COVID-19
COVID-19 coronavirus

- Coronaviridae family, Orthocoronavirinae subfamily
- RNA viruses
- It causes respiratory, enteral, liver and neurological diseases among mammals and birds
- Seven of the human coronaviruses are known
- The lipid envelope can be disrupted by alcohol and chlorine
Clinical Characteristics of Coronavirus Disease 2019 in China

Data from 1099 patients were processed - in 30 regions of China

- 3.5% health worker, 43.9% Wuhan resident
- median age: 47 years
- median incubation time: 4 days
- median hospitalization: 12 days
- 0.9% of patients under 15 years of age

Symptoms: Fever (43.8%) - which occurred in 88.7% of patients during hospitalization, cough (67.8%); nausea, vomiting (5.0%), diarrhea (3.8%)

Complications: pneumonia (91%), ARDS (3.4%), shock (1.1%)

Primary outcome (intensive care, mechanical ventilation, death) 67 patients (6.1%); 15 patients (1.4%) - death
For the first 1,000 people to be infected, MERS took **903 days or 2.5 years**

SARS took **130 days**

and the new coronavirus took **48 days**
• Therapy: IV antibiotic therapy (58%), oseltamivir (35.8%), oxygen therapy (41.3%), mechanical ventilation (6.1%)

• Lymphocytopenia was reported: 83.2%

• The severity of clinical symptoms in patients varies widely

• Among 1099 confirmed COVID patients, 1.4% mortality was experienced this percentage would decrease to less than 1%, including those with asymptomatic / mild symptoms
The RT-PCR test showed the virus with only 59% accuracy, whereas chest CT identified 88% of the COVID-19 patients.

Typical chest CT image: bilateral milk glass-like haze, multifocal consolidations

RT-PCR test: COVID detectable in blood, nose, throat secretion (12-24h)

CT provides a more accessible, practical and faster way to detect the disease
Hungary
Last update: 08/03/2020

- **7** Fertőzött
- **0** Gyógyult
- **0** Elhunyt
- **67** Karanténban
- **362** Mintavétel

Infected | Recovered | Deceased | Quarantine | Tested
---|---|---|---|---

Worldwide
Last update: 08/03/2020

- **106 165** Fertőzött
- **59 965** Gyógyult
- **3 594** Elhunytak

Updated data: www.koronavirus.gov.hu
Countries affected by confirmed COVID-19 disease (antsz)
Figure 3: Distribution of confirmed COVID-19 cases by March 5, 2020 in the EU / EEA Member States and Great Britain (ECDC, 05/03/2020).

3. ábra: A 2020. március 5-ig az EU/EEA tagállamokban és Nagy-Britanniában előfordult igazolt COVID-19 megbetegedések megoszlása a jelentés ideje szerint (ECDC, 2020.03.05.).
### Box. Key Findings From the Chinese Center for Disease Control and Prevention Report

72,314 Cases (as of February 11, 2020)
- Confirmed cases: 44,672 (62%)
- Suspected cases: 16,186 (22%)
- Diagnosed cases: 10,567 (15%)
- Asymptomatic cases: 889 (1%)

#### Age distribution (N = 44,672)
- \(\geq 80\) years: 3% (1408 cases)
- 30-79 years: 87% (38,680 cases)
- 20-29 years: 8% (3619 cases)
- 10-19 years: 1% (549 cases)
- \(<10\) years: 1% (416 cases)

#### Spectrum of disease (N = 44,415)
- Mild: 81% (36,160 cases)
- Severe: 14% (6,168 cases)
- Critical: 5% (2,087 cases)

#### Case-fatality rate
- 2.3% (1023 of 44,672 confirmed cases)
- 14.8% in patients aged \(\geq 80\) years (208 of 1408)
- 8.0% in patients aged 70-79 years (312 of 3918)
- 49.0% in critical cases (1023 of 2087)

#### Health care personnel infected
- 3.8% (1716 of 44,672)
- 63% in Wuhan (1080 of 1716)
- 14.8% cases classified as severe or critical (247 of 1668)
- 5 deaths
For every 50 people that were infected, MERS killed 17 people.

SARS killed five people.

and the new coronavirus killed one.
Patients seek health care and can be diagnosed and isolated, and their contacts can be traced. A caveat is that coronaviruses have a propensity for nosocomial spread.

Patients do not seek health care, do not receive a diagnosis, and may spread the virus to contacts.
How to think about COVID-19?

- Some of those exposed to the virus, acquire the virus
- Some will be asymptomatic
- There will be some who have mild symptoms
- There will be people who get (viral) pneumonia
- In severe cases, those who require ventilation - may require mechanical ventilation but will still recover
- People with co-morbidities die of the underlying disease or as a complication due to nosocomial infections
What lesson does the first German cluster teach us?

• Contacts were found only after the PCR analysis of the index case
• The contacts might have transmitted the virus even before they had (or had very little of) the symptoms.
Feasibility of controlling COVID-19 outbreaks by isolation of cases and contacts
Importance of isolation / quarantine

• Isolation / quarantine of the potentially infected patient could prevent the spreading of the virus

• When does an individual appear to be potentially infected?
  • He/She has been to Wuhan, he has been to Iran
  • He/She comes from an area where there is a documented accumulation
  • He/She got in contact with a COVID-19 infected patient
  • During his/her trip (on a plane, on a bus?) there was a patient (near?) showing respiratory symptoms
  • He/she has fever, respiratory symptoms, and the above factors can be detected during an epidemiological history taking
Diagnosis

• Epidemiological history

• According to the updated case definition (National Center for Public Health, WHO, ECDC, CDC) it is possible / necessary to initiate a respiratory sample PCR test

• A nasopharyngeal sample should be sent to the reference laboratory

• In severe cases, a chest CT may confirm a COVID-19 pneumonia
What to watch out for when taking samples?

• In case of doubt, the patient should be examined in a full protective equipment !!
• A surgical mask is not enough !!

The health worker should not only protect himself/herself !!!

We know from the cases of SARS, MERSCo and now COVID-19 that unsuspecting healthcare workers were the vectors for the ones to spread the virus

(Italy, Washington State - USA, etc.)
Conclusion:
From the respiratory samples, the highest number of virus was detected on day 3 after the onset of symptoms.
What to do now?

• Persons with respiratory symptoms should preferably stay at home
• When their symptoms are mild, patients at risk based on their travel history should remain at home
• Wear a mask to protect your family members and vulnerable elderly people
• If there is a reasonable suspicion, contact the designated health care facilities
• In case of shortness of breath, fever, call a physician (emergency room, family doctor) for appropriate patient transport to the designated institution
General rules of prevention

• Avoid mass events held indoors

• Wash hands as often as possible, apply alcohol hand disinfectant after soapy hand wash

• Cough into a tissue, sneeze the used tissue into a sealed box.

• Do not touch your eyes, nose, mouth if you have not disinfected your hands when wearing a surgical face mask

• Disinfect objects and surfaces to which the virus can be transmitted (computer keyboard, mouse, mobile phone ...