Nový korona virus 2019-nCoV a klinická charakteristika onemocnění COVID-19

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Obsah

- Charakteristika a morfologie viru 2019-nCoV (SARS-CoV-2)

BRIEF REPORT

A Novel Coronavirus from Patients with Pneumonia in China, 2019

Na Zhu, Ph.D., Dingyu Zhang, M.D., Wenling Wang, Ph.D., Xingwang Li, M.D., Bo Yang, M.S., Jingdong Song, Ph.D., Xiang Zhao, Ph.D., Baoying Huang, Ph.D., Weifeng Shi, Ph.D., Roujian Lu, M.D., Peihua Niu, Ph.D., Faxian Zhan, Ph.D., Xuejun Ma, Ph.D., Dayan Wang, Ph.D., Wenbo Xu, M.D., Guizhen Wu, M.D., George F. Gao, D.Phil., and Wenjie Tan, M.D., Ph.D., for the China Novel Coronavirus Investigating and Research Team

- Klinická charakteristika onemocnění COVID-19

ORIGINAL ARTICLE

Clinical Characteristics of Coronavirus Disease 2019 in China

W. Guan, Z. Ni, Yu Hu, W. Liang, C. Ou, J. He, L. Liu, H. Shan, C. Lei, D.S.C. Hui, B. Du, L. Li, G. Zeng, K.-Y. Yuen, R. Chen, C. Tang, T. Wang, P. Chen, J. Xiang, S. Li, Jin-lin Wang, Z. Liang, Y. Peng, L. Wei, Y. Liu, Ya-hua Hu, P. Peng, Jian-ming Wang, J. Liu, Z. Chen, G. Li, Z. Zheng, S. Qiu, J. Luo, C. Ye, S. Zhu, and N. Zhong, for the China Medical Treatment Expert Group for Covid-19*

- Aktuální situace z 12.03.2020

1) Charakteristika a morfologie 2019-nCoV

- Betacoronavirus (sarbecovirus)
  - obalené RNA viry
  - SARS-CoV (2002-2003), MERS-CoV (2012)
  - genetická diversita a častá rekombinace

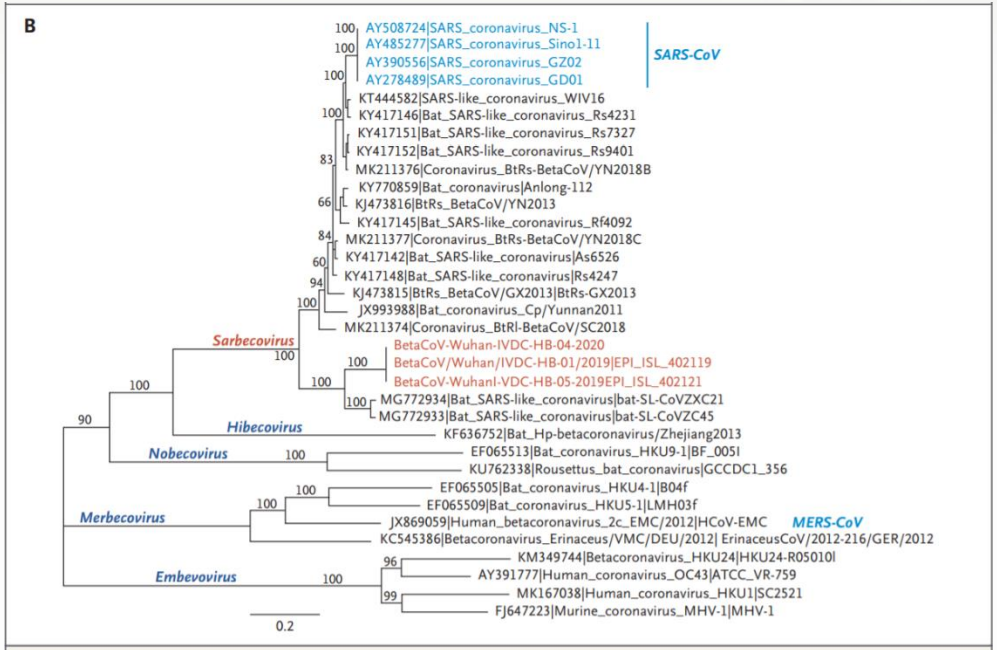


Figure 4. Schematic of 2019-nCoV and Phylogenetic Analysis of 2019-nCoV and Other Betacoronavirus Genomes.
Shown are a schematic of 2019-nCoV (Panel A) and full-length phylogenetic analysis of 2019-nCoV and other betacoronavirus genomes in the Orthocoronavirinae subfamily (Panel B).

Vzorky a izolace viru

- 4x BAL– pneumonie nejasné příčiny – Wuhan 21.12.2019
- 7x kontrolních BAL pacientů s pneumonii známe etiologie – Peking
- Virus transport medium – centrifugace – inokulace supernatantu na epitel.bb DC – denně světel. mikroskopie + RT-PCR
- Epitelie s průkazem cytopatického efektu na povrchu bb s úbykem cílii 72 hod po inokulaci
- Po 6 dnech elektronová mikroskopie

Pacienti s nejasnou pneumonii

- Primární výskyt 12/2019 Wuhan, Hubei Province
  - epidemiologické spojení s trhem mořských plodů a zvířat

- PACIENT č.1 – 49 let, Ž, bez chronické medikace, horečka, kašel, dyskomfort na hrudníku s progresí, CT nález, obchodník Wuhan, vyléčena
- PACIENT č.2 – 61 let, M, kašel, horečka, po 7 dnech dušnost s RTG progresí, ventilace, smrt po 20 dnech, pravidelný návštěvník trhu
- PACIENT č. 3 – 32let, M, vyléčen

Morfologie a kontagiozita SARS-CoV-2

- Sférické partikule s polymorfizmy, ɵ 60-140 nm, výběžky (9-12nm) – „solar corona“
  - Extracelulární volný virus
  - Intracelulárně inkluze naplněné virovými partikuly s vazbou na cytoplazmat. membránu

R∅ (attack rate)

- počet nakažených osob od 1 nemocné osoby
  - WHO: 1.4 – 2.5
  - Studie 1.5 - 3.5

