Helpful reading prior:

- Clinical Characteristics of Coronavirus Disease 2019 in China, NEJM, DOI: 10.1056/NEJMoa2002032
- Cancer Patients in Sars-CoV-2 infection: a nationwide analysis in China, Lancet Oncology, DOI:10.1016/s1470-2045(20)30096-6
- Analysis of Epidemiological and Clinical features in older patients with Corona Virus 2019 (COVID-19) out of Wuhan, Clinical Infectious Diseases, DOI: 10.1093/cid/ciaa242

Table 2. Detection of 2019-nCoV in respiratory sites of NCP cases.

Collection date	Sample types	NCP cases		
		Severe	Mild	*p values*
0~7 d.a.o				
Positive rate (n/N, %)	Throat	12/20 (60.0)	46/75 (61.3)	1.000
	Nasal	11/15 (73.3)	147/204 (72.1)	1.000
	Sputum	8/9 (88.9)	37/45 (82.2)	0.26
	BALF	0/0 (0)	0/0 (0)	NA
Ct values (median; range)*	Throat	28.14 (18.86~35.4)	28.7 (17.19-33.44)	0.721
	Nasal	29 (19.19~36.1)	28.98 (17.58~37)	0.569
	Sputum	25 (20~30.17)	28.5 (18~36)	0.059
	BALF	NA	NA	NA
8~14 d.a.o				
Positive rate (n/N, %)	Throat	18/36 (50.0)	8/27 (29.6)	0.127
	Nasal	34/47 (72.3)	96/179 (53.6)	0.03
	Sputum	15/18 (83.3)	32/43 (74.4)	525
	BALF	12/12 (100)	0/3 (0)	0.002
Ct values (median; range)	Throat	29.6 (25~35)	28.36 (23.99~33.71)	0.115
	Nasal	32.09 (22~36.4)	30 (16.69~37)	0.133
	Sputum	26.5 (22.4~34)	31.32 (22~36)	0.025
	BALF	26.75 (19~34)	NA	
≥15 d.a.o				
Positive rate (n/N, %)	Throat	14/38 (36.8)	1/9 (11.1)	0.236
	Nasal	17/34 (50.0)	6/11 (54.5)	1.000
	Sputum	11/18 (61.1)	3/7 (42.9)	0.656
	BALF	11/14 (78.6)	0/0 (0)	NA
Ct values (median; range)	Throat	33.62 (26~36.25)	NA	NA
	Nasal	33 (25.21~37)	29.32 (23.79~36)	0.6
	Sputum	26.55 (19.78~34.09)	33.79 (25~33.8)	0.049
	BALF	29.8 (26~36)	NA	NA

NA: Not available.

BALF: Bronchoalveolar lavage fluid.

d.a.o: Days after illness onset.

NCP: Novel coronavirus pneumonia.

