Summary:

China's "Handbook of COVID-19 Prevention and Treatment"

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Contents

Part One Prevention and Control Management

I Isolation Area Management

Fever Clinic

- layout at entrance; one-way only
- Zone arrangement: independent examination room, a laboratory, an observation room, and a resuscitation room;
- Patient Management:
    - Pts with fevers must wear masks
    - Limit proximity and visitors to minimize exposures
    - Prompt dispositions to minimize exposures
    - Educate pts & families
- Screening, Admission and Exclusion

Isolation Ward Area

- Observation section, isolation section, and isolation-ICU section
- Suspected vs. Confirmed patients are in separate areas
    - Suspected cases in private rooms, private bathrooms
    - Confirmed cases may be in wards, separated at least 4 feet apart
- Patient Management:
    - Visitors not allowed; patients are permitted to keep their phones
    - Educate patients on how to not spread COVID; instruct them on facemasks, hand washing, cough etiquette, home observation, etc.

II Staff Management

Workflow Management

- First must train staff in PPE
- Divide teams; 4 hours maximum in isolation areas
- Before going off-shift, staff must wash themselves and conduct necessary personal hy- giene regimens to prevent possible infection of their respiratory tracts and mucosa.

Health management

- Front line staff shall live in isolation accommodations
- Shall be provided nutritious diet
- Shall monitor and record health status
    - Fever, respiratory symptoms, mental health
    - Isolate if fever/symptoms arise
- Testing recommended when they return to community; if COVID negative must continue isolation 14 days, to protect them

III COVID-19 Related Personal Protection Management (see page 10)

- PPE levels 1, 2, & 3 depending on duties
    - Level 1 (disposable cap, mask, gloves, gown) for pre-exam triage & gen. outpatient dept.
    - Level 2 (disposable cap, N95 mask, goggles, gloves, gown) for noninvasive, non-respiratory contact areas

- Level 3 (disposable cap, N95 mask, goggles, gloves, gown, full-face respiratory protective devices or powered air-purifying respirator [PAPR]) for airway procedures, surgery, or autopsy
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IV Hospital Practice Protocols During COVID-19 Epidemic

- Guidance on donning & doffing procedures for all
- Donning: Protocol for Donning PPE:
  - Put on special work clothes and work shoes →
  - Wash hands →
  - Put on disposable surgical cap →
  - Put on medical protective mask (N95) →
  - Put on inner disposable nitrile/latex gloves →
  - Put on goggles and protective clothing (note: if wearing protective clothing without foot covers, please also put on separate waterproof boot covers), put on a disposable isolation gown (if required in the specific work zone) and face shield/powered air-purifying respirator(if required in the specific work zone) →
  - Put on outer disposable latex gloves

- Doffing: Protocol for Removing PPE:
  - Wash hands and remove visible bodily fluids/blood contaminants on the outer surfaces of both hands →
  - Wash hands replace outer gloves with new gloves →
  - Remove powered air-purifying respirator or self-priming filter-type full-face mask/mask (if used) →
  - Wash hands →
  - Remove disposable gowns along with outer gloves (if used) →
  - Wash hands and put on outer gloves →
  - Enter Removal Area No. 1 →
  - Wash hands and remove protective clothing along with outer gloves (for gloves and protective clothing, turn inside out, while rolling them down) (note: if used, remove the waterproof boot covers with clothing) →
  - Wash hands →

- Enter Removal Area No. 2 →
- Wash hands and remove goggles →
- Wash hands and remove mask →
- Wash hands and remove cap →
- Wash hands and remove inner disposable latex gloves →
- Wash hands and leave Removal Area No. 2 →
- Wash hands, take a shower, put on clean clothes and enter the clean area

Disinfection Procedures for COVID-19 Isolation Ward Area	(see manual)
Disinfection Procedures for Spills of COVID Blood/Fluids	(see manual)
Disinfection Procedures for COVID Reusable Medical Devices	(see manual)
Disinfection Procedures for Fabrics of Suspected or Confirmed Patients	(see manual)
Disposal Procedures for COVID-Related Medical Waste	(see manual)
Procedures for taking Remedial Actions against Occupational Exposure	(see manual)

