

COVID-19: ISN recommendations

The International Society of Nephrology has put together this page to provide the global nephrology community on updates on the current global novel Coronavirus (COVID-19) pandemic. This page is a companion to the recently published article in *Kidney International* "[The Novel Coronavirus 2019 Epidemic and Kidneys](#)". We will continue to update the information on these pages as the situation changes. Our aim is to provide the global kidney health community (physicians, non-physician health workers as well as the general public) on the current knowledge and best practices and stories from around the world.

- [Recommendations for the Novel Coronavirus 2019 Epidemic](#)
- [COVID-19 Webinar](#)

Recommendations for the Novel Coronavirus 2019 Epidemic: Kidney Patients, Health Care Professionals and Family/Caregivers

Saraladevi Naicker, Chih-Wei Yang, and Vivekanand Jha

Novel coronavirus disease (COVID-19) is a newly discovered contagious disease caused by SARS-CoV-2 virus, primarily manifesting as an acute respiratory illness with pneumonia, but can affect multiple organs such as kidney, heart, digestive tract, blood and nervous system [1,2](#). The majority of infections either do not produce any symptoms or cause a mild flu-like illness that resolves spontaneously. The common clinical presentations of COVID-19 are fever (98%), cough (76%), and myalgia and fatigue (18% each)[3](#). Symptoms of upper respiratory infection with running nose and productive cough are uncommon, except in children. About 16-20% cases have been classified as 'severe' or 'critical'.

COVID-19 is more contagious than previous coronavirus infections (severe acute respiratory syndrome (SARS-CoV) and Middle East Respiratory Syndrome coronavirus (MERS-Co-V)). It spreads by human-to-human transmission via droplets from coughing or sneezing, fecal or direct contact, and has an incubation period (interval between getting the infection and development of symptoms) estimated at 1 to 14 days (usually 3 to 7 days). The infection can be transmitted even during the incubation period.

Pregnant women, the newborn and the elderly, and patients with comorbidities (like diabetes mellitus, hypertension, cardiovascular, chronic lung and chronic kidney disease) are particularly susceptible to COVID-19 infection and are likely to have more severe illness. Infection has been reported in all ages, including in children.

Diagnosis:

The diagnosis is mainly based on obtaining an accurate history of contact with someone who could have been infected (hard to accurately determine in case of contact with someone who does not yet have symptoms), clinical manifestations, and laboratory examination [4](#). Of note, the recent increase in cases has been primarily amongst those without any travel history or apparent contact with infected individuals. A number of organizations have provided technical guidance for laboratory testing for the COVID-19 infection including collecting and handling specimens[5](#). Where available, healthcare professionals should be guided by country-specific advice from.

[A] Recommendations for prevention and treatment of COVID-19

General measures for prevention

The following are general measures advised by Center for Disease Control (CDC)[6](#), and the National Institute for Communicable Disease (NICD)[7](#), of South Africa to minimize exposure to COVID-19:

1. Wash your hands often with soap and water for at least 20 seconds.
(<https://www.youtube.com/watch?v=d914EnpU4Fo>)
2. If soap and water are not available, use an alcohol-based (>60% alcohol) hand sanitizer.
3. Avoid touching your eyes, nose, and mouth with unwashed hands.
4. Avoid close contact with people who are sick.
5. Stay at home when you are sick and try and keep your distance from others at home.
6. Cough or sneeze into a tissue or a flexed elbow, then throw the tissue into the bin.
7. Clean and disinfect frequently touched objects and surfaces.
8. Avoid touching surfaces used in public places. You may want to use a hand towel or tissue if possible when touching doorknobs, light switches, etc.
9. You may want to take your shoes off when you enter your house. Some people have outdoor shoes and indoor shoes or slippers.

10. Avoid greeting people with a handshake, hug or a kiss. A smile and a verbal greeting will be just fine.
11. If you are sick, stay home, except to get medical care. Or if someone else is sick, avoid visiting or being with the sick person.
12. If you have traveled to another country where the coronavirus has been confirmed or you have been with someone who has a confirmed case of the coronavirus, inform your health authority as you may need to be quarantined for 14 days.
13. If you have concerns about being exposed to the coronavirus, use your judgment—you may want to avoid attending large public events, or travel to countries with with large numbers of infections.
14. Contact your doctor if you feel sick. The main symptoms of the Coronavirus are: fever, cough, and shortness of breath. Your doctor can order a test if the