- Chřipka 1.3
- SARS 2.0

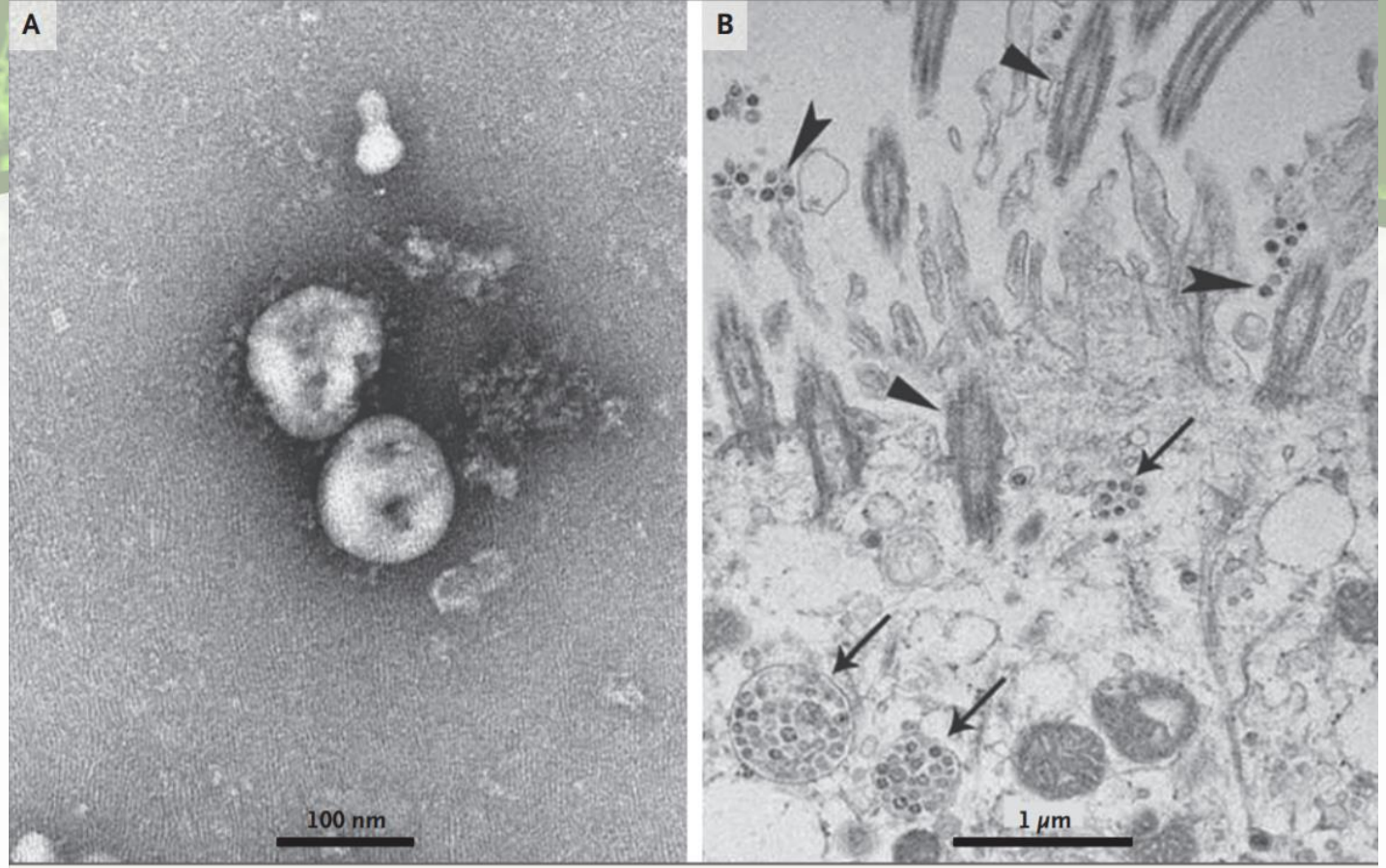


Figure 3. Visualization of 2019-nCoV with Transmission Electron Microscopy.

Negative-stained 2019-nCoV particles are shown in Panel A, and 2019-nCoV particles in the human airway epithelial cell ultrathin sections are shown in Panel B. Arrowheads indicate extracellular virus particles, arrows indicate inclusion bodies formed by virus components, and triangles indicate cilia.

Sekvenace genomu

- RNA extrahována z BAL – templát pro rtPCR
- Illumina sequencing + nanopore sequencing
- 85% identita s bat-SARS-like CoV
- využití sekvenování v diagnostice – detekce virové RNA – real-time reverse-transcriptase PCR assay

2) Klinická charakteristika COVID-19

Soubor pacientů ve studii

- 1099 pacientů z 552 nemocnic, 30 provincií
- 11.12.2019-31.1.2020
- hospitalizovaní i ambulantní pacienti s lab.dg. – rt RT-PCR assay z nazál. nebo pharyngeál. stěru
- median věku 47 let
- 41,9 % ženy
- při přijetí rozdělení na pacientov v těžkém (173 = 15,7%) a lehkém stavu (926=84,3%) – pacienti s těžkým průběhem v průměru o 7 let starší

