Role of ECMO
For the Critical COVID-19 Cases in Shanghai China

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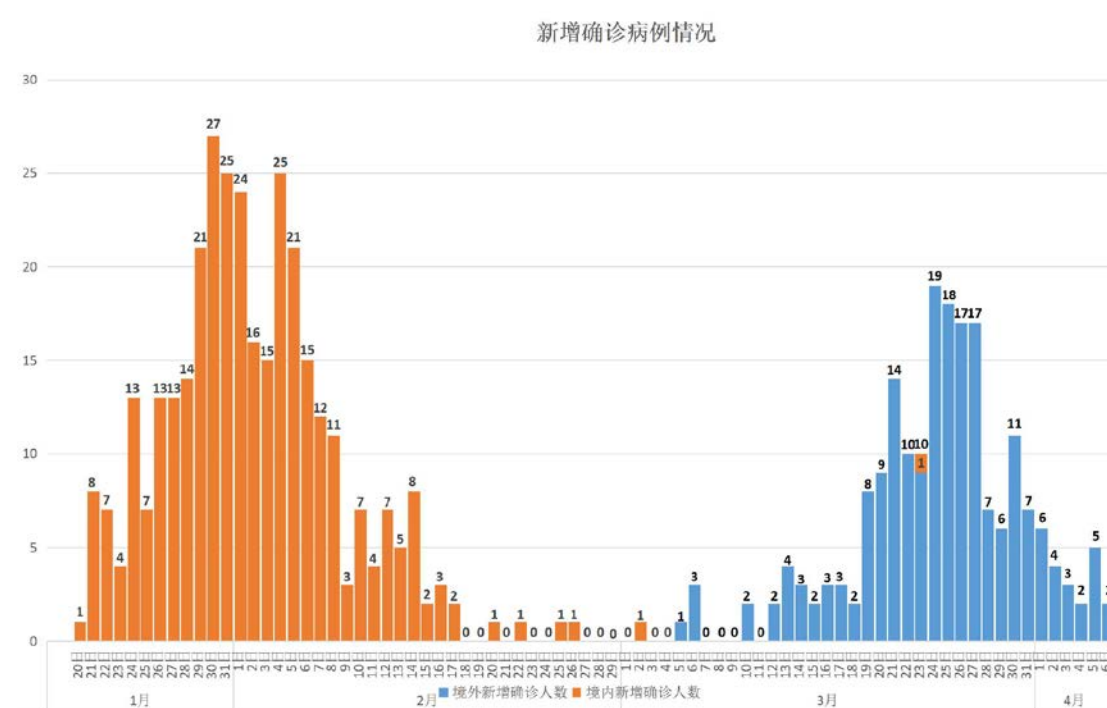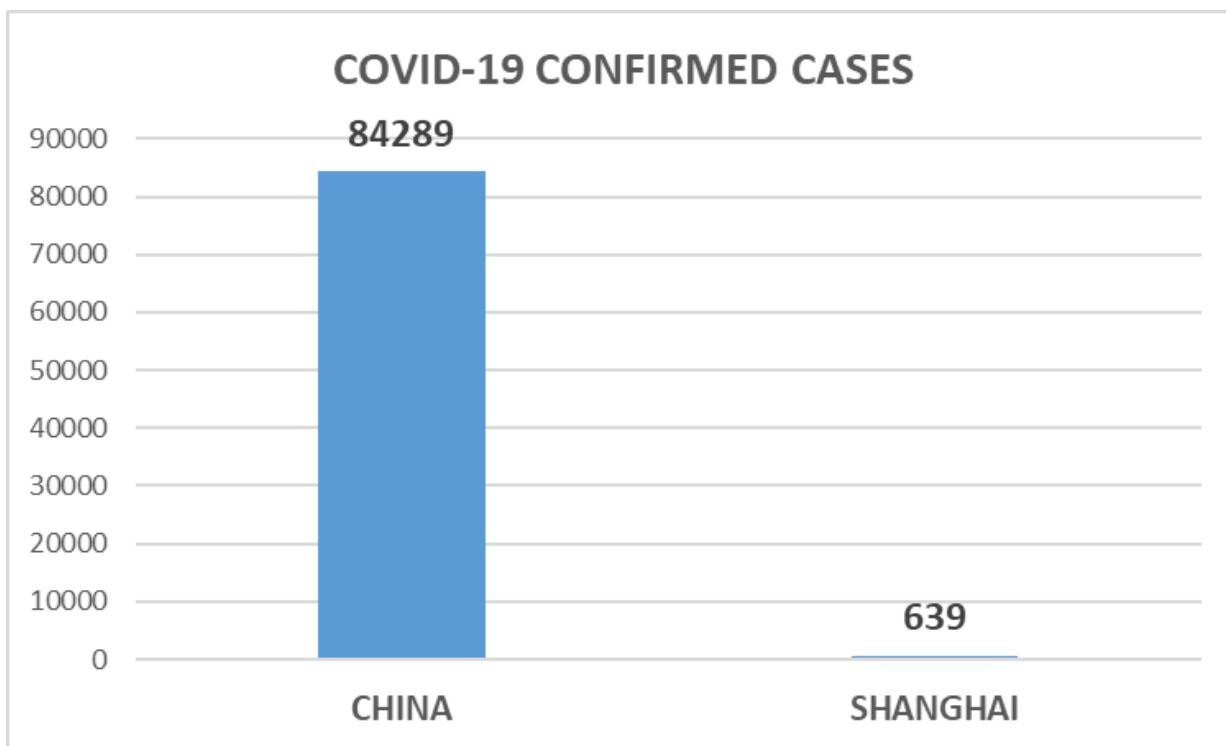Shanghai COVID-19 ECMO Expert Team