* Lower cycle threshold (Ct) values indicate higher viral loads

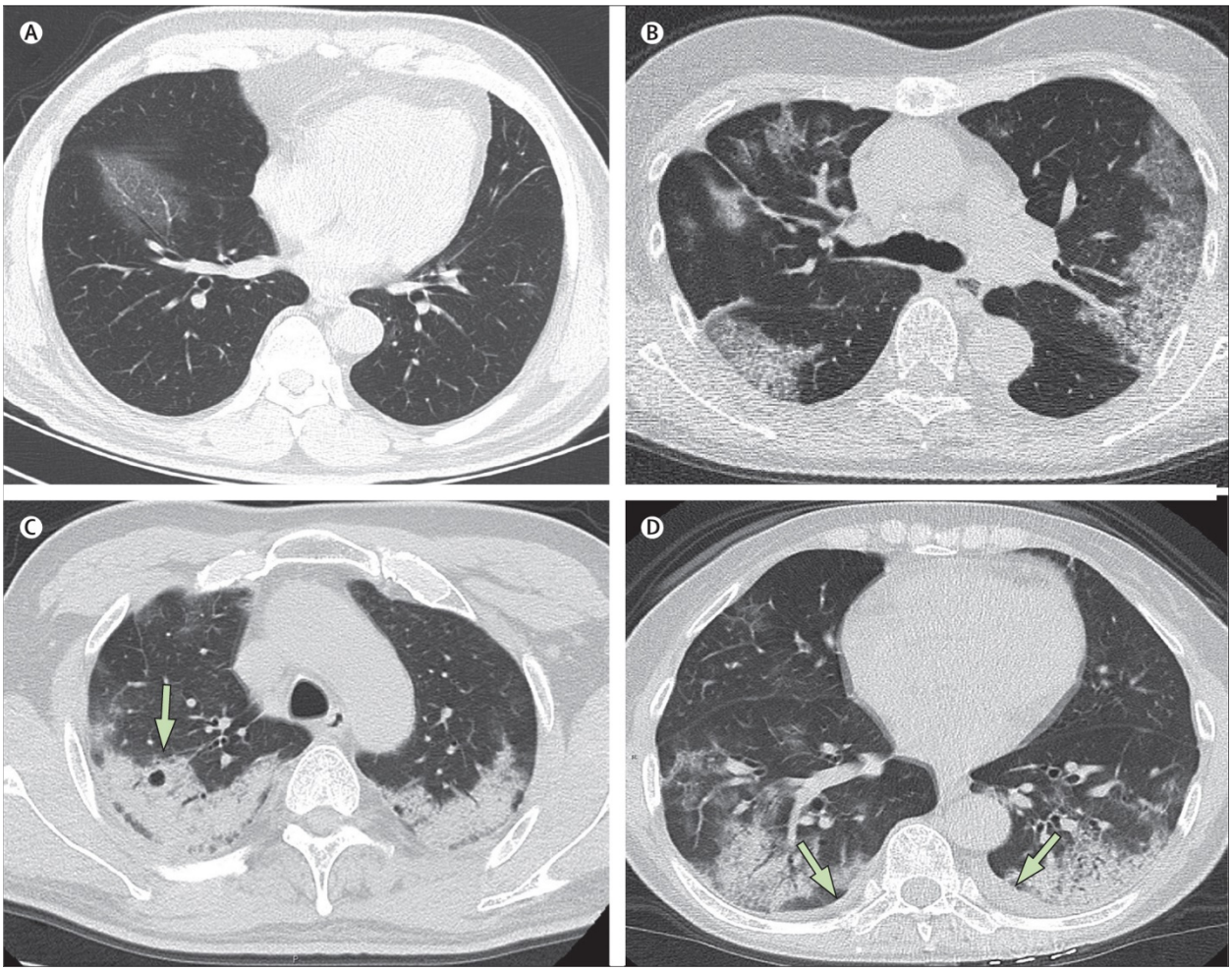

Figure 2Transverse thin-section CT scans in patients with COVID-19 pneumonia

(A) 56-year-old man, day 3 after symptom onset: focal ground-glass opacity associated with smooth interlobular and intralobular septal thickening in the right lower lobes. (B) 74-year-old woman, day 10 after symptom onset: bilateral, peripheral ground-glass opacity associated with smooth interlobular and intralobular septal thickening (crazy-paving pattern). (C) 61-year-old woman, day 20 after symptom onset: bilateral and peripheral predominant consolidation pattern with a round cystic change internally (arrow). (D) 63-year-old woman, day 17 after symptom onset: bilateral, peripheral mixed pattern associated with air bronchograms in both lower and upper lobes, with a small amount of pleural effusion (arrows).[2]

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)
Symptoms — no. (%)					
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 rounding. 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%).
¶ The presence of hepatitis B infection was defined as a positive result on testing for hepatitis B surface antigen with or without elevated levels of alanine or aspartate aminotransferase.
‖ Included in this category is any type of cancer.

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 Pa_{O_2}:F_{IO_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)
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‡	13.4 (11.9–14.8)	13.5 (12.0–14.8)	12.8 (11.2–14.1)	12.5 (10.5–14.0)	13.4 (12.0–14.8)
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}:F_{IO_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%).