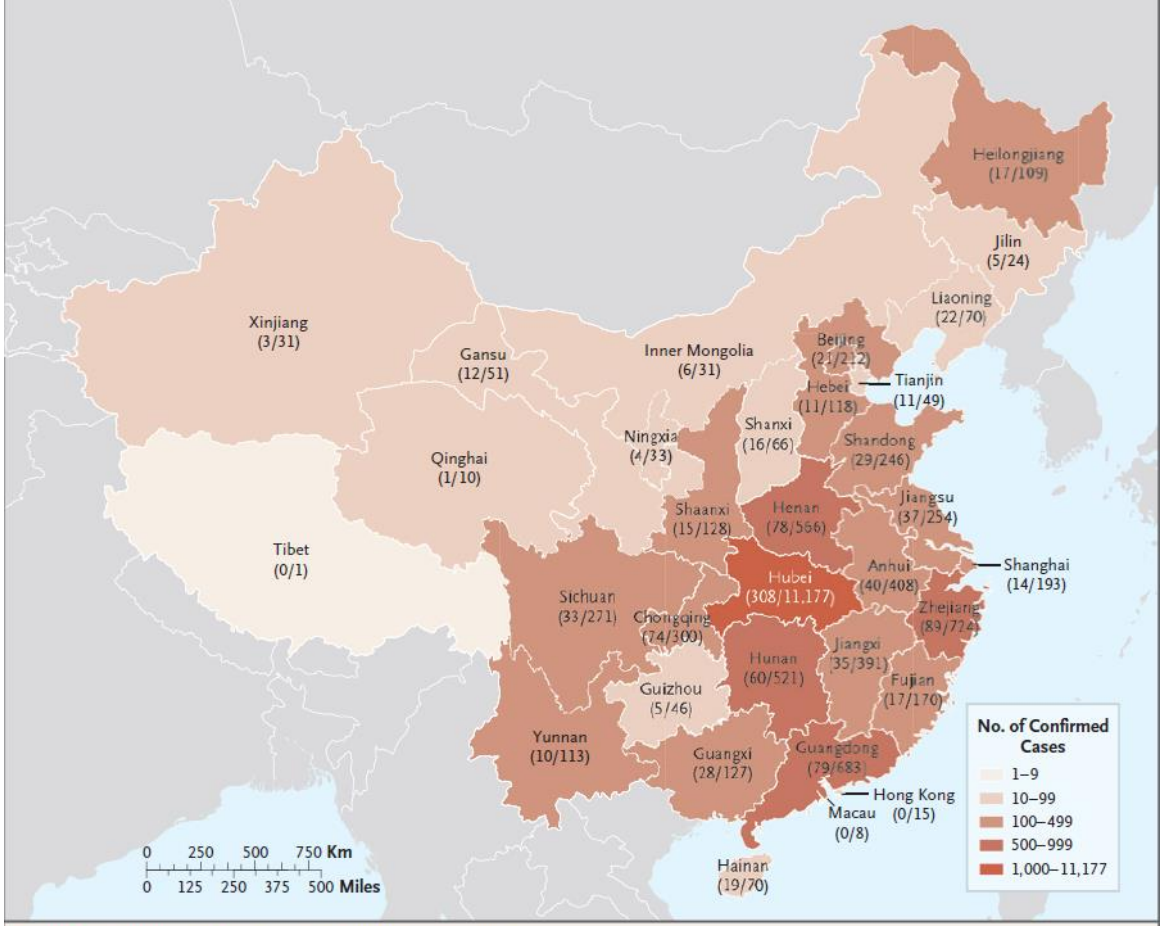


Figure 1. Distribution of Patients with Covid-19 across China.

Shown are the official statistics of all documented, laboratory-confirmed cases of coronavirus disease 2019 (Covid-19) throughout China, according to the National Health Commission as of February 4, 2020. The numerator denotes the number of patients who were included in the study cohort and the denominator denotes the number of laboratory-confirmed cases for each province, autonomous region, or provincial municipality, as reported by the National Health Commission.

Table 1. Clinical Characteristics of the Study Patients, According to Disease Severity and the Presence or Absence of the Primary Composite End Point.*

Characteristic	All Patients (N=1099)	Disease Severity		Presence of Primary Composite End Point†	
		Nonsevere (N=926)	Severe (N=173)	Yes (N=67)	No (N=1032)
Age					
Median (IQR) — yr	47.0 (35.0–58.0)	45.0 (34.0–57.0)	52.0 (40.0–65.0)	63.0 (53.0–71.0)	46.0 (35.0–57.0)
Distribution — no./total no. (%)					
0–14 yr	9/1011 (0.9)	8/848 (0.9)	1/163 (0.6)	0	9/946 (1.0)
15–49 yr	557/1011 (55.1)	490/848 (57.8)	67/163 (41.1)	12/65 (18.5)	545/946 (57.6)
50–64 yr	292/1011 (28.9)	241/848 (28.4)	51/163 (31.3)	21/65 (32.3)	271/946 (28.6)
≥65 yr	153/1011 (15.1)	109/848 (12.9)	44/163 (27.0)	32/65 (49.2)	121/946 (12.8)
Female sex — no./total no. (%)	459/1096 (41.9)	386/923 (41.8)	73/173 (42.2)	22/67 (32.8)	437/1029 (42.5)
Smoking history — no./total no. (%)					
Never smoked	927/1085 (85.4)	793/913 (86.9)	134/172 (77.9)	44/66 (66.7)	883/1019 (86.7)
Former smoker	21/1085 (1.9)	12/913 (1.3)	9/172 (5.2)	5/66 (7.6)	16/1019 (1.6)
Current smoker	137/1085 (12.6)	108/913 (11.8)	29/172 (16.9)	17/66 (25.8)	120/1019 (11.8)
Exposure to source of transmission within past 14 days — no./total no.					
Living in Wuhan	483/1099 (43.9)	400/926 (43.2)	83/173 (48.0)	39/67 (58.2)	444/1032 (43.0)
Contact with wildlife	13/687 (1.9)	10/559 (1.8)	3/128 (2.3)	1/41 (2.4)	12/646 (1.9)
Recently visited Wuhan‡	193/616 (31.3)	166/526 (31.6)	27/90 (30.0)	10/28 (35.7)	183/588 (31.1)
Had contact with Wuhan residents‡	442/611 (72.3)	376/522 (72.0)	66/89 (74.2)	19/28 (67.9)	423/583 (72.6)
Median incubation period (IQR) — days§	4.0 (2.0–7.0)	4.0 (2.8–7.0)	4.0 (2.0–7.0)	4.0 (1.0–7.5)	4.0 (2.0–7.0)
Fever on admission					
Patients — no./total no. (%)	473/1081 (43.8)	391/910 (43.0)	82/171 (48.0)	24/66 (36.4)	449/1015 (44.2)
Median temperature (IQR) — °C	37.3 (36.7–38.0)	37.3 (36.7–38.0)	37.4 (36.7–38.1)	36.8 (36.3–37.8)	37.3 (36.7–38.0)
Distribution of temperature — no./total no. (%)					
<37.5°C	608/1081 (56.2)	519/910 (57.0)	89/171 (52.0)	42/66 (63.6)	566/1015 (55.8)
37.5–38.0°C	238/1081 (22.0)	201/910 (22.1)	37/171 (21.6)	10/66 (15.2)	228/1015 (22.5)
38.1–39.0°C	197/1081 (18.2)	160/910 (17.6)	37/171 (21.6)	11/66 (16.7)	186/1015 (18.3)
>39.0°C	38/1081 (3.5)	30/910 (3.3)	8/171 (4.7)	3/66 (4.5)	35/1015 (3.4)
Fever during hospitalization					
Patients — no./total no. (%)	975/1099 (88.7)	816/926 (88.1)	159/173 (91.9)	59/67 (88.1)	916/1032 (88.8)
Median highest temperature (IQR) — °C	38.3 (37.8–38.9)	38.3 (37.8–38.9)	38.5 (38.0–39.0)	38.5 (38.0–39.0)	38.3 (37.8–38.9)
<37.5°C	92/926 (9.9)	79/774 (10.2)	13/152 (8.6)	3/54 (5.6)	89/872 (10.2)
37.5–38.0°C	286/926 (30.9)	251/774 (32.4)	35/152 (23.0)	20/54 (37.0)	266/872 (30.5)
38.1–39.0°C	434/926 (46.9)	356/774 (46.0)	78/152 (51.3)	21/54 (38.9)	413/872 (47.4)
>39.0°C	114/926 (12.3)	88/774 (11.4)	26/152 (17.1)	10/54 (18.5)	104/872 (11.9)

Table 1. Clinical Characteristics of the Study Patients, According to Disease Severity and the Presence or Absence of the Primary Composite End Point.*

