



ORIGINAL RESEARCH PAPER

Medicine

MANAGEMENT, PREVENTION AND CONTROL OF COVID-19 IN DIALYSIS UNIT

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1. Antecedents

On 31 December 2019 the Authorities of the Chinese Popular Republic, communicated to the WHO several cases of pneumonia of unknown etiology in Wuhan, a city situated in the Chinese province of Hubei. A week later confirmed that it treated of a new coronavirus that has been designated SARS-CoV-2. To the equal that others of the family of the coronavirus, this virus causes diverse clinical demonstrations under the term COVID-19, that include respiratory pictures that vary from the common cold until pictures of grave pneumonia with syndrome of distrés respiratory, septic shock and multi-organic failure. The majority of the cases of COVID-19 notified until the moment debut with slight pictures.

The roads transmission of the SARS-CoV-2 are similar to the described for other coronavirus:

- Through the secretions of people infected by respiratory drops of more than 5 micron, that are able to transmit to distances of until 2 metres.
- Through the hands or the fomites contaminated with these secretions followed of the contact with the mucosa of the mouth, nose or eyes.

The SARS-CoV-2 has detected in secretions nasopharyngeal, including the saliva. It has not been able to show the aerial transmission or by aerosols (able to transmit to a distance of more than 2 metres) in the shoot of SARS-CoV-2 in China. Although it has detected the genome and the virus infective in faeces of ill people, the transmission through the faeces is another hypothesis for which does not exist evidence in this epidemic to date. There is not sufficient evidence about the vertical transmission of the SARS-CoV-2, although the data of a series of 9 pregnant indicate the absence of the virus in samples of liquid amniotic, umbilical cord and maternal milk.

2. Objectives

- This document is directed to the handle of patients with suspicion or confirmation of COVID-19 in the unit of dialysis.

- It applies so much to patient dispensaries as to patients hospitalized that require treatment in the units of dialysis.

3. Definition of case of COVID-19

- In a stage of community transmission sustained generalized has to value the detection of infection by SARS-CoV-2 in people especially vulnerable that present a clinical picture of acute respiratory infection, after a clinical assessment individualized.

4. Taking, handle and transport of samples for the diagnostic of COVID-19

- In the event that the criteria for conducting a diagnostic test for the detection of SARS-CoV-2 infection are met, the following samples must be taken:
- Taking of peripheral blood pre-dialysis in lilac tube for determination of IgG IgM
- Upper respiratory tract: exuded nasopharynges/oropharynges
- Since there may be knocks or spills during transport, clinical samples sent out of the hospital must be treated as potentially infectious and will be considered category B (they must be transported in triple packaging)

5. Teams of individual protection (EPI) for the sanitary personnel in contact with cases of COVID-19

- Health personnel attending to cases of SARS-CoV-2 infection or people entering the isolation room or zone must wear personal protective equipment to prevent infection by microorganisms transmitted by drops and by contact that Include a gown, mask (surgical or FFP2 depending on the type of procedure to be performed and always ensuring sufficient stock for situations where its use is expressly indicated), gloves and eye protection. It is especially important to ensure the proper functioning and proper sealing of the respiratory protection masks used.
- The procedures that generate aerosols should be performed only if they are considered strictly necessary for the clinical management of the case. In order to carry out these procedures,

the number of people in the room should be reduced to a minimum and all should carry:

- An FFP2 or FFP3 self-filtering mask if available.
- Fitted full-frame eye protection or full face shield.
- Gloves.
- Long-sleeved gowns (if the gown is not waterproof and splashes of blood or other bodily fluids are expected to occur, add a plastic apron).
- Strict hand hygiene will be followed before and after contact with the patient and the removal of protective equipment.
- A record will be made of each of the professionals who have come into contact with the patient, for control and monitoring purposes.

6. Mediated for the prevention of COVID-19 in units of dialysis

The following measures have to use in group with the measures of prevention and control of specific infection for the unit of hemodialysis and of dialysis peritoneal.

6.1. General measures of information and performance headed to patient for the prevention of infection COVID-19

- Information signs on hand hygiene, respiratory hygiene, and cough management should be posted at the entrance to the dialysis unit and in the waiting rooms and posters to inform patients that they should notify the unit's health personnel if they have symptoms / signs of ARI, if possible, before coming to the dialysis session.
- In these areas, there will be dispensers with alcohol-based preparations for hand hygiene, disposable tissues for respiratory hygiene and waste containers with a plastic bag and opening lid with pedal for disposal.
- All patients are healthy, possible, probable or confirmed, they will wear a surgical mask during the transfer and throughout the dialysis session.