Table 3. Complications, Treatments, and Clinical Outcomes.

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)
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)
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%).

Table 1. 2007 Infectious Diseases Society of America/American Thoracic Society Criteria for Defining Severe Community-acquired Pneumonia
Validated definition includes either one major criterion or three or more minor criteria
Minor criteria
Respiratory rate ≥ 30 breaths/min
Pa_{O2}/F_{IO2} ratio ≤ 250
Multilobar infiltrates
Confusion/disorientation
Uremia (blood urea nitrogen level ≥ 20 mg/dl)
Leukopenia* (white blood cell count < 4,000 cells/μl)
Thrombocytopenia (platelet count < 100,000/μl)
Hypothermia (core temperature < 36°C)
Hypotension requiring aggressive fluid resuscitation
Major criteria
Septic shock with need for vasopressors
Respiratory failure requiring mechanical ventilation
*Due to infection alone (i.e., not chemotherapy induced).

Table 2 Clinical Symptoms associated with COVID-19.

Clinical types	Symptoms
Mild type	nonpneumonia or mild pneumonia
Severe type	dyspnea, respiratory frequency ≥ 30/min, blood oxygen saturation ≤ 93%, partial pressure of arterial oxygen to fraction of inspired oxygen ratio < 300, and/or lung infiltrates >50% within 24 to 48 hours
Critical type	respiratory failure, septic shock, and/or multiple organ dysfunction or failure

Table S1. Baseline Information of Cases with Cancer History

ID	District*	Time*	Sex	Complication	Age	Course*(year)	Tumor Type	Phase	Severe events (Yes/No)
NO.1	Hubei	2020/1/22	Male	No	83	4	Bladder cancer	Postoperative routine follow-up	Yes
NO.2	Hubei	2020/1/9	Male	Diabetes, Hypertension	87	2	Colonic tubular adenocarcinoma	Postoperative routine follow-up	Yes
NO.3	Hubei	2020/1/3	Male	No	67	0	Adrenal neoplasms	3 weeks after operation	Yes
NO.4	Hubei	2020/1/9	Female	No	68	8	Breast cancer	Surgical resection plus adjuvant chemotherapy 8 years ago	Yes
NO.5	Hubei	2020/1/14	Male	No	58	7	CRCC*	Recurrence, in immunotherapy	Yes
NO.6	Zhejiang	2020/1/20	Female	No	62	4	Breast cancer	Surgical resection plus adjuvant chemotherapy 4 years ago	Yes
NO.7	Zhejiang	2020/1/20	Male	No	56	5	Rectal carcinoma	Surgical resection plus adjuvant chemotherapy5 years ago	No
NO.8	Guangdong	2020/1/19	Male	No	53	16	Transverse colon cancer	Surgical resection plus adjuvant chemotherapy 16 years ago	No
NO.9	Hubei	2020/1/13	Female	No	63	1	Papillary thyroid microcarcinoma	Postoperative, in TSH inhibition therapy	No
NO.10	Shanxi	2020/1/23	Male	No	47	1	Lung adenocarcinoma	In chemotherapy for advanced tumor	No
NO.11	Zhejiang	2020/1/20	Female	No	52	0.5	Breast cancer	Postoperative, loss of chemotherapy information	No
NO.12	Shandong	2020/1/25	Male	No	47	1	Lymphoma	N.A.	No
NO.13	Hubei	2020/1/12	Male	Diabetes, Hypertension, Cerebrovascular disease	80	4	Bladder cancer	Postoperative, no chemotherapy information	Yes
NO.14	Hubei	2019/12/27	Male	COPD*	79	5	Colorectal carcinoma	Surgical resection plus adjuvant radiotherapy 5 years ago	Yes
NO.15	Hubei	2020/1/17	Male	No	63	1	Lung adenocarcinoma	In chemotherapy for advanced tumor	Yes
NO.16	Hubei	2020/1/23	Female	CKD*	58	2	Lung carcinoma in situ	Postoperative routine follow-up	No
NO.17	Hubei	2020/1/17	Male	No	58	2	Lung adenocarcinoma	Postoperative, In targeted therapy	No
NO.18	Hubei	2020/1/26	Female	No	55	6	Lung adenocarcinoma	Advanced, In targeted therapy	No