Characteristic	All Patients (N=1099)	Disease Severity		Presence of Primary Composite End Point†	
		Nonsevere (N=926)	Severe (N=173)	Yes (N=67)	No (N=1032)
Conjunctival congestion	9 (0.8)	5 (0.5)	4 (2.3)	0	9 (0.9)
Nasal congestion	53 (4.8)	47 (5.1)	6 (3.5)	2 (3.0)	51 (4.9)
Headache	150 (13.6)	124 (13.4)	26 (15.0)	8 (11.9)	142 (13.8)
Cough	745 (67.8)	623 (67.3)	122 (70.5)	46 (68.7)	699 (67.7)
Sore throat	153 (13.9)	130 (14.0)	23 (13.3)	6 (9.0)	147 (14.2)
Sputum production	370 (33.7)	309 (33.4)	61 (35.3)	20 (29.9)	350 (33.9)
Fatigue	419 (38.1)	350 (37.8)	69 (39.9)	22 (32.8)	397 (38.5)
Hemoptysis	10 (0.9)	6 (0.6)	4 (2.3)	2 (3.0)	8 (0.8)
Shortness of breath	205 (18.7)	140 (15.1)	65 (37.6)	36 (53.7)	169 (16.4)
Nausea or vomiting	55 (5.0)	43 (4.6)	12 (6.9)	3 (4.5)	52 (5.0)
Diarrhea	42 (3.8)	32 (3.5)	10 (5.8)	4 (6.0)	38 (3.7)
Myalgia or arthralgia	164 (14.9)	134 (14.5)	30 (17.3)	6 (9.0)	158 (15.3)
Chills	126 (11.5)	100 (10.8)	26 (15.0)	8 (11.9)	118 (11.4)
Signs of infection — no. (%)					
Throat congestion	19 (1.7)	17 (1.8)	2 (1.2)	0	19 (1.8)
Tonsil swelling	23 (2.1)	17 (1.8)	6 (3.5)	1 (1.5)	22 (2.1)
Enlargement of lymph nodes	2 (0.2)	1 (0.1)	1 (0.6)	1 (1.5)	1 (0.1)
Rash	2 (0.2)	0	2 (1.2)	0	2 (0.2)
Coexisting disorder — no. (%)					
Any	261 (23.7)	194 (21.0)	67 (38.7)	39 (58.2)	222 (21.5)
Chronic obstructive pulmonary disease	12 (1.1)	6 (0.6)	6 (3.5)	7 (10.4)	5 (0.5)
Diabetes	81 (7.4)	53 (5.7)	28 (16.2)	18 (26.9)	63 (6.1)
Hypertension	165 (15.0)	124 (13.4)	41 (23.7)	24 (35.8)	141 (13.7)
Coronary heart disease	27 (2.5)	17 (1.8)	10 (5.8)	6 (9.0)	21 (2.0)
Cerebrovascular disease	15 (1.4)	11 (1.2)	4 (2.3)	4 (6.0)	11 (1.1)
Hepatitis B infection¶	23 (2.1)	22 (2.4)	1 (0.6)	1 (1.5)	22 (2.1)
Cancer‖	10 (0.9)	7 (0.8)	3 (1.7)	1 (1.5)	9 (0.9)
Chronic renal disease	8 (0.7)	5 (0.5)	3 (1.7)	2 (3.0)	6 (0.6)
Immunodeficiency	2 (0.2)	2 (0.2)	0	0	2 (0.2)

The denominators of patients who were included in the analysis are provided if they differed from the overall numbers in the group. Percentages may not total 100 because of roundin
Covid-19 denotes coronavirus disease 2019, and IQR interquartile range.
The primary composite end point was admission to an intensive care unit, the use of mechanical ventilation, or death.
These patients were not residents of Wuhan.
Data regarding the incubation period were missing for 808 patients (73.5%).

Příznaky a inkubační doba

Nejčastější

- Kašel 67,8 %
- Horečka 43%
- Únava 38,1%
- Zahlenění 33,7%
- Dyspnoe 18,7%

Vzácné

- Exantém 0,2%
- Lymfadenopatie 0,2%
- Konjunktivitis 0,8%
- Hemoptysis 0,9%

Klinická charakteristika COVID-19

Virus	Incubation Period (typical cases)
Novel Coronavirus (2019-nCoV)	2-14 or 0-24 days *
SARS	2-7 days, as long as 10 days
MERS	5 days (range: 2-14)
Swine Flu	1-4 days, as long as 7 days
Seasonal Flu	2 days (1-4 range)

Inkubační doba

- **median 4 dny (2-7 dnů)**

- **WHO** mezi 2 a 14 dnů
- **National Health Commission (NHC)** of China 10-14 dnů
- **DXY.cn**, a leading Chinese online community for physicians and health care professionals, najčastějí 3-7 dnů, max 14
- ??? > 14 dnů

Primární outcome

- hospitalizace na JIP
- nutnost invazivní/neinvazivní ventilace
- smrt pacienta

Table 3. Complications, Treatments, and Clinical Outcomes.

Variable	All Patients (N=1099)	Disease Severity		Presence of Composite Primary End Poir	
		Nonsevere (N=926)	Severe (N=173)	Yes (N=67)	No (N=1032)
Complications					
Septic shock — no. (%)	12 (1.1)	1 (0.1)	11 (6.4)	9 (13.4)	3 (0.3)
Acute respiratory distress syndrome — no. (%)	37 (3.4)	10 (1.1)	27 (15.6)	27 (40.3)	10 (1.0)
Acute kidney injury — no. (%)	6 (0.5)	1 (0.1)	5 (2.9)	4 (6.0)	2 (0.2)
Disseminated intravascular coagulation — no. (%)	1 (0.1)	0	1 (0.6)	1 (1.5)	0
Rhabdomyolysis — no. (%)	2 (0.2)	2 (0.2)	0	0	2 (0.2)
Physician-diagnosed pneumonia — no./total no. (%)	972/1067 (91.1)	800/894 (89.5)	172/173 (99.4)	63/66 (95.5)	909/1001 (90.8)
Median time until development of pneumonia (IQR) — days*					
After initial Covid-19 diagnosis	0.0 (0.0–1.0)	0.0 (0.0–1.0)	0.0 (0.0–2.0)	0.0 (0.0–3.5)	0.0 (0.0–1.0)
After onset of Covid-19 symptoms	3.0 (1.0–6.0)	3.0 (1.0–6.0)	5.0 (2.0–7.0)	4.0 (0.0–7.0)	3.0 (1.0–6.0)
Treatments					
Intravenous antibiotics — no. (%)	637 (58.0)	498 (53.8)	139 (80.3)	60 (89.6)	577 (55.9)
Oseltamivir — no. (%)	393 (35.8)	313 (33.8)	80 (46.2)	36 (53.7)	357 (34.6)
Antifungal medication — no. (%)	31 (2.8)	18 (1.9)	13 (7.5)	8 (11.9)	23 (2.2)
Systemic glucocorticoids — no. (%)	204 (18.6)	127 (13.7)	77 (44.5)	35 (52.2)	169 (16.4)
Oxygen therapy — no. (%)	454 (41.3)	331 (35.7)	123 (71.1)	59 (88.1)	395 (38.3)
Mechanical ventilation — no. (%)	67 (6.1)	0	67 (38.7)	40 (59.7)	27 (2.6)
Invasive	25 (2.3)	0	25 (14.5)	25 (37.3)	0
Noninvasive	56 (5.1)	0	56 (32.4)	29 (43.3)	27 (2.6)
Use of extracorporeal membrane oxygenation — no. (%)	5 (0.5)	0	5 (2.9)	5 (7.5)	0
Use of continuous renal-replacement therapy — no. (%)	9 (0.8)	0	9 (5.2)	8 (11.9)	1 (0.1)
Use of intravenous immune globulin — no. (%)	144 (13.1)	86 (9.3)	58 (33.5)	27 (40.3)	117 (11.3)
Admission to intensive care unit — no. (%)	55 (5.0)	22 (2.4)	33 (19.1)	55 (82.1)	0
Median length of hospital stay (IQR) — days†·	12.0 (10.0–14.0)	11.0 10.0–13.0)	13.0 (11.5–17.0)	14.5 (11.0–19.0)	12.0 (10.0–13.0)

