

Key Quality Control Links for Prevention and Control of 2019-nCoV in Hemodialysis Centers

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National Medical Quality Control Center for Kidney Diseases

Backgrounds

2019-nCoV infected pneumonia outbreaked in Wuhan City, Hubei Province, and other regions. On January 20, upon approval from the State Council, the National Health Commission includes 2019-nCoV-infected pneumonia into category B infectious disease specified in *the Law of the People's Republic of China on the Prevention and Treatment of Infectious Diseases*, and prevention and control measures for category A infectious diseases are taken. Thirty-one provinces, autonomous regions and municipalities in the mainland of China have all started the first-level response to public health emergencies and implemented the strictest prevention and control measures. Hemodialysis patients generally have low immunity, frequent hospital visits lead to increased exposure opportunities, crowded dialysis room and relatively closed environment, making hemodialysis patients vulnerable groups in this epidemic. In order to prevent the aggregation epidemic in hemodialysis rooms and reduce the risk of hemodialysis patients, the National Medical Quality Control Center for Kidney Diseases has specifically proposed the key quality control links for 2019-nCoV prevention and control during the epidemic. All dialysis rooms (centers) are requested to refer to this guidance.

Key quality control links for 2019-nCoV prevention & control

1. The structural layout and the concept of polluted areas

Under the existing layout conditions, the functional zones should be defined as far as possible, including office and living rooms, warehouses, water treatment rooms, preparation rooms, waiting areas, reception areas, dialysis rooms, sewage washing rooms, etc. Operating rooms may be set up when conditions permit. Different functional areas are divided into clean areas, polluted areas and potential polluted areas according to whether they are easily polluted by patients' blood, body fluids and pathogens. On this basis, clear staff-patient diversion and decontamination diversion should be set as far as possible to reduce the risk of cross infection.

2. Perfect the systems

- (1) Implement the responsibility system, hemodialysis room/center head for the first responsible person;
- (2) Hemodialysis room basic rules and regulations and emergency plans must be complete;
- (3) Daily investigation report system for 2019-nCoV infected pneumonia;
- (4) Full whereabouts report registration system (including weekends);
- (5) Risk education and training system for all staff;
- (6) Epidemic related informed consent systems;
- (7) Family/accompany personnel training and education system (including but not limited to epidemic situation, ventilation, hand hygiene, use of protective equipment, respiratory tract hygiene and public social etiquette).

3. Set up pre-exam and triage post

- (1) On-the-job reception nurses and nursing workers should correctly wear surgical masks and protective screens/masks and isolation suits.
- (2) Position responsibilities:
 - A. Measure and record the body temperature of the patient/accompany personnel;
 - B. Investigate and record the epidemiological history of patients/accompany personnel in epidemic (check the item)
 - Having a history of living in Wuhan and its surrounding areas or other communities with case reports within 14 days.
 - Having a history of contact with symptomatic patients in Wuhan and surrounding areas or other communities with case reports within 14 days.
 - Having a history of contact with confirmed infected persons (i.e. RNA test positive)
 - Clustered infection
 - In the period of medical observation
 - Having a plan to travel to other places in the next 2 weeks.
 - C. Ask dialysis patients (including dialysis interval) if they have any symptoms such as fatigue, dry cough, nasal obstruction, runny nose, sore throat, abdominal pain, diarrhea, dyspnea, etc.; chest x-ray and CT should be taken for those with respiratory symptoms; Is there any abnormality in the following test results (peripheral blood leukocyte, liver and kidney function, muscle enzyme, C-reactive protein, erythrocyte sedimentation rate, blood gas analysis, etc.);
 - D. Escort patients with body temperature $\geq 37.3^{\circ}\text{C}$ and suspected 2019-nCoV infected person to fever clinic.

4. Personnel management

- (1) All the staff

Each dialysis session should be equipped with a team of qualified doctors, nurses, technicians/engineers, and trained handy personnel.

- A. Strengthen the training of all staff on prevention and control of 2019-nCoV infection (try to take non-meeting forms such as internet and telephone etc.);
- B. Full implementation and enforcement of standard preventive measures;
- C. Strictly implement hand hygiene operations;
- D. Take body temperature twice a day, and report body temperature in time and intervene according to relevant regulations;
- E. Wear working clothes and surgical masks correctly during the whole working process. Medical staff must wear surgical masks and protective screens/masks when loading and unloading the machine, performing vascular access surgery/operation, puncture or nursing, etc. If working in dialysis room for medical observation period, medical staff must wear goggles and wear isolation gown. Other staff should move within the specified area and wear protective articles according to the protection requirements of the corresponding area.
- F. Any staff member in medical observation period should not be allowed to work;
- G. Suspected or confirmed novel coronavirus infection should be treated in isolation, and close contacts should be medically observed for 14 days.
- H. Staff members having a high risk of occupational exposure should take vaccines and/or preventive drugs according to the conditions.

(2) Patients

- A. Before entering dialysis room and after dialysis, body temperature should be measured and recorded;
- B. Wear surgical mask or KN95 level mask correctly during the whole process;
- C. Wash hands with seven-step method before and after changing clothes;
- D. No eating during dialysis;
- E. Body temperature measured should be recorded in dialysis treatment sheet.