* District: District of Diagnosis; Time: Time of Preliminary Diagnosis; Course: Course of Tumor; COPD: chronic obstructive pulmonary disease; CKD: chronic kidney disease; CRCC: chromophobe renal cell carcinoma

Table S3. Logistic regression model for identifying risk factors for severe events

Variables	OR	LL	UL	P value
Age	1.048	1.033	1.064	<0.001
Sex (Female vs. Male)	0.613	0.409	0.918	0.018
Cancer	**5.399**	**1.802**	**16.177**	**0.003**
Hypertension	1.878	1.217	2.898	0.004
COPD	3.397	1.373	8.409	0.008
Diabetes mellitus	2.206	1.331	3.656	0.002

A forward conditional logistic model was used. Other variables including smoking, other comorbidities were removed during modeling. COPD, chronic obstructive pulmonary disease

Table S2. Baseline characteristics between cancer patients and non-cancer patients

Characteristics	Cancer patients	Non-cancer patients	P value
Age	63.1±12.1	48.7±16.2	**<0.001**
Sex (Male%)	61.1%	57.2%	0.814
Known smoking history	22.2%	6.8%	**0.032**
Any other comorbidity*	22.2%	24.2%	1.000
Abnormality in X-ray	22.2%	15.2%	0.504
Abnormality in CT-scan	94.4%	70.8%	**0.033**
Polypnea#	47.1%	23.5%	**0.039**

*, other comorbidities include chronic obstructive pulmonary disease (COPD), diabetes mellitus, hypertension, coronary heart disease, cerebrovascular disease, viral hepatitis type B, malignant tumor, chronic kidney disease and immunodeficiency. #other symptoms being compared but found no difference include fever, cough, expectoration, stuffy nose, conjunctival congestion, headache, sore throat, dyspnea, fatigue, nausea and vomiting, hemoptysis, diarrhea, muscular pain, arthralgia, shivering.

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Recommendations for Prioritization, Treatment and Triage of Breast Cancer Patients During the COVID-19 Pandemic: Executive Summary

Version 1.0

The COVID-19 Pandemic Breast Cancer Consortium.

March 24, 2020

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Executive Summary

The COVID-19 pandemic poses unprecedented challenges for patients, clinicians and health care systems. We assembled representatives from multiple cancer care organizations with expertise in the multidisciplinary management of breast disease to provide preliminary recommendations for the triage and treatment of patients with breast disease amidst the COVID-19 pandemic. These are recommendations, and are not intended to supersede individual physician judgement, nor institutional policy or guidelines. These recommendations should be taken in the context of each institution's resources and prevalence of the COVID-19 pandemic in their region. The consortium highly recommends multidisciplinary discussion regarding priority for elective surgery and adjuvant treatments for your breast cancer patients. The COVID-19 pandemic may vary in severity over time and these recommendations are subject to change with changing COVID-19 pandemic severity.

Recommendations are broken down into the following priority categories based on patient condition[1]: a) Priority A: patient condition is immediately life threatening, clinically unstable, b) Priority B: patient situation is noncritical but delay beyond 6-8 weeks could potentially impact overall outcome, c) Priority C: patient's condition is stable enough that services can be delayed for the duration of the COVID-19 pandemic.

In order to get the information out as quickly as possible prior to publication, we are releasing this executive summary and providing our emails for urgent questions related to treatment of breast cancer patients during this COVID-19 pandemic.