Characteristic	All Patients (N=1099)	Disease Severity		Presence of Primary Composite End Point†	
		Nonsevere (N=926)	Severe (N=173)	Yes (N=67)	No (N=1032)
Clinical outcomes at data cutoff — no. (%)					
Discharge from hospital	55 (5.0)	50 (5.4)	5 (2.9)	1 (1.5)	54 (5.2)
Death	15 (1.4)	1 (0.1)	14 (8.1)	15 (22.4)	0
Recovery	9 (0.8)	7 (0.8)	2 (1.2)	0	9 (0.9)
Hospitalization	1029 (93.6)	875 (94.5)	154 (89.0)	51 (76.1)	978 (94.8)

* For the development of pneumonia, data were missing for 347 patients (31.6%) regarding the time since the initial diagnosis and for 161 patients (14.6%) regarding the time since symptom onset.
† Data regarding the median length of hospital stay were missing for 136 patients (12.4%).

<u>Primární outcome</u> 6,1% ze všech pacientů,
24,9% u těžkého průběhu

- hospitalizace JIP 5,0 %
- ivazivní mechanická podpora dýchaní 2,3%
- letalita 1,4%

Kumulativní riziko 3,6% celkově, u pacientů s těžkým průběhem 20,6%

Laboratorní a RDG nález

- 975 CT – 86,2% abnormality („ground-glass opacity, bilateral patchy shadows“)
  - bez CT nálezu 157/877 (17,9%) s lehkým průběhem, 5/173 (2,9%) s těžkým průběhem
- lymfocytopenie 83,2 %
- trombocytopenie 36,2 %
- leukopenie 33,7%
- elevace CRP ve většině případů
- méně časté elevace jater. enzymů, CK, D-dimerů

Table 2. Radiographic and Laboratory Findings.*

Variable	All Patients (N=1099)	Disease Severity		Presence of Composite Primary End Point	
		Nonsevere (N=926)	Severe (N=173)	Yes (N=67)	No (N=1032)
Radiologic findings					
Abnormalities on chest radiograph — no./total no. (%)	162/274 (59.1)	116/214 (54.2)	46/60 (76.7)	30/39 (76.9)	132/235 (56.2)
Ground-glass opacity	55/274 (20.1)	37/214 (17.3)	18/60 (30.0)	9/39 (23.1)	46/235 (19.6)
Local patchy shadowing	77/274 (28.1)	56/214 (26.2)	21/60 (35.0)	13/39 (33.3)	64/235 (27.2)
Bilateral patchy shadowing	100/274 (36.5)	65/214 (30.4)	35/60 (58.3)	27/39 (69.2)	73/235 (31.1)
Interstitial abnormalities	12/274 (4.4)	7/214 (3.3)	5/60 (8.3)	6/39 (15.4)	6/235 (2.6)
Abnormalities on chest CT — no./total no. (%)	840/975 (86.2)	682/808 (84.4)	158/167 (94.6)	50/57 (87.7)	790/918 (86.1)
Ground-glass opacity	550/975 (56.4)	449/808 (55.6)	101/167 (60.5)	30/57 (52.6)	520/918 (56.6)
Local patchy shadowing	409/975 (41.9)	317/808 (39.2)	92/167 (55.1)	22/57 (38.6)	387/918 (42.2)
Bilateral patchy shadowing	505/975 (51.8)	368/808 (45.5)	137/167 (82.0)	40/57 (70.2)	465/918 (50.7)
Interstitial abnormalities	143/975 (14.7)	99/808 (12.3)	44/167 (26.3)	15/57 (26.3)	128/918 (13.9)
Laboratory findings					
Median Pao_2:Fio_2 ratio (IQR)†	3.9 (2.9–4.7)	3.9 (2.9–4.5)	4.0 (2.8–5.2)	2.9 (2.2–5.4)	4.0 (3.1–4.6)
White-cell count					
Median (IQR) — per mm^3	4700 (3500–6000)	4900 (3800–6000)	3700 (3000–6200)	6100 (4900–11,100)	4700 (3500–5900)
Distribution — no./total no. (%)					
>10,000 per mm^3	58/978 (5.9)	39/811 (4.8)	19/167 (11.4)	15/58 (25.9)	43/920 (4.7)
<4000 per mm^3	330/978 (33.7)	228/811 (28.1)	102/167 (61.1)	8/58 (13.8)	322/920 (35.0)
Lymphocyte count					
Median (IQR) — per mm^3	1000 (700–1300)	1000 (800–1400)	800 (600–1000)	700 (600–900)	1000 (700–1300)
Distribution — no./total no. (%)					
<1500 per mm^3	731/879 (83.2)	584/726 (80.4)	147/153 (96.1)	50/54 (92.6)	681/825 (82.5)