(3) Hemodialysis patients suspected or confirmed of novel coronavirus infection should be transferred to the isolation area of the designated hospital instead of staying in the original hemodialysis room.

(4) Hemodialysis patients in the medical observation period should be staggered from other patients (e.g. set up 10:00-14:00 session); dialysis should be arranged in an independent room for observation period patients (not shared with those hepatitis positive patients); and disinfection should be strengthened in the dialysis room after dialysis.

(5) During the epidemic prevention and control period, the patient's family members and

accompany personnel should not enter the dialysis room, and the nurses or nursing workers should assist patients to change clothes and move into the dialysis room. Repeated education should be given to patients, family members and accompany personnel, of correct wearing of masks, hand washing, ventilation, public social etiquette, etc. (including the dialysis interval).

5. Patients running-in, outcome and dialysis modality selection

- (1) During the epidemic prevention and control period, the flow of dialysis patients among medical institutions should be minimized. In principle, dialysis patients transferred by themselves from other medical institutions are not accepted.
- (2) In case of patient diversion due to government requisition of hospital, relevant official regulations should be followed. If there were no regulations for reference, it is suggested that the hemodialysis room (center) of the requisitioned hospital should actively contact other dialysis centers in advance, so as to achieve planned diversion.
- (3) The process of receiving patients diverted from other hospitals could refer to that of running-in patients; the epidemiological situation of patients and the original dialysis center should be fully understood; Diverted patients should be staggered from other patients (e.g. dialysis from 10: 00 to 14: 00) and should be arranged in a separate area.
- (4) For newly introduced dialysis patients, the first epidemiological history survey should be conducted.
- (5) For newly introduced dialysis patients, peritoneal dialysis may be given priority if no absolute contraindications.
- (6) For newly introduced dialysis patients suspected or confirmed to 2019-nCoV infection should be transferred to designated hospitals as soon as possible, and dialysis mode should be selected there accordingly.
- (7) Maintenance hemodialysis patients who are judged to be at higher risk of novel coronavirus infection and may benefit from home therapy, could be considered to transfer to peritoneal dialysis.
- (8) Maintenance hemodialysis patients who have been suspected or confirmed needing a designated hospital, or have been medically observed needing a separate dialysis room, could be considered to transfer to peritoneal dialysis if the above demands cannot be met.

6. Vascular access/operation management

- (1) Items of the risk of novel coronavirus infection should be added in the informed consent form.
- (2) The informed consent should be signed by family members without close contact history.
- (3) Patients must be screened for novel coronavirus infection before operation/surgery.
- (4) In principle, the operation/surgery can only be conducted after the 2019-nCoV screening is negative and the observation period is completed.

- (5) In principle, suspected or confirmed infected patients should take operation/surgery after they are transferred to designated hospitals.
- (6) When emergency is occurred before transfer, the operation/surgery should be performed in the isolation operating room (or negative pressure room). The operating room should be disinfected intensively and the patient should be transferred to the designated hospital after surgery.
- (7) For patients who are still in medical observation period and need emergency surgery due to their illness, the operation/surgery should be conducted in the isolation operating room (or negative pressure room). The operating room should be disinfected intensively and the patient should continue his/her medical observation.
- (8) Patients suspected or confirmed to be infected with novel coronavirus or in medical observation period, could be considered to insert a catheter as vascular access instead of autologous arteriovenous fistula (AVF) or graft (AVG).
- (9) When performing a surgery for suspected or confirmed patients or patients in medical observation, operators and assistants should correctly wear medical protective masks, goggles/protective face screen, isolation clothes/protective suits, and other protective equipment as required.
- (10) Strict three-level examinations of indications and contraindications, and perfect the management of preoperative discussion, medical records and early warning of postoperative complications.

7. Dialysis room management

- (1) After each session, open the window and ventilate for 30 minutes.
- (2) Use fresh air system to strengthen cleaning and disinfection, ventilation frequency should be increased. When suspected or confirmed cases occur, the air conditioning and ventilation system should be immediately shut down, then cleaned and disinfected, and restarted only after passing the re-exam.
- (3) Disinfect with chlorine-containing spray or ultraviolet radiation after the daily treatment, lasting for more than 1 hour, and make monitoring records.
- (4) Disinfection of the floor and surface of environmental objects should be carried out strictly in accordance with *the Technical Specification for Disinfection of Medical Institutions*. The floor and surfaces of machines, beds, tables and other objects should be thoroughly wiped and disinfected with 1000-2000mg/L chlorine-containing disinfectant, and make monitoring records.
- (5) If the floor and the surfaces of machines, beds, dining tables and other objects are contaminated by blood, excrement, secretions, vomitus and other pollutants of patients, the visible pollution should be removed with hygroscopic materials such as paper towels first, and then 2000mg/L chlorine-containing disinfectant should be used. Records must be made

for terminal disinfection.

- (6) It is recommended to use a non-contact thermometer to check the body temperature. In case of contact type, the principle of one disinfection for one use must be implemented.
- (7) Medical wastes must be classified, disposed, registered and transported in strict accordance with *the Regulations on the Management of Medical Wastes* and *the Measures for the Management of Medical Wastes in Medical Institutions*. Strengthen the concept of used masks, caps, gloves and other articles as medical wastes and eliminate secondary pollution.
- (8) The medical institution should provide protective articles that meet the requirements for staff.

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