Surgical Operations for Suspected or Confirmed COVID-19 Patients:

- OR & PPE:
  - Negative pressure ventilation rooms; temp/humidity controlled
  - All surgical personnel (including surgeons, anesthesiologists, hand-washing nurses, and charge nurses in operating room) should put on their PPE in the buffer room before entering the operating room:
  - Put on double caps, medical protective mask (N95), medical goggles, medical protective clothing, boot covers, latex gloves, and powered air-purifying respirator;
  - surgeons and the hand-washing nurses should wear disposable sterile operating clothes and sterile gloves in addition to the PPE as mentioned above;
  - Patients should wear disposable caps + disposable surgical masks according to their situation;
  - The charge nurses in the buffer room are responsible for delivering items from the buffer area to the negative pressure operating room;
  - During the operation, the buffer room and the operating room shall be tightly closed, and the operation must be carried out only if the operation room is under negative pressure;
  - Irrelevant personnel shall be excluded from entering the operating room.

Procedures for Final Disinfection

- Medical waste shall be disposed of as COVID-19 related medical waste;
- Reusable medical devices shall be disinfected according to the disinfection procedures of SARS-CoV-2 related reusable medical devices;
- Medical fabrics shall be disinfected and disposed of according to the disinfection procedures for SARS-CoV-2 related infectious fabrics;
- Surfaces of objects (instruments and devices including device table, operating table, operating bed, etc.);
  - Visible blood/bodily fluid pollutants shall be completely removed before dis- infection (handled in accordance with disposal procedures of blood and bodily fluid spills).
  - All surfaces shall be wiped with a disinfectant containing 1000 mg/L active chlorine and allowed to sit for 30 minutes with the disinfectant.

- Floors and walls:
    - Visible blood/bodily fluid pollutants shall be completely removed before disinfec- tion (handled in accordance with disposal procedures of blood and bodily fluid spills).
    - All surfaces shall be wiped with a disinfectant containing 1000 mg/L active chlorine and allowed to sit for 30 minutes with the disinfectant.
- Indoor air: Turn off the fan filter unit (FFU). Disinfect the air by irradiation by ultraviolet lamp for at least 1 hour. Turn on the FFU to purify the air automatically for at least 2 hours.

Procedures for Handling Bodies of Deceased Suspected or Confirmed Patients (see manual)

Digital Support for Epidemic Prevention and Control (see manual)

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Part Two: Diagnosis and Treatment

I. Personalized, Collaborative and Multidisciplinary Management (see manual)

II. Etiology and Inflammation Indicators
    a. Detection:
        i. Specimen collection
        ii. Nucleic acid detection
        iii. Virus isolation & culture
        iv. Detection of serum antibody
        v. Detecting indicators of inflammatory response
        vi. Detection of secondary bacterial or fungal infection
        vii. Laboratory safety

III. Imaging Findings of COVID-19 Patients
    a. Hi-res CT preferred
    b. Portable CXR for immobile/critical patients
    c. Typical CT features of COVID-19 :
        i. patchy ground glass opacities;
        ii. nodules and patchy exudation;
        iii. multifocal consolidation lesions;
        iv. diffuse consolidation, "white lung"

IV. Bronchoscopy in COVID management
    a. Collection of specimens
    b. Suction of secretions; blood
    c. Control of bleeding
    d. Delivery of therapeutic drugs to bronchi
    e. Aid in the placement of ET tubes or percutaneous tracheostomy

V. Diagnosis & Clinical Classification of COVID infection
    a. Early diagnosis, treatment and isolation should be carried out whenever possible.
    b. Dynamic monitoring of lung imaging, oxygenation index and cytokine levels are helpful for early identification of patients who may develop into severe and critical cases.