Table 2. Radiographic and Laboratory Findings.*

Variable	All Patients (N=1099)	Disease Severity		Presence of Composite Primary End Point	
		Nonsevere (N=926)	Severe (N=173)	Yes (N=67)	No (N=1032)
Platelet count					
Median (IQR) — per mm^3	168,000 (132,000–207,000)	172,000 (139,000–212,000)	137,500 (99,000–179,500)	156,500 (114,200–195,000)	169,000 (133,000–207,000)
Distribution — no./total no. (%)					
<150,000 per mm^3	315/869 (36.2)	225/713 (31.6)	90/156 (57.7)	27/58 (46.6)	288/811 (35.5)
Median hemoglobin (IQR) — g/dl‡	134.0 (119.0–148.0)	135.0 (120.0–148.0)	128.0 (111.8–141.0)	125.0 (105.0–140.0)	134.0 (120.0–148.0)
Distribution of other findings — no./total no. (%)					
C-reactive protein ≥10 mg/liter	481/793 (60.7)	371/658 (56.4)	110/135 (81.5)	41/45 (91.1)	440/748 (58.8)
Procalcitonin ≥0.5 ng/ml	35/633 (5.5)	19/516 (3.7)	16/117 (13.7)	12/50 (24.0)	23/583 (3.9)
Lactate dehydrogenase ≥250 U/liter	277/675 (41.0)	205/551 (37.2)	72/124 (58.1)	31/44 (70.5)	246/631 (39.0)
Aspartate aminotransferase >40 U/liter	168/757 (22.2)	112/615 (18.2)	56/142 (39.4)	26/52 (50.0)	142/705 (20.1)
Alanine aminotransferase >40 U/liter	158/741 (21.3)	120/606 (19.8)	38/135 (28.1)	20/49 (40.8)	138/692 (19.9)
Total bilirubin >17.1 μmol/liter	76/722 (10.5)	59/594 (9.9)	17/128 (13.3)	10/48 (20.8)	66/674 (9.8)
Creatine kinase ≥200 U/liter	90/657 (13.7)	67/536 (12.5)	23/121 (19.0)	12/46 (26.1)	78/611 (12.8)
Creatinine ≥133 μmol/liter	12/752 (1.6)	6/614 (1.0)	6/138 (4.3)	5/52 (9.6)	7/700 (1.0)
D-dimer ≥0.5 mg/liter	260/560 (46.4)	195/451 (43.2)	65/109 (59.6)	34/49 (69.4)	226/511 (44.2)
Minerals§					
Median sodium (IQR) — mmol/liter	138.2 (136.1–140.3)	138.4 (136.6–140.4)	138.0 (136.0–140.0)	138.3 (135.0–141.2)	138.2 (136.1–140.2)
Median potassium (IQR) — mmol/liter	3.8 (3.5–4.2)	3.9 (3.6–4.2)	3.8 (3.5–4.1)	3.9 (3.6–4.1)	3.8 (3.5–4.2)
Median chloride (IQR) — mmol/liter	102.9 (99.7–105.6)	102.7 (99.7–105.3)	103.1 (99.8–106.0)	103.8 (100.8–107.0)	102.8 (99.6–105.3)

Lymphocytopenia was defined as a lymphocyte count of less than 1500 per cubic millimeter. Thrombocytopenia was defined as a platelet count of less than 150,000 per cubic millimeter. To convert the values for creatinine to milligrams per deciliter, divide by 88.4.
Data regarding the ratio of the partial pressure of arterial oxygen to the fraction of inspired oxygen (Pa_{O_2}:Fi_{O_2}) were missing for 894 patients (81.3%).
Data regarding hemoglobin were missing for 226 patients (20.6%).
Data were missing for the measurement of sodium in 363 patients (33.0%), for potassium in 349 patients (31.8%), and for chloride in 392 patients (35.7%).

Přenos COVID-19

- Kapénkova nákaza
  - Cca 1,8 m
  - Typické pro respirační viry
- Vzdušní přenos
  - Kontroverzní
  - FFP3
- Kontaktem
  - Povrch – sliznice
  - Hodiny až dny (týdny?)

Riziko úmrtí při COVID-19

Na základě věku

Baseline characteristics	Confirmed cases, N (%)	Deaths, N (%)	Case fatality rate, %
Overall	44,672	1,023	2.3
Age, years			
0–9	416 (0.9)	–	–
10–19	549 (1.2)	1 (0.1)	0.2
20–29	3,619 (8.1)	7 (0.7)	0.2
30–39	7,600 (17.0)	18 (1.8)	0.2
40–49	8,571 (19.2)	38 (3.7)	0.4
50–59	10,008 (22.4)	130 (12.7)	1.3
60–69	8,583 (19.2)	309 (30.2)	3.6
70–79	3,918 (8.8)	312 (30.5)	8.0
≥80	1,408 (3.2)	208 (20.3)	14.8

Na základě pohlaví

Baseline characteristics	Confirmed cases, N (%)	Deaths, N (%)	Case fatality rate, %
Sex			
Male	22,981 (51.4)	653 (63.8)	2.8
Female	21,691 (48.6)	370 (36.2)	1.7

Zdroj: The Novel Coronavirus Pneumonia Emergency Response Epidemiology Team. The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) — China, 2020[J]. China CDC Weekly, 2020, 2(8): 113-122.

Riziko úmrtí při COVID-19

Na základě komorbidit

Baseline characteristics	Confirmed cases, N (%)	Deaths, N (%)	Case fatality rate, %
Comorbid condition[†]			
Hypertension	2,683 (12.8)	161 (39.7)	6.0
Diabetes	1,102 (5.3)	80 (19.7)	7.3
Cardiovascular disease	873 (4.2)	92 (22.7)	10.5
Chronic respiratory disease	511 (2.4)	32 (7.9)	6.3
Cancer (any)	107 (0.5)	6 (1.5)	5.6
None	15,536 (74.0)	133 (32.8)	0.9
Missing	23,690 (53.0)	617 (60.3)	2.6

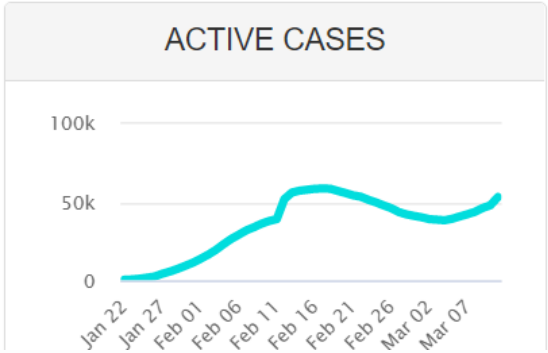
Porovnání s jinými koronaviry

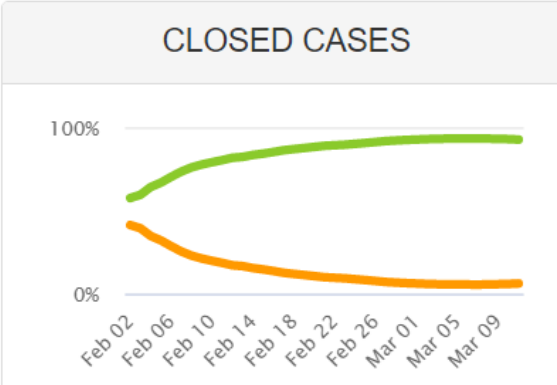
Virus	Death Rate
Wuhan Novel Coronavirus (2019-nCoV)	2%*
SARS	9.6%
MERS	34%
Swine Flu	0.02%

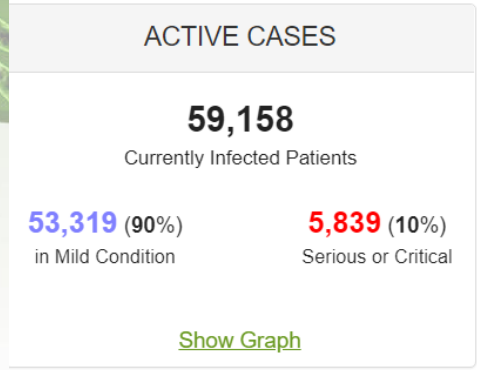
Zdroj: The Novel Coronavirus Pneumonia Emergency Response Epidemiology Team. The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) — China, 2020[J]. China CDC Weekly, 2020, 2(8): 113-122.

