Prevention and Treatment System against COVID-19 by Whole-process Management and Innovation —SRRSH Experience

Xiujun CAI, MD, FACS, FRCS
President, SRRSH
Outline

01 Overview of the campaign against the virus in SRRSH

02 Early Stage of Epidemic: Prepared for action

03 Outbreak Period: First-level Response to Major Public Health Emergencies

04 Post-Pandemic: Restoration and Precaution

05 Management of Severe and Critical Patients: The experience from frontline teams
Overview of the Campaign

- No. of pts. with fever clinic visiting: 4,659
- No. of suspected carriers isolated: 328
- No. of pts. diagnosed: 9
- No. of sample tested: 1,350
  Positive with COVID-19: 9
- No. of staffs engaged in the frontline: 13,860
- No. of pts. hospitalization/surgical procedures: 16,075 / 2,641

Duration: From Jan. 14 to Mar. 19 (65 days)

NO DEATH, NO HOSPITAL INFECTION!
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Early Stage:
Prepared for action
Rapid Response of Leadership

First coordination meeting for prevention and control planning

- Leading group for prevention and control of COVID-19 infection
- Experts and rescue team for COVID-19 infection

Official Issued Document
THE HOSPITAL LEVEL
- ERP for acute infection diseases (updated)
- ERP for prevention and control of COVID-19 infection
- Workflows for surgical procedures during the period of COVID-19 epidemic
- ERP for inpatients wards during the period of COVID-19 epidemic
- Workflows for fever clinic and quarantine wards
- Guideline for quarantine wards remodeling
- Guideline for clinical sampling and inspection of Suspected carriers
- ......

THE DEPARTMENT LEVEL
- Workflows for radiology
- Workflows for ultrasound
- Workflows for EKG
- Workflows for DSA room
- Workflows for Hemodialysis center
- Workflows for Endoscopic center
- Workflows for Clinical laboratory
- Workflows for nuclear medicine department
- Workflows for COVID-19 infection with ACS
- ......
COVID-19 related Training & Evaluation

Guidelines and workflows are available online

Training for physician, nurse, and rescue team

Mandatory online test for each medical staff
Hardware Preparation for Quarantine

Assigned work space

- Assigned work space was prepared in Radiology and laboratory system

Wards remodeling

- 4 units were remodeled for quarantine of suspected carriers
- 2 units were remodeled as fever clinic
- 1 negative pressure room in ICU was prepared for severe or critical case of suspected carrier
- Emergency quarantine room in each inpatient floor was prepared

Transferring system

- Medical transferring system, including transportation, for the confirmed cases was set up

COVID-19 alert and report system

- Established a hospital-wide COVID-19 alert and report system.
Gate of COVID-19 Control – Fever Clinic

Rational Design

Clear Signs

Designated Route to Radiology Room

Zone setting: three zones and two passages
Gate of COVID-19 Control – Fever Clinic

Epidemic history

- no
  - Waiting area and normal process
- yes
  - Isolation room

Doctor (history, PE)

Quick blood test and flu test

Chest CT scan

Suspected case

Expert consultation

COVID-19 Nucleic Acid test

Isolation ward

Well Equipped Staff
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Outbreak Period:
First-level Response to Major Public Health Emergencies
INNOVATIONS

Upgraded Prevention and Control Procedure on Campus
- A standardized process to take care of the pts. from entrance to ward

Internet + Medical Service
- A solid AI epidemic prevention system

Integrated Medical Resource with Frontlines
- Individualized treatment for each patient
Upgraded Prevention and Control Efforts on Campus

**Screening Point**
Temperature and epidemiological history screening at the main entrance gate

**Health QR Code**
Based on online epidemiological questionnaires and big data (including real-time public data and the social credit system, such as travel, medical records, and Epidemiological history)

- **Red** - Fever Clinic;
- **Yellow** - Special outpatient area;
- **Green** - Normal outpatient area.
High selective admission (emergency/elective)

Reconfirm the epidemiological history and Health code (pts. and accompaniers)

Mandatory chest CT scan before admission

Fixed room and floor for designated physician

Informed consent for the strict hospitalization rules during the epidemic

Inpatient

Upgraded Prevention and Control Efforts on Campus

Sir Run Run Shaw Hospital
Upgraded Prevention and Control Efforts on Campus

- Management of inpatients’ accompaniers
  - Wristband, the only identification for entrance