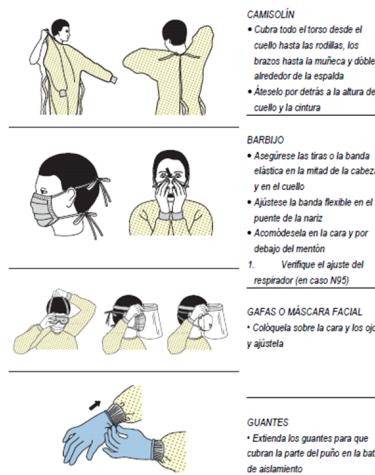
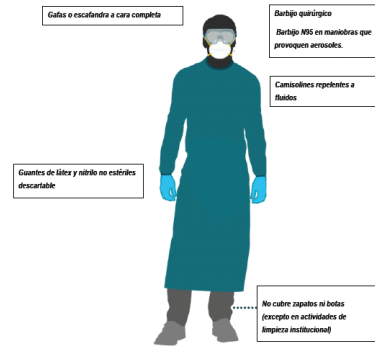
6.2. General measures headed to the protection of the health of the workers

- The number of healthcare and non-healthcare workers in direct contact with dialysis patients with suspected or confirmed COVID-19 will be minimized. With this objective, the workers of these units should be assigned ensuring that they are the ones who interact in the care of these patients. As far as possible, there should be no rotations of assigned personnel.
- Exposure of health and non-health workers who, depending on their personal characteristics, pathologies, medication, immune disorders, etc., should be avoided. are considered more susceptible to the risk of infection.
- Health and non-health workers dedicated to the care of patients with COVID-19 or exposed to environments likely contaminated by the virus, should receive adequate and sufficient information, education and training, based on all available data.
- This will include training in: mode of transmission, potential health risks, precautions to take, respiratory protection and hand hygiene measures, use of clothing and personal protective equipment, measures to be taken in the event of incidents and their prevention. as well as the recognition of the symptoms associated with the infection for the implementation of measures aimed at avoiding the transmission of the infection.
- Workers who are not caring for patients with COVID-19 and who are not exposed to environments likely to be contaminated by the virus should also receive information and training on infection prevention.

6.3. General measures in relation to the sanitary transport no urgent of patients to the units of dialysis

- Regarding the transfer of patients to the dialysis units, it should be recommended that, if possible, they do so with their relatives in their own vehicle, trying to avoid collective transport.

- In the case of requiring ambulance medical transportation, the number of patients accessing at the same time should be limited (up to a maximum of 4 patients).
- The personnel in charge of transport must apply self-protection measures and apply preventive measures (ask about symptoms, mandatory use of masks ...)



7. Measures for handle of patients with COVID-19 (possible cases, likely or confirmed) in dialysis

The measures and cautions for the handle patient with COVID-19 (possible case, likely or confirmed) have to include the standard cautions, cautions of contact and cautions of transmission by drops, and used in group with the specific cautions for the prevention of infections in dialysis.

7.1 Location of patients with COVID-19 in the units of dialysis

- The transfer of these patients in an individual ambulance that has the driver's cabin physically separated from the patient's transportation area will be previously arranged. If this is not possible, transport will be organized in such a way that these patients will be transported jointly on the one hand and healthy patients on the other.
- The permanence of these patients in the waiting room will be avoided by adjusting the session schedule. If this is not possible, these patients will be separated by at least 2 meters in all directions in relation to other patients. If there is more than one case, these patients will be scheduled on the same shift.
- If possible, a specific physically isolated room will be designated to dialyze these patients.
- If there is more than one patient with suspicion or confirmation of COVID-19, isolation of cohorts can be established to dialyze them simultaneously in the same room at nearby posts and by the same personnel.
- If a specific physically isolated room cannot be dedicated for these patients, they will be dialyzed at the end of the day and they will be located at the end of the room where there is less traffic and personnel flow. These patients will be at least 2

meters apart in all directions relative to other patients.

- In the case of hospitalized patients, whenever possible they will be dialyzed in their room with portable water plants.
- In the dialysis room there will be dispensers with alcohol-based preparations for hand hygiene, disposable handkerchiefs for respiratory hygiene and waste containers with a plastic bag and opening lid with pedal for their elimination, and the elimination of other disposable materials such as masks. .
- All patients should perform an AVF wash at home and complete the procedure with alcohol disinfection in the dialysis station.
- The hemodialysis machine used in a suspected or confirmed case of COVID-19 could then be used for another patient through adequate external disinfection of sodium hypochlorite.

7.2 Personnel to the care of patients with COVID-19

- Specific health personnel will be assigned to care for these patients. These personnel must wear PPE (gloves, gown, mask, eye protector) both for the care and care of the patient and for taking samples.
- The number of people entering and leaving the room will be reduced to a minimum.
- Personnel responsible for cleaning areas with coronavirus patients should also wear a suitable PPE.
- Likewise, anyone who must enter the room who has direct contact with infected patients or their contaminated environment will get PPE.
- Strict hand hygiene will be carried out always before and after contact with the patient and after the withdrawal of the PPE.
- Visits to these patients will not be allowed during their stay in the dialysis room.
- A record will be made of all the personnel of the dialysis unit that attends to possible, probable or confirmed cases of SARS-CoV-2 infection.

7.3 Detection and statement of cases of COVID-19 in patients in dialysis

- A record will be made of all probable and confirmed cases of COVID-19.
- All patients who are not in the previous registry, will be asked on arrival at the unit and prior to the dialysis session, if they have symptoms / signs of ARF and will be evaluated individually to confirm the existence of ARF. If they present compatible symptoms, they will be classified as possible cases and a pre-dialysis peripheral blood sample will be taken and, if necessary, nasopharyngeal and / or oropharyngeal exudate for PCR.
- Confirmed cases must be reported urgently to the 171 or 911 service, which in turn will notify the convention center either IESS or MSP.