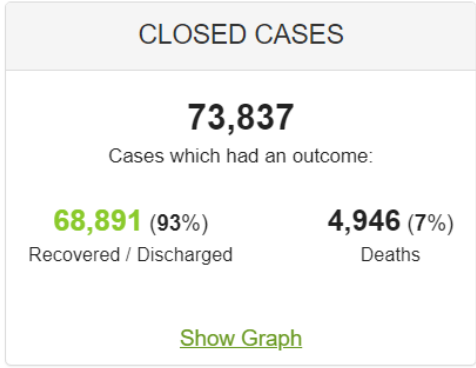
3) Aktuální informace

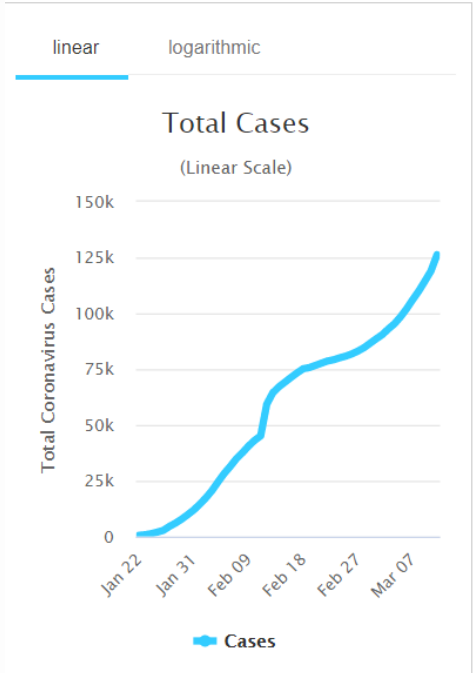
11.03.2020 WHO vyhlásilo pandemii

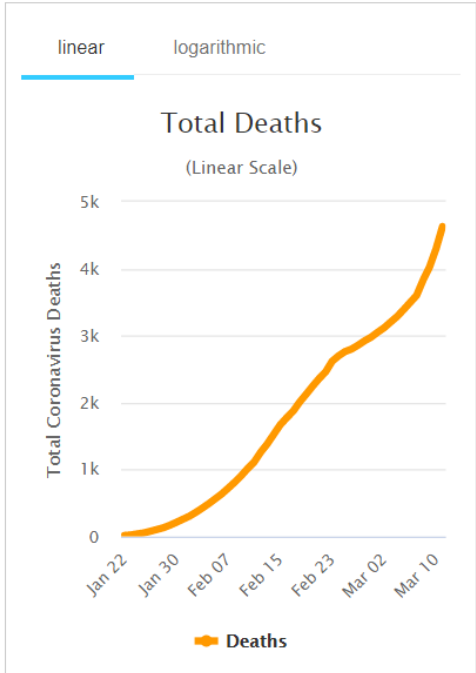












Country, Other	Total Cases	New Cases	Total Deaths	New Deaths	Total Recovered	Active Cases	Serious, Critical
China	80,796	+18	3,169	+11	62,826	14,801	4,257
Italy	15,113	+2,651	1,016	+189	1,258	12,839	1,153
Iran	10,075	+1,075	429	+75	3,276	6,370	
S. Korea	7,869	+114	66	+6	333	7,470	54
Spain	3,059	+782	86	+31	189	2,784	126
Germany	2,502	+536	5	+2	25	2,472	9
France	2,281		48		12	2,221	105
USA	1,396	+95	39	+1	15	1,342	10
Switzerland	867	+215	6	+2	4	857	
Norway	727	+98			1	726	
Diamond Princess	696		7		325	364	32
Japan	691	+52	17	+2	118	556	29
Sweden	683	+183	1		1	681	2
Denmark	674	+160			1	673	2
Netherlands	614	+111	5		2	607	1
UK	590	+130	10	+2	18	562	
Belgium	399	+85	3		1	395	2

Country, Other	Total Cases	New Cases	Total Deaths	New Deaths	Total Recovered	Active Cases	Serious, Critical
Austria	361	+115	1	+1	4	356	1
Qatar	262					262	
Bahrain	195				35	160	1
Singapore	187	+9			96	91	12
Malaysia	158	+9			26	132	2
Australia	156	+28	3		26	127	1
Hong Kong	130		3		77	50	6
Canada	122	+12	1		9	112	1
Finland	109	+44			1	108	
Iceland	109	+24				109	
Israel	100	+3			4	96	2
Greece	99		1	+1		98	2
Czechia	96	+2				96	
Slovenia	89	+32				89	
UAE	85	+11			17	68	2
Kuwait	80	+8			5	75	4
Iraq	79	+8	8	+1	20	51	
Portugal	78	+17			1	77	1

Aktuální data k 12.03.2020

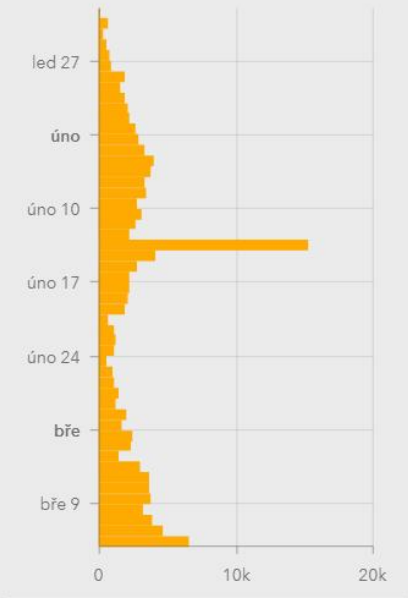
Zdroj: https://www.worldometers.info/coronavirus/#repro

