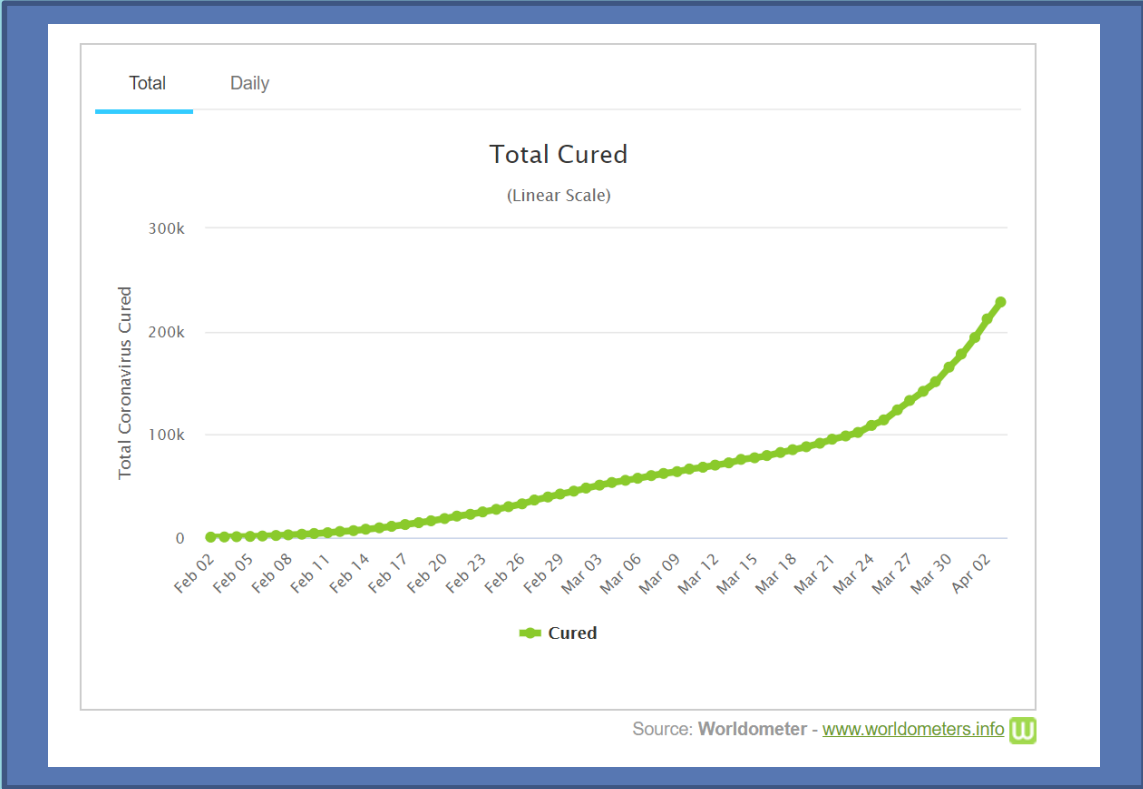
"Total Cases" = total cumulative count (1,118,304). This figure therefore includes deaths and recovered or discharged patients (cases with an outcome).



