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

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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
114 Doctors
227 Nurses

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

- PaO₂/FiO₂ < 100 mmHg
- pH < 7.25 & PaCO₂ > 60 mmHg over 6 hrs

ECMO should be immediately established

- PaO₂/FiO₂ < 50 mmHg over 1 hr
- PaO₂/FiO₂ < 80 mmHg over 2 hrs
- Existence of uncompensated respiratory acidosis with pH < 7.2 hour
## Preliminary Results-baseline

<table>
<thead>
<tr>
<th>Patient</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
<tr>
<td><strong>Clinical characteristics</strong></td>
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<tr>
<td><strong>Gender</strong></td>
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<tr>
<td><strong>Age (years)</strong></td>
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<td>81</td>
<td>62</td>
<td>75</td>
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<td>63</td>
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<tr>
<td><strong>Weight/BMI (kg)</strong></td>
<td>76/24.5</td>
<td>72/23.8</td>
<td>75/24.3</td>
<td>67/22.4</td>
<td>62/20.8</td>
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<td>Chronic kidney disease</td>
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<td><strong>Murray Index</strong></td>
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## Preliminary Results-ECMO

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<th>ECMO parameters</th>
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<tr>
<td><strong>Patient</strong></td>
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<td><strong>RASS</strong></td>
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<td><strong>P/F before ECMO</strong></td>
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<td>67</td>
<td>66</td>
<td>64</td>
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<td>76</td>
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<td>57</td>
<td>55</td>
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<td><strong>Lactate (mmol/L)</strong></td>
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<td>2.8</td>
<td>3.1</td>
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<tr>
<td><strong>Time of mechanical ventilation before ECMO</strong></td>
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<td>4</td>
<td>10</td>
<td>12hour</td>
<td>13</td>
<td>4</td>
<td>21</td>
<td>5hour*</td>
<td>13*</td>
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<td><strong>Time of ECMO (day)</strong></td>
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<td>40</td>
<td>47</td>
<td>47</td>
<td>37</td>
<td>22</td>
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<td>VV</td>
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<td>ECPR-VA</td>
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<td><strong>State by now</strong></td>
<td></td>
<td>Home</td>
<td>Died</td>
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<td>Home</td>
<td>Died</td>
<td>Died</td>
<td>Died</td>
<td>MV</td>
</tr>
</tbody>
</table>
USE GLOVES
Wear disposable gloves to avoid contact with potentially infected surfaces.

USE HAND SANITIZER
Use sanitizers to keep your hands and personal accessories clean.

WASH YOUR HANDS
Frequently wash your hands with soap for at least 20 seconds, or use hand sanitizer when soap is not available.

MAKE SUPPLIES
Make sure you have enough supplies to last you a longer time and minimize the potential risks of infection.

SOCIAL DISTANCING
Stay home and keep a distance of at least 1 meter. Social distancing is the most effective way to stop the spread of the virus.

USE DELIVERY
Using delivery services reduces the number of contacts and minimizes the risks of infection.