Pandemic of COVID-19 in Shanghai, China
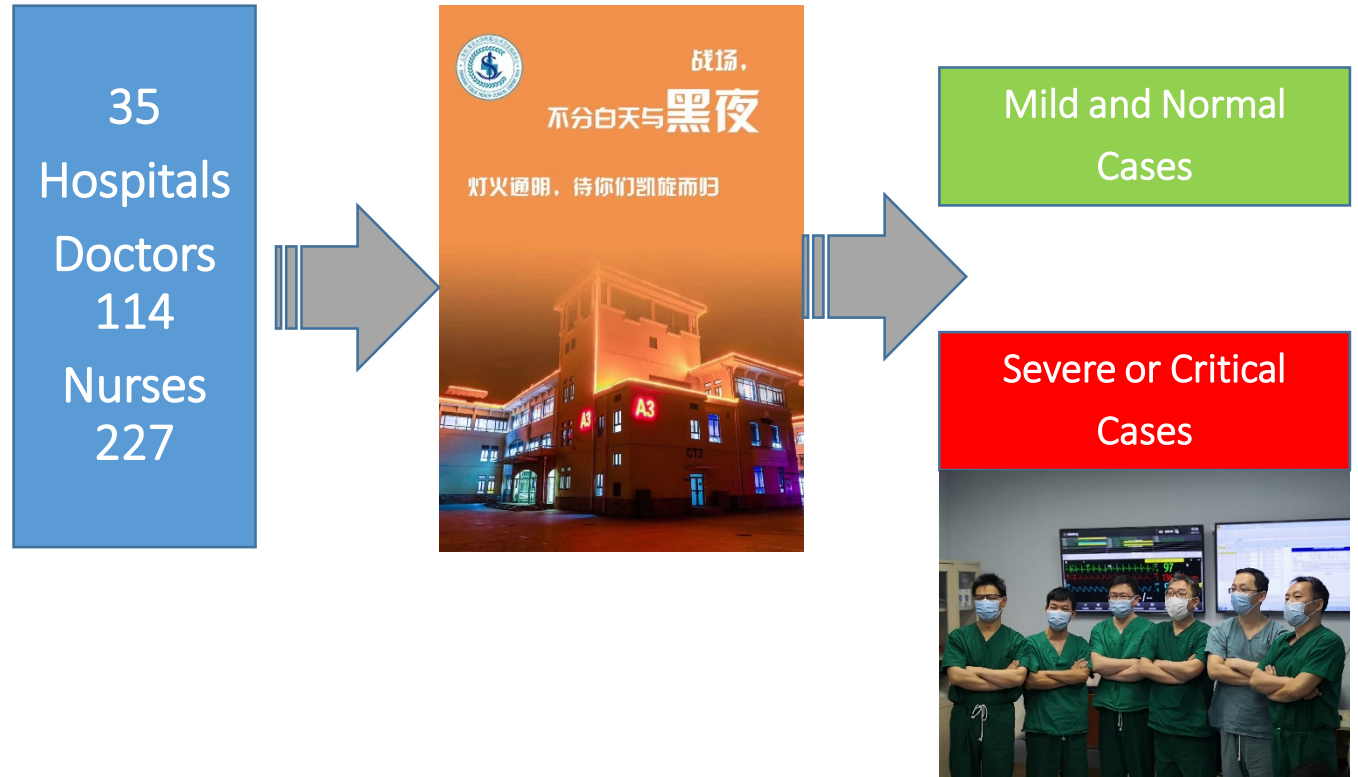
Updated on 22th Apr By China National Health Authority

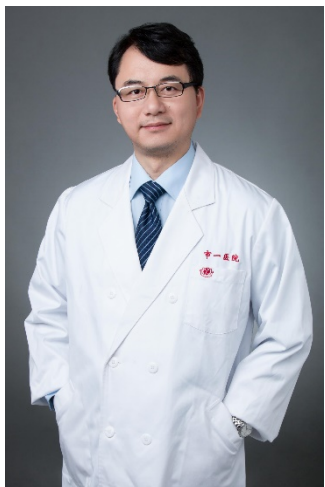# Covid 19 Shanghai Epidemic Summary

- The first patient was confirmed on Jan 20, 2020
- 639 confirmed cases by Apr 22,2020
  - Discharged 532
- All patients were admitted to a COVID-19 designated hospital
- 19 critical cases
  - 7 Death
  - 9 had been on ECMO
  - 11 Discharged home or rehab service
  - 1 still on mechanical ventilation