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REFERENCE

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Table 1. Priorities for Breast Disease Focused Outpatient Visits

Priority A	Priority B	Priority C
Potentially unstable (e.g. hematoma, infection)	New diagnosis of noninvasive cancer-convert as many visits to telemedicine visits	Established patients with no new issues
New diagnosis of invasive cancer-may convert to telemedicine visit	Post op patients	Survivorship visits
	Established patients with new problems or symptoms from treatment-convert as many visits to telemedicine visits	Patients at high risk for breast cancer (BRCA carriers, etc…)
		Well breast visits
		Benign breast follow up visits (including atypia and other benign lesions)

Table 2. Priorities for Breast Disease Focused Imaging

Priority A	Priority B	Priority C
None	Diagnostic imaging for breast symptoms or a BIRADS 4-5 screening mammogram	Routine screening can be deferred until the COVID-19 pandemic resolves- It is reasonable for patients in the general population to defer screening mammography for 6 to 12 months, a deferral that is not likely to have an impact on overall survival.
	Biopsies for abnormal mammograms or breast symptoms	Patients with abnormal screening mammograms who can go to 6 month interval imaging
		Defer all screening with other modalities such as MRI or breast U/S

Table 3. Priorities for Breast Disease Focused Surgical Oncology

Priority A	Priority B	Priority C
Incision and drainage of a breast abscess	Neoadjuvant patients finishing treatment	Excision of benign lesions-fibroadenomas, nodules, etc.
Evacuation of hematoma	Clinical stage T2 or N1 ER positive/PR positive/HER2 negative tumors*[&]-some of	Duct excisions

	these patients can receive hormonal therapy	
Revision of ischemic mastectomy flap	Triple negative and HER2 positive patients- In some cases institutions may decide to proceed with surgery versus subjecting a patient to an immunocompromised state, these decisions will depend on institutional resources.	Discordant biopsies likely to be benign
Revascularization/revision of autologous tissue flap-autologous reconstruction should be deferred	Reconstructive surgery should be limited to tissue expander or implant placement- autologous reconstruction should be deferred	High risk lesions-atypia, papillomas, etc…
	Discordant biopsies likely to be malignant	Prophylactic surgery-for cancer and noncancer
	Excision of malignant recurrence	Delayed sentinel node biopsy for cancer identified on excisional biopsy
	Provided that radiation oncology services are available and the risk of multiple visits or deferred radiation is acceptable, eligible patients should have breast conservation. Elective mastectomy with or without reconstruction may be preferred but should be deferred until after the COVID-19 pandemic resolves.	ER positive and ER negative DCIS
		Re-excision surgery
		Tumors responding to neoadjuvant hormonal therapy
		Clinical Stage I ER positive/PR positive/Her2 negative cancers-these patients can receive hormonal therapy

Table 4. Priorities for Breast Cancer Focused Medical Oncology

Priority A	Priority B	Priority C
Neoadjuvant/adjuvant chemotherapy for triple negative and HER2 positive breast cancer	*Higher Priority*: Use of neoadjuvant endocrine therapy to enable deferral of surgery by 6 to 12 months in clinical stage 1 or 2 breast cancers. Many women with early stage, ER positive breast cancers to not benefit substantially from chemotherapy. In general, these include women with stage 1 or limited stage 2 cancers, particularly those with low-intermediate grade tumors, lobular breast cancers, low OncotypeDX@ scores (<25), or "luminal A" signatures. High level evidence supports the safety and efficacy of 6 to 12 months of primary endocrine therapy before surgery in such women, which may enable the deferral of surgery.	Antiresorptive therapy (zoledronic acid, denosumab) that is not needed urgently for hypercalcemia
Early line chemotherapy likely to improve outcomes in metastatic disease	*Higher Priority*: For HER2 positive breast cancer: Adjuvant antibody treatment for may reasonably be curtailed after 7 months instead of 12 months of treatment, as randomized trials show narrow benefits of longer (12M) durations as compared to shorter durations.	Follow up imaging, restaging studies and some echocardiograms and ECGs can be delayed or done at lengthened intervals if clinically stable
Completion of neo/adjuvant chemotherapy (with or without anti-HER2 therapy) that has already been initiated	*Lower Priority*: Later line palliative chemotherapy that is less likely to improve outcomes	Port flush can go to 12 weeks or longer
Continuation of standard adjuvant endocrine therapy	*Lower Priority*: Antibody treatment (i.e. trastuzumab,	In carefully selected patients, particularly those with ER