c. A positive result of the nucleic acid of SARS-CoV-2 is the gold standard for the diagnosis of COVID-19.
d. However, considering the possibility of false negatives in nucleic acid detection, suspected cases characteristic manifestations in CT scans can be treated as confirmed cases even if the nucleic acid test is negative.
e. Isolation and continuous tests of multiple specimens should be carried out in such cases.
f. The diagnostic criteria follow Protocols for the Diagnosis and Treatment of COVID-2019. A confirmed case is based on epidemiological history (including cluster transmission), clinical manifestations (fever and respiratory symptoms), lung imaging, and results of SARS-CoV-2 nucleic acid detection and serum-specific antibodies.
    i. Clinical Classifications:
        1. **Mild Cases** The clinical symptoms are mild and no pneumonia manifestations can be found in imaging.
        2. **Moderate Cases** Patients have symptoms such as fever and respiratory tract symptoms, etc. and pneumonia manifestations can be seen in imaging.
        3. **Severe Cases** Adults who meet any of the f ollowing criteria: respiratory rate ≥ 30 breaths/min; oxygen saturation ≤ 93% at a rest state; **"Oxygen Index", or (PaO2)/ (FiO2)** ≤ 300 mmHg. Patients with > 50% lesions progression within 24 to 48 hours in lung imaging should be treated as severe cases.
        4. **Critical Cases** Meeting any of the following criteria: occurrence of respiratory failure requiring mechanical ventilation; presence of shock; other organ failure that requires monitoring and treatment in the ICU.
        5. **Critical cases are further divided into early, middle and late** stages according to the oxygenation index and compliance of respiratory system.
            a. Early stage: 100 mmHg <oxygenation index ≤150 mmHg; compliance of respiratory system ≥30 mL / cmH2O; without organ failure other than the lungs. The patient has a great chance of recovery through active antiviral, anti-cytokine storm, and supportive treatment.
            b. Middle stage: 60 mmHg < oxygenation index ≤100 mmHg; 30 mL/cmH2O > compliance of respiratory system ≥15 mL/cmH2O; may be complicated by other mild or moderate dysfunction of other organs.
            c. Late stage: oxygenation index ≤ 60 mmHg; compliance of respiratory system <15 mL/cmH2O; diffuse consolidation of both lungs that requires the use of ECMO; or failure of other vital organs. The mortality risk is significantly increased.

Treatment:

a.
    i. Lopinavir/Ritonavir (2 weeks)

vii. very detailed section on other ECMO and supportive considerations; see manual

viii. 

        - Body temperature are taken twice a day (in the morning and evening) and pay close attention to any changes in the patient's condition.
    - Follow-up
        - A specialized doctor should be arranged for each discharged patient's follow-ups. The first follow-up call should be made within 48 hours after discharge. The outpatient follow-up will be carried out 1 week, 2 weeks, and 1 month after discharge.
        - Examinations include liver and kidney functions, blood test, nucleic acid test of sputum and stool samples, and pulmonary function test or lung CT scan should be reviewed according to the patient's condition.
        - Follow-up phone calls should be made 3 and 6 months after discharge.
    - Management of patients tested positive again after discharge
        - Strict discharge standards have been implemented in our hospital.
        - There is no discharged case in our hospital whose sputum and stool samples are tested positive again in our follow-ups.
        - However, there are some reported cases that patients are tested positive again, after being discharged based on the standards of national guidelines (negative results from at least 2 consecutive throat swabs collected at an interval of 24 hours; body temperature remaining normal for 3 days, symptoms significantly improved; obvious absorption of inflammation on lung images).
        - It is mainly due to sample collection errors and false negative testing results. For these patients, the following strategies are recommended:
        - (1) Isolation according to the standards for COVID-19 patients.
        - (2) Continuing to provide antiviral treatment which has been proved to be effective during prior hospitalization.
        - (3) Discharge only when improvement is observed on lung imaging and the sputum and stool are tested negative for 3 consecutive times (with an interval of 24 hours).
        - (4)Home isolation and follow-up visits after discharge in accordance with the require- ments mentioned above.