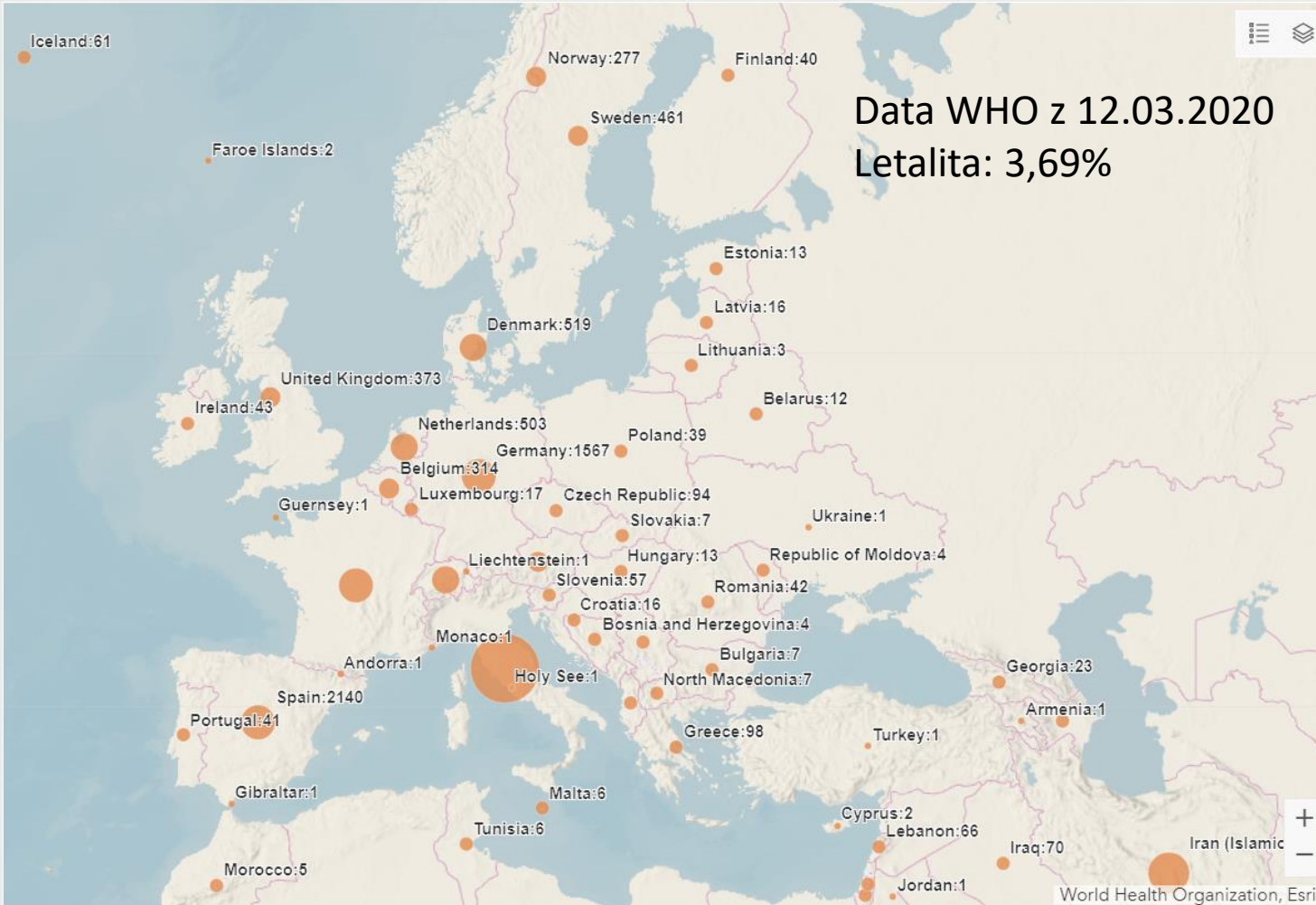
Novel Coronavirus (COVID-19) Situation

124 847
confirmed cases

4 613
deaths

118
countries, areas or territories with cases





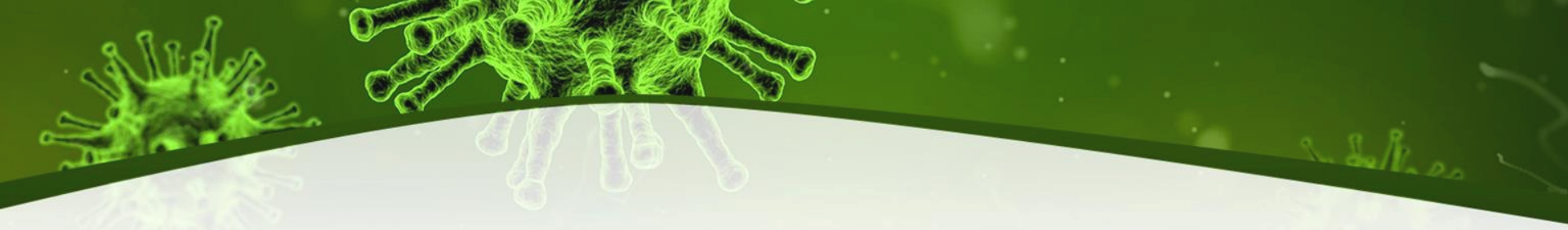
Diskuse a závěr

- dominantní symptomy kašel, febrilie, únava, dušnost
- rychlé šíření, ale nižší úmrtnost v porovnání s MERS a SARS
- Letalita
  - 1,4% - 2,3% - dle aktuálních dat z WHO 3,69 %
  - v skutečnosti se dá předpokládat nižší, do studie nejsou zavzatí pacienti s CoV-SARS-2 bez klinické manifestace
- cesta přenosu kapénkovou nákazou a přenosem tělními tekutinami
- potřeba lépe porozumět nemoci a projevům ještě před rozvojem pneumonie (v této studii u 8,9% pacientů detekován virus před rozvojem pneumonie nebo bez rozvoje)
- potřeba včasné izolace, diagnostiky a managementu

Zdroje

- Zhu N, Zhang D, Wang W, et al. A Novel Coronavirus from Patients with Pneumonia in China, 2019. *N Eng J Med* 2020;382:727-733
- Guan W, Ni Z, Hu Y, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. *N Eng J Med* 2020; DOI: 10.1056: 1-13
- The Novel Coronavirus Pneumonia Emergency Response Epidemiology Team. The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) — China, 2020[J]. China CDC Weekly, 2020, 2(8): 113-122.
- Del Rio C, Malani PN. COVID-19—New Insights on a Rapidly Changing Epidemic. *JAMA.* Published online February 28, 2020. doi:10.1001/jama.2020.3072
- Kampf G, Todt D, Pfaender S, Stenmann E. Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents. *J Hosp Infect.* 2020 Mar;104(3):246-251. doi: 10.1016/j.jhin.2020.01.022. Epub 2020 Feb 6.

- The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) - China CCDC, March 11 2020
- Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19) [Pdf] - World Health Organization, March 11, 2020
- https://www.worldometers.info/coronavirus/ - March 12, 2020
- https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/ - March 12, 2020
- http://www.mzcr.cz/dokumenty/koronavirus-2019-ncov-aktualni-data_18455_4122_1.html – March 12, 2020



Děkuju za pozornost!