with oral agents such as tamoxifen or aromatase inhibitors	pertuzumab) for metastatic, HER2 positive breast cancer beyond two years of maintenance in patients with minimal disease burden (follow for progression every 3-6 months)	positive breast cancer, radiation therapy may be delivered before chemotherapy without compromising long term survival, if this facilitates patient safety.
LHRH agonists in the adjuvant or metastatic setting to ensure optimal endocrine therapy	In stage 1, HER2 positive breast cancers, clinicians may substitute trastuzumab-DM1 instead of paclitaxel/trastuzumab for patient safety or convenience based on randomized trial data	
	Consider delaying addition of CDK4/6, mTOR, or PIK3CA inhibitors to endocrine therapy, particularly in first-line and/or situations where endocrine-therapy alone is providing effective tumor control	
Adjusting and Optimizing Treatment Dosing or Scheduling		
Chemotherapy schedules may be modified so as to reduce clinical visits (for instance, using 2 or 3 week dosing instead of weekly dosing for selected agents when appropriate. Patients should receive G-CSF growth factor support so as to minimize neutropenia, while dexamethasone use should be limited as appropriate to reduce immunosuppression.	Neoadjuvant endocrine therapy. Based on randomized trials, preoperative treatment with an aromatase inhibitor may offer clinical benefit over tamoxifen in postmenopausal women. For premenopausal women, LHRH agonists should be used, and aromatase inhibitors are preferred over tamoxifen. Home administration of LHRH agonists by patient or visiting nursing may be considered where that is an option	
Anti-HER2 therapies. Trastuzumab and pertuzumab are unlikely to affect immune function and should be safe for patients.	Anti-Her2 therapies. Antibody treatment in metastatic setting may reasonably be liberalized to longer intervals (e.g. 4	

	weeks)	
LHRH agonists may be given with long acting, every 3 month dosing, to reduce patient visits or alternatively, home administration of LHRH agonists by patient or visiting nursing may be considered where that is an option.	Oral targeting agents (e.g. CDK4/6 inhibitors, mTOR inhibitors, PIK3Ca inhibitors). Use of oral targeted agents must be weighed against the increased risk of adverse events which may increase interaction with healthcare centers and staff. Doses may be reduced to optimize tolerability and minimize treatment related toxicities.	
Endocrine therapies. Oral agents used widely in adjuvant or metastatic setting (e.g. tamoxifen, aromatase inhibitors) should have no effect on immune function and can be safely continued. Fulvestrant should have no effect on immune function but requires monthly clinical administration.		

Table 5. Priorities for Breast Cancer Focused Radiation Oncology

Priority A	Priority B	Priority C
Bleeding/painful inoperable breast mass	Category 1: Adjuvant post-operative breast cancer patients within 16 weeks of last surgery or chemotherapy with high risk indications for radiation such as inflammatory disease, node positive disease, triple negative breast cancer, post neoadjuvant chemo with residual disease at surgery, young age (<40) with additional high-risk features	Patients over age 65-70yo with lower risk Stage I hormone receptor positive/HER2- cancers and taking adjuvant endocrine therapy can be encouraged to defer/omit radiation without affecting overall survival- If patient cannot tolerate endocrine therapy, re-evaluate for radiation depending on individual patient and pathologic factors and current severity of pandemic. Invasive cancers should be prioritized over DCIS.

Patients already on treatment	Category 2: Adjuvant post-operative breast cancer patients within 3-6 months of last surgery or chemotherapy with low intermediate/intermediate risk indications for radiation, such as age < 65yo and stage I/II luminal cancer, ER+ node negative, ER+ node positive, or positive margins-use of hypofractionation where clinically appropriate is recommended to reduce visits	Women with DCIS may omit radiation therapy, especially those with ER positive lesions taking adjuvant endocrine therapy, without affecting overall survival
Patients with spinal cord compression, brain metastases, or other critical metastatic lesions		