- Temperature and health code reporting system for pts. and accompaniers

Checklist for Daily Reporting System

<table>
<thead>
<tr>
<th>条目</th>
<th>体温</th>
<th>血压/脉率</th>
<th>呼吸</th>
<th>口罩</th>
<th>体温检测情况</th>
<th>血压/脉率检测情况</th>
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Sir Run Run Shaw Hospital
### Exp 1: Online promotion & education

- **Published 16 articles about this epidemic**
  - More than 100 thousand PViews per article

- **Organized 19 online lectures on epidemic prevention**
  - More than 10 thousand audience in one lecture

- **Broadcasted 14 live sessions on psychological advisory**
  - More than 1.26 million audience cumulatively
Exp 2: Remote inquiry & consultation

The domestic earliest remote inquiry and consultation line
More than 104 teams of medical specialists
Serving for 32674 patients
more than 168 thousand online advisory
Serving for more than 4260 residents of Wuhan online
Supporting more than 1000 people in psychological advisory online
Innovative AI Epidemic Prevention System at SRRSH

Exp 3: Online AI Self-test for COVID-19

- NHC
  Highly recognized and prompted

- 10 seconds
  AI risk assessment
  Link to remote consultation

- The whole patient
  Screening forward
  Treatment separately for patient at risk

- Applied to more than 584
  online medical institutions

- 16.2 million
  Online registered users
Online Prescription and Follow-up System for Chronic Disease

Procedures:
1. Click online clinic
2. Select Follow-up
3. Online inquiry
4. e-prescription
5. Delivery methods
6. Delivery address
7. Pay by insurance
8. Pay the co-pay
9. Medications Delivery
Integrated Medical Resource with Frontlines

MDT & Individualized Treatment

In campus specialists conducted video MDT with medical rescue teams in Wuhan and Jingmen of Hubei.

Implemented individualized treatment for every single severe or critical case.
Innovative Tips for Preventing Hospital Infection

- Temperature & Symptom Monitoring System (TSMS) for staffs with fever and aspiratory symptoms
- Daily COVID-19 prevention and control quality checklist from each staff
- Meal delivery Robot in Quarantine Wards
  - Changed work styles: all the meetings or academic activities went online modes
- Changed the dinning styles: both for staffs and pts.

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SRRSH

Post-Pandemic: Restoration and Precaution

Sir Run Run Shaw Hospital
**Restoration & Precaution**

- **Restoration of medical practice**
  - Enlarge the admission criteria
  - Re-open the reserved inpatient wards
  - Re-start of scheduled surgical procedure

- **Efforts on local business restoration**
  - Instructions and guideline

- **Strengthen innovations in the pandemic**
  - Health code
  - AI Epidemic Prevention System
  - Self checklist
  - TSMS

- **Psychological intervention for the staffs**

**INCREASE OF PROCEDURES IN RECENT 10 DAYS**

- 1: 45
- 2: 47
- 3: 65
- 4: 78
- 5: 62
- 6: 91
- 7: 110
- 8: 121
- 9: 132
- 10: 110
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Management of Severe and Critical Patients:
Experience from Frontline Teams
Management of Severe & Critical pts.

8 batches of rescue teams with total 189
Medical and nursing specialists (Jingmen and Wuhan in Hubei, etc)

Patient Data from Rescue Teams in Wuhan & Jingmen

<table>
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<tr>
<th>ECMO</th>
<th>IMV</th>
<th>NIV</th>
<th>CRRT</th>
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<td>11</td>
<td>51</td>
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Taking care of severe and critical pts.
Dispatch of SRRSH Staff

142
Wuhan Union Hospital Tumor Center

5
Wuhan Puai Hospital

1
Wuhan Tianyou Hospital

1
Wuhan Fangcang Hospital

35
Hospitals in Jingmen

1
Hospitals in Shaanxi

1
First Affiliated Hospital, Zhejiang University School of Medicine

1
Fourth Affiliated Hospital, Zhejiang University School of Medicine

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Management of Severe & Critical pts.

1. Characteristics of severe respiratory failure
2. Ventilation support recommendations
3. Treatments
   - Antiviral Treatment
   - Supportive Treatment
   - Corticosteroids: controversial for the dose and duration
4. ....

To be continued from our infection disease specialists on Q&A
THANK YOU

The virus has been beyond borders, and the collaboration as well!