Shanghai Medical Support Team

35 Hospitals

Doctors 114

Nurses 227

战场，
不分白天与**黑夜**

灯火通明，待你们凯旋而归

Mild and Normal Cases

Severe or Critical Cases

Shanghai
COVID-19
ECMO Expert
Team

"Shanghai F7"

ECMO team

- One supervisor

- 3 ECMO specialists-24/7 in Red Zone
  - Physician Perfusionist
  - Critical Care Physician
  - Pulmonologist

- Responsibility
  - Oversee ECMO management
  - Participate in clinical evaluation and treatment
  - Communicate with the Shanghai COVID-19 Expert Team for guidance
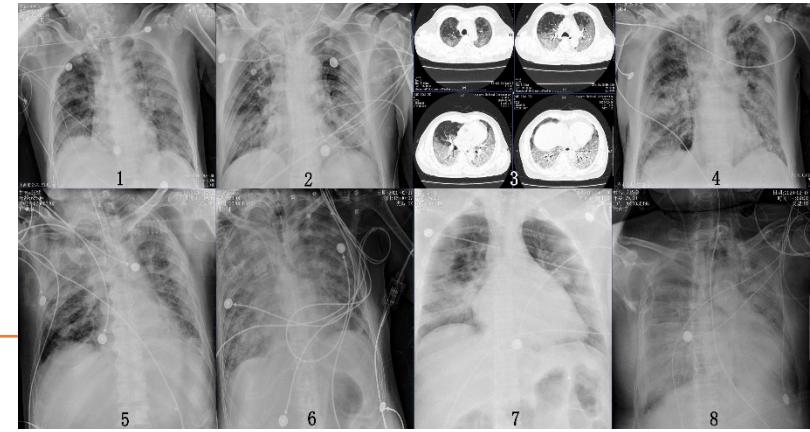

Rotate every 4 weeks from 7 staffs

ECMO for Critical Cases

- ECMO 9
  - ECPR 1 in V-A
  - V-V 8

- Death 5
  - ECPR unsuccessful
  - BMI 40.8,   ECMO twice
  - Malignancy D37
  - 81 y with comorbidities D47
  - Bleeding during weaning D39

- Withdraw 4 –ECMO D23/ D47/ D40/D15
  - 3 Discharged home
  - 1 Still on MV

Infection Control in ECMO Management

ECMO Indication and Timing

Standard ARDS Treatment Before ECMO

protective lung ventilation, optimal PEEP, pharmaceutical recruitment, and prone positioning

ECMO should be actively considered

⊖PaO_2/FiO_2<100mmHg
⊜pH<7.25 & $PaCO_2$>60mmHg over 6hrs

ECMO should be immediately established

⊖PaO_2/FiO_2< 50mmHg over 1 hr
⊜PaO_2/FiO_2<80mmHg over 2hrs
⊛Existence of uncompensated respiratory acidosis with PH<7.2 hour

Preliminary Results-baseline

Patient	1	2	3	4	5	6	7	8	9
Clinical characteristics									
Gender	Male	Male	Male	Male	Male	Female	Male	Female	Male
Age (years)	64	81	62	75	65	63	25	79	76
Weight/BMI (kg)	76/24.5	72/23.8	75/24.3	67/22.4	62/20.8	65/24.2	125/40.8	74/23.6	83/26.2
Comorbidities									
Hypertension	Yes	Yes			Yes			Yes	Yes
Diabetes					Yes				Yes
Cardiovascular disease		Yes							Yes
Malignancy				BC					
Cerebrovascular disease					CI			CI	
COPD									Yes
Chronic kidney disease					MN				Yes
Murray Index	4	4	4	4	4	4	4	4	4

Preliminary Results-ECMO

ECMO parameters									
Patient	1	2	3	4	5	6	7	8	9
RASS	-3~-5	-3~-5	-3~-5	-3~-5	-3~-5	-3~-5	-3~-5	\	-3~-5
P/F before ECMO	67	66	64	75	76	70	54	57	55
Lactate (mmol/L)	2.4	2.8	3.1	4.0	1.3	2.4	3.1	2.1	3.7
Time of mechanical ventilation before ECMO	4	10	12hour	13	4	21	5hour* 13*	5	2
Time of ECMO (day)	40	47	47	37	22	39	8/10	3hrs	11
Mode of ECMO	VV	VV	VV	VV	VV	VV	VV	ECPR-VA	VV
State by now	Home	Died	Home	Died	Home	Died	Died	Died	MV