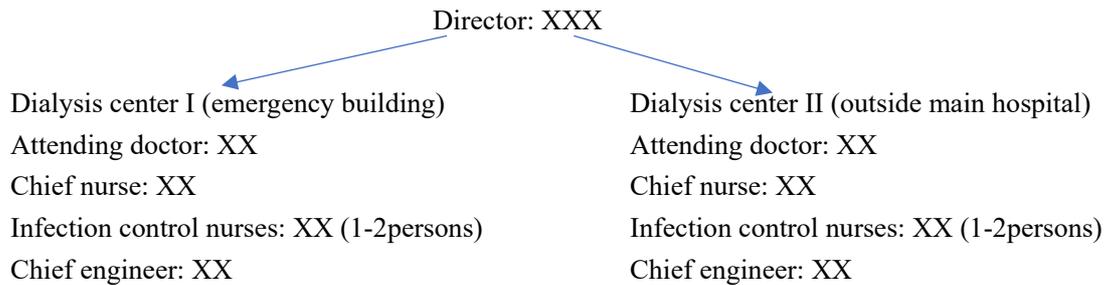


**Recommendations and stipulations for Corona Virus Disease 2019 in Hemodialysis centers
of Peking University 1st Hospital.
(Version 3. 2020.2.29 -)**

Part I. Introduction

- Corona Virus Disease 2019 (COVID-19) is included into the Class B communicable diseases and managed as a Class A communicable disease stipulated in the *Law of the People's Republic of China on the Prevention and Treatment of Infectious Disease*.
- All age groups are susceptible to 2019-nCoV infection.
- The 2019-nCoV infection is primarily spread through respiratory droplets from an infected individual in close contact. Case-based evidence suggests the existence of aerosol and fecal-oral transmission.
- The hemodialysis center belongs to a relatively densely populated place of dialysis patients, their accompanying persons and medical staff.
- The dialysis patients are susceptible to 2019-nCoV infection with a bad prognosis and atypical symptoms (REF1).
- Prevention and control of COVID-19 should be strengthened in our hemodialysis centers.

Part II. Work group for 2019-nCoV infection prevention and control



Part III. Protection of Staff

1. Training of all staff on characteristics, prevention and control of 2019-nCoV infection (Update and adjust at any time according to the epidemic characteristics and guidances of Health Administration).

- Ensure that every employee, including all staff such as doctors, nurses, engineers and service personnel, receives effective training.
- Method: online training and group training in case of safety.
- Assign special persons to be responsible for training target.

2. Minimize gathering medical activities.

- Use online tools or telephones provided by the hospital.
- Wear protective equipment normatively if gathering necessarily to maximize ensuring the safety of all staff.

3. All staff should take protective measures and effectively implement standard prevention.

- Wear qualified masks and hats during work in accordance with regulations.
- Implement hand hygiene strictly, and note that wearing gloves cannot replace hand washing.
- Standard precautions such as wearing goggles or facemasks, and protective clothing should be done under the following conditions: a) pre-examination and consultation; b)

invasive operation; c) connection to vascular access; d) operations (including needle, blood drawing, etc.) that possibly contact with the blood and body fluids of patients.

- Wash or disinfect hands before wearing protective equipment and after removing protective equipment.
4. **Arrange staff on duty reasonably and establish a reserve system to ensure that sufficient staff are on duty.**
 5. **Recommendation to staff for daily monitoring.**
 - **Daily self-monitoring**
 - ✓ Measure your body temperature daily. If you have a temperature of $\geq 37.3^{\circ}\text{C}$ or any respiratory symptom, you should report to the principal as soon as possible, and intervene timely in accordance with relevant procedures.
 - ✓ If your families have symptoms (including fever, cough, etc.), you should report truthfully, and be quarantined and observed if necessary.
 - **Taking meals**
 - ✓ Avoid concentrated dining.
 - ✓ Remove goggles, masks and hats in sequence before meals, and wash hands with running water.
 - ✓ Minimize talking during meals to reduce the spread of droplets.
 - **During the rest period**, you should stay at home as much as possible. Try to isolate from other family members and wear masks if necessary at home.
 - **If you have contact with people** in the epidemic area, or have contact with confirmed and suspected patients, you should report timely and actively, and cooperate with requirements of epidemic prevention personnel to implement isolated observation.

Part IV. Management of Patients and Accompanying Persons

1. **Providing education and training materials on COVID-19 prevention to patients and their accompanying persons.**
 - How to protect themselves in public area
 - How to wash hands correctly
 - How to wear masks correctly
 - Basic knowledge on COVID-19 prevention.
 - Epidemiological survey on the living area, traveling and contact history of patients
2. It is recommended to **fix the accompanying persons**. Except for special conditions, **accompanying persons are not allowed to enter the dialysis treatment room**.
3. **Patients and accompanying persons should wear medical masks** when they enter the dialysis room and during dialysis. (We recommend all of them to wear masks when in public transportation and into buildings of the hospital)
4. **Avoid meals** as far as possible during dialysis. Take some simple food such as candies to prevent hypoglycemia.
5. **Surveillance of patients' temperature and respiratory symptoms of COVID-19** (see the section of "Pre-Examination and Triage" for details).
 - Measure and record body temperature before dialysis.
 - Monitoring respiratory symptoms and the recent suspicious symptoms of COVID-19 (including fatigue, diarrhea, conjunctival congestion and other possible infections)

- Perform relevant tests to exclude **COVID-19** if necessary.
6. During epidemic prevention and control, avoid changing the dialysis center (room) as much as possible for maintenance hemodialysis patients.
 7. When accepting dialysis patients who are shunted by other dialysis centers (rooms) in the area due to the need for epidemic control. Whether there are 2019-nCoV infections must be investigated, and then arrange dialysis according to the relevant principles in the "Pre-Examination and Triage" section.
 8. Establish the key patient information registration in the dialysis room, record the temperature of patients and accompanying persons and their contact history with the confirmed or suspected cases, home quarantine or fever patients.
 9. Establish the patient fever information registration in dialysis room, which records in detail the identity information, body temperature data, dialysis machine number, responsible nurse, patient information of adjacent stations, patient information of the next dialysis patient, positive signs of patients and other contents. Achieve a daily summary of a report.