7.4 handle of patients with COVID-19

- All dialysis patients that are probable or confirmed cases should come with a surgical mask. Possible cases will be fitted with a surgical mask and a pre-dialysis peripheral blood sample or nasopharyngeal and / or oropharyngeal exudate will be taken to perform diagnostic PCR. The person taking the samples must use a PPE.
- All cases (possible, probable, or confirmed) will be located in the dialysis unit following the guidelines given in section 7.1 (Location of COVID-19 cases).
- The patient will be instructed in the correct hand washing / hygiene, respiratory hygiene (use of masks, disposable handkerchiefs that will cover the mouth and nose when coughing or sneezing and how to dispose of it).
- Hospitalized patients after the dialysis session ends:
- You will be transferred to your home service with a surgical mask.
- The responsible personnel who transfer you will wear a surgical mask.

- Once the patient is located in his home service, the isolation regulations established there will be followed.
- Patients who are in home isolation after the dialysis session ends:
- They will be transferred to their home with a surgical mask in an individual ambulance that has the driver's cabin physically separated from the patient's transportation area. If this is not possible, transport will be organized in such a way that they are transferred jointly to these patients.
- These patients will also come by ambulance on dialysis.
- Once at home, the patient will follow previously established home isolation regulations.
- The personnel involved in the transfer must be previously informed of the risk and that they must wear PPE (gown, gloves, surgical mask).
- The presence of companions during ambulance transport should be avoided as much as possible. In the event that a patient requires it, said companion must also wear PPE (gown, gloves, surgical mask) being provided from IARE.
- The cleaning and disinfection of the ambulance will be done in accordance with the company's normal procedures. Cleaning workers will be provided with the necessary PPE.

7.5 POST-EXPOSURE PROPHYLAXIS

- On the other hand, hydroxychloroquine is a drug that is already being used in the field of SARS-CoV-2 for post-exposure treatment and prophylaxis and that has shown some efficacy in slowing down virus replication and shortening the duration of COVID-19. .
- The 12-week, double-blind, randomized trial aims to include a total of 4,000 healthcare workers from 61 public and private hospitals who are at risk of exposure to SARS-CoV-2 in 14 autonomous communities. Potential participants include doctors, nurses, nursing assistants, laboratory and radiology technicians, and caretakers. Participants are being randomized to one of the following four study arms:
- 200mg of hydroxychloroquine (half daily tablet) + one TDF / emtricitabine placebo tablet
- 1 daily TDF / emtricitabine placebo tablet + Hydroxychloroquine placebo medium tablet

8.Cleaning, disinfection and management of waste

8.1. Cleaning and disinfection of teams and sanitary material

- Coronaviruses are especially sensitive to cleaning products and disinfectants commonly used in the healthcare environment and have sufficient capacity to inactivate the virus, so special products are not required. Check in the technical specifications of the products used the viricidal level and that they comply with the UNE 14476 standard.
- It is recommended that the non-critical material (stethoscope, sphygmomanometer, thermometer ...) be exclusively used by the patient. The material that is going to be used later with another patient must be properly cleaned and disinfected or sterilized, depending on the type of material in question, according to the usual protocols of the center.
- The material to be reprocessed will be transported to the cleaning area in a closed container. For the reprocessing of the material, the personnel will use the personal protection equipment that is commonly used for the material cleaning and disinfection processes. No special cleaning and disinfection products are required, the products commonly used in health centers have sufficient capacity to inactivate the virus.
- The cleaning and disinfection of the hemodialysis machines will be carried out following the usual rules established for the cleaning and disinfection of these machines.

8.2. Cleaning and disinfection of surfaces and spaces

- It is important to ensure proper cleaning of surfaces and spaces.
- The procedure for cleaning and disinfecting the surfaces and

spaces in contact with the patient will be done in accordance with the usual policy of cleaning and disinfection of the center.

- There is evidence that coronaviruses are inactivated by contact with 0.1% sodium hypochlorite solution, 62-71% ethanol, or 0.5% hydrogen peroxide, within one minute. It is important that there is no moisture left on the surface near the patient. Disinfectant wipes can be used.
- The usual detergents and disinfectants authorized for this purpose (with viricidal effect) will be used and disposable textile material will be used for the surfaces.
- Cleaning staff will receive training and information prior to the first entry into the box or room and will use the PPE (gown, gloves, mask)
- The general cleaning will always be wet, from the cleanest to the dirtiest areas.
- The used material that is disposable, will be placed in a waste container with a plastic bag, and it will be labeled with the precise warnings.

8.3. Clothes of bed

- No special treatment is required for the clothes used by the patient and for the dishes or disposable kitchen tools. The usual procedures will be followed.
- The removal of clothing from the patient's room will be carried out according to the recommendations, bagged and closed inside the room itself.

8.4. Management of waste

- The waste generated in patient care is considered Class III waste and therefore must be disposed of as special bio sanitary waste..

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