Source: Worldometer - www.worldometers.info

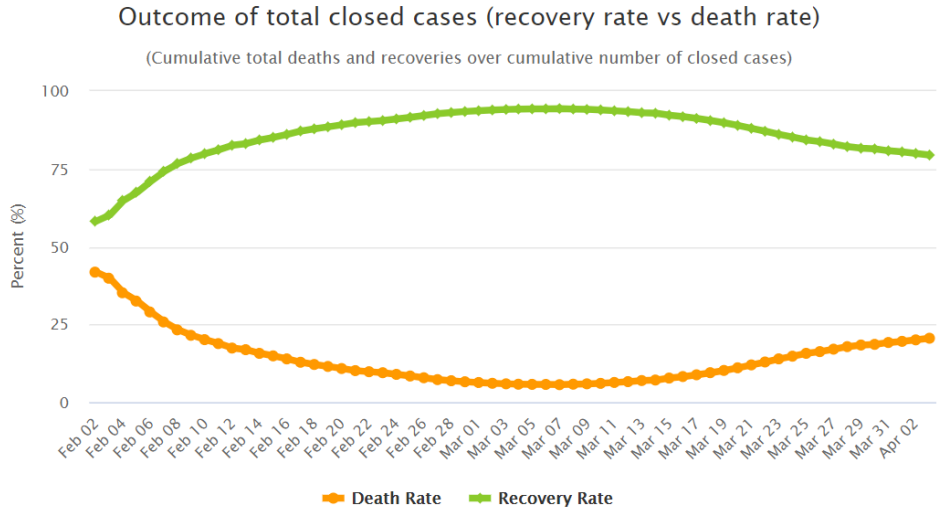


Recent statistics as of April 04, 2020, 07:19 GMT:



Recent statistics as of April 04, 2020, 07:19 GMT:

Outcome of Cases (Recovery or Death)



Signs and symptoms:



- The COVID-19 symptoms can be non-specific and infected people may be asymptomatic.
- The two most prevalent symptoms are fever (88%), and dry cough (68%).
- Less common symptoms include fatigue, phlegm, impairment of the sense of smell, shortness of breath, muscle and joint pain, sore throat, headache or chills.¹

Signs and symptoms:



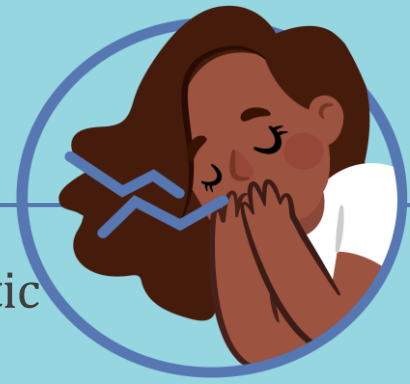
- The WHO claims that one in six people are critically ill and have trouble breathing.
- The U.S. Centre for Disease Control and Prevention (CDC) reports emergency symptoms such as trouble breathing, constant chest pain or discomfort, sudden confusion, trouble waking and bluish face or lips; if such symptoms are present, immediate medical attention is recommended.¹

Signs and symptoms:



- Further disease development can result in serious pneumonia, acute respiratory distress syndrome, sepsis, septic shock and death.
- The normal duration of incubation (the time between infection and onset of symptoms) varies from one to 14 days; most generally, it is five days.¹

Signs and symptoms:



- Spectrum of illness severity: the spectrum of symptomatic infections ranges from mild to critical.
 - I. Mild (no or moderate pneumonia) in 81 per cent were registered.
 - II. Severe disease (e.g. dyspnea, hypoxia, or > 50 percent pulmonary involvement within 24 to 48 hours) has been identified in 14 percent.
 - III. Severe illness (e.g., respiratory failure, shock, or multi-organ dysfunction) was reported in 5 percent.
 - IV. The overall fatality rate was 2.3 per cent; no deaths among non-critical cases were registered⁴

Risk factors for severe illness

- Severe illness can occur in otherwise healthy individuals of any age, but it predominantly occurs in adults with advanced age or underlying medical comorbidities such as:
 - Cardiovascular disease
 - Diabetes mellitus
 - Hypertension
 - Chronic lung disease
 - Cancer⁴



Death rate by age:

***Death Rate** = (number of deaths / number of cases) = **probability** of

This probability differs depending on the age group. The percentages

up to 100%, as they **do NOT** represent share of deaths by age group

person in a given age group, the **risk of dying** if infected with COVID

AGE	DEATH RATE confirmed cases	DEATH RATE all cases
80+ years old	21.9%	14.8%
70-79 years old		8.0%
60-69 years old		3.6%
50-59 years old		1.3%
40-49 years old		0.4%
30-39 years old		0.2%
20-29 years old		0.2%
10-19 years old		0.2%
0-9 years old		no fatalities

Sex ratio:

Sex ratio

COVID-19 Fatality Rate by SEX:

***Death Rate** = (number of deaths / number of cases) = **probability of dying if infected by the virus (%)**.

This probability differs depending on sex. When reading these numbers, it must be taken into account that **smoking** in China is much more prevalent among males. Smoking increases the risks of respiratory complications.

SEX	DEATH RATE confirmed cases	DEATH RATE all cases
Male	4.7%	2.8%
Female	2.8%	1.7%

***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 sex.

Death rate by age:

COVID-19 Fatality Rate by COMORBIDITY:

***Death Rate** = (number of deaths / number of cases) = **probability of dying if infected by the virus** (%).

This probability differs depending on pre-existing condition. The percentage shown below does **NOT represent in any way the share of deaths by pre-existing condition**. Rather, it represents, for a patient with a given pre-existing condition, the **risk of dying** if infected by COVID-19.

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

***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**.

Can children be infected with the coronavirus?

- As with adults, it can infect children who are exposed to the coronavirus and develop symptoms of Covid-19.
- "At the beginning of the pandemic, children were thought not to get infected with coronavirus, but now it is clear that infection in children is the same as in adults, " Explains Andrew Pollard, Professor of Pediatric Infection and Immunity at Oxford University; "When they get the infection they can have a lot milder symptoms."⁷



Diagnosis:

The WHO has published multiple guidelines for detecting the disease. The standard method of testing is real-time reverse transcription polymerase chain reaction (rRT-PCR). Usually, the test is conducted on respiratory samples collected via a nasopharyngeal swab, but a nasal swab or sputum sample can also be used. Results are generally available within a few hours to two days.¹



How does COVID-19 spread?

- Tiny droplets from the nose or mouth that occur when a person with COVID-19 coughs or exhales will spread the disease from person to person.
- Such droplets land around the person on objects and surfaces. others then capture COVID-19 by touching certain objects or surfaces and then touching their eyes, nose or mouth.⁵



How does COVID-19 spread?

- People can also catch COVID-19 if they breathe in droplets. from a person with COVID-19 who coughs out or exhales droplets.
- That's why it's important to stay away from a sick person by more than 1 meter (3 feet).
- The WHO is analysing ongoing research on ways of spread of COVID-19, and will continue to share updated results.⁵



Prevention:



- There is currently no vaccine to prevent coronavirus disease 2019 (COVID-19). The best way to prevent illness is to avoid being exposed to this disease. However, as a reminder, CDC always recommends everyday preventive actions to help prevent the spread of respiratory diseases⁶, including:

Clean your hands often



- Wash your hands often for at least 20 seconds with soap and water, particularly after you have been in a public place, or after blowing your nose, coughing or sneezing.
- Using a hand sanitizer that contains at least 60 per cent alcohol if soap and water are not readily available. Cover and rub all surfaces of your hands together until they feel dry.
- Avoid touching your eyes, nose, and mouth with unwashed hands.⁶

How long can the coronavirus survive on surfaces?



They remain viable for up to:

- four hours on copper.
- 24 hours on cardboard.
- 72 hours on plastic and steel.

There's a lot that we still don't know, like how different environments, like exposure to sunlight, heat, or cold, can impact these periods of survival.⁸

Avoid close contact



- Avoid close contact with people who are sick
- Stay home as much as possible.
- Put distance between yourself and other people.
- Stay home if you are sick, except to get medical care⁶

Wear a facemask if you are sick



- When you're sick: If you're around other people you should wear a facemask. If you are unable to wear a facemask (for example, as it creates breathing difficulties), then you should do your best to cover your coughs and sneezes, and people who care for you will wear a facemask when they come in.
- If you are NOT sick: You do not need to wear a facemask unless you are caring for someone who is sick⁶

Treatment:



There is currently no approved antiviral medication for treating COVID-19. Treatment is directed at symptom relief, which can include:

- Pain relievers (ibuprofen or acetaminophen)
- Cough syrup or medication
- Rest
- Fluid intake.⁹

THANK
you



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