Part V. Pre-Examination and Triage

- 1. All visiting patients and accompanying persons, need to accept measuring of body temperature by a temperature gun, answer the epidemiological exposure history, whether they are in the medical observation period, and whether they have infectious symptoms before dialysis.**

- 2. COVID-19 screening**

- Identifying patients who need to accept COVID-19 screening:
 - ✓ MHD patients who have body temperature ≥ 37.3 °C (screen temperature by a temperature gun and re-measure the temperature with a mercury thermometer)

OR

 - ✓ Recently appeared infectious symptoms (including fever, cough, chest tightness, fatigue, diarrhea, conjunctival congestion, and etc.)

Notice: If symptoms above appeared either before entering the dialysis room, between dialysis, or after dialysis, patients need to go to the fever clinic of hospital for COVID-19 screening.

- **Screening procedure**
 - ✓ Epidemiological survey
 - ✓ Blood routine and CRP
 - ✓ Chest CT
 - ✓ Coronavirus nucleic acid test

Notice: According to published papers on COVID-19, HD patients with COVID-19 are mostly clinical mild, therefore Chest CT and nucleic acid test are very important [REF1]. The epidemiological history is very important for the areas where the imported cases are the main ones, and it is not reliable for the communities where the outbreak cases occur.

- 3. Determine the dialysis procedures based on comprehensive evaluation of the patient's medical history, symptoms, signs, and examinations and screening of COVID-19:**

- For confirmed COVID-19 patients, report timely according to regulations and transfer to designated hospital or designated department for further treatment.

- For suspected COVID-19 patients, perform bedside CRRT treatment in isolation ward and perform protections according to corresponding regulations, or transfer the patients to the nearest designated hospital for quarantine and treatment.
 - Before the exclusion of COVID-19, fever patients can receive bedside CRRT treatment performed by medical staff in the isolation ward.
 - Fever patients who have been excluded from COVID-19 can be treated with dialysis or CRRT in the isolation treatment area of the dialysis room.
4. **For patients who are home quarantined or have close contact with persons home quarantined**
- Perform bedside CRRT treatment by medical staff in the isolation ward.
 - Arrange the patient for dialysis treatment separately after the completion of others.
 - The medical staff should perform second-level protection, and conduct terminal disinfection after dialysis.

Part VI. Disinfection and Quarantine

1. Strictly comply with the *Technical Standards for Disinfection in Medical Institutions, Hospital Air Purification Management Standards, Technical Guidelines for the Prevention and Control of 2019-nCoV Infections in Medical Institutions* (First Edition) and *Medical Protection Guidelines for Pneumonia Protection of 2019-nCoV Infections* (Tentative Edition) to perform management, and strengthen the supervision.

2. **Complete air disinfection according to the requirements of the *Hospital Air Purification Management Standards***

- Strengthen window ventilation and maintain air circulation.
- Open the fresh air system throughout to ensure air circulation and perform air disinfection on time.
- Turn off the air conditioning system.

3. Disinfection in conventional dialysis center: strictly comply with the *Technical Standards for Disinfection in Medical Institutions* to conduct disinfection.

- Wipe and disinfect the surface of objects and floor between the two shifts with 500mg/L chlorine-containing disinfectant, complete and record the terminal disinfection.
- Wipe and disinfect the desk surfaces, computer screens and keyboards in office areas.
- Wipe and disinfect the Pad used for medical records during dialysis.
- Avoid using paper dialysis records, or use a single page of records for each treatment to avoid entraining the medical records to the treatment area.

(Adjust according to the prevailing situation in Beijing, perform the rule of Disinfection of dialysis units in key epidemic areas: strictly conduct in accordance with the *Technical Standards for Disinfection in Medical Institutions*. Wipe and disinfect the surface of objects and floor between the two shifts thoroughly with 1000-2000mg/L chlorine-containing disinfectant. If the surface of the environmental objects and the floor are contaminated by patient excreta, secretions, vomit, etc., remove it with a hygroscopic material such as a tissue firstly, and cover with rags soaked in 2000mg/L chlorine-containing disinfectant for 30 minutes, wipe and disinfect, and implement and record the terminal disinfection.)

4. Perform terminal disinfection immediately with the assistance of infection control experts if there are confirmed or highly suspected cases of COVID-19 in the dialysis center. It can be used

again only after passing the inspection of infection control experts (which should be combined with local medical conditions).

Part VII. Management of medical waste

Follow the *Medical Waste Management Regulations* and *Medical Waste Management Measures of Medical and Health Institutions* to dispose the medical waste generated by confirmed or suspected patients of COVID-19 into the management of infectious medical wastes.

References.

1. Ma Y, Diao B, Lv X et al. 2019 novel coronavirus disease in hemodialysis (HD) patients: Report from one HD center in Wuhan, China. MedRxiv preprint doi: <https://doi.org/10.1101/2020.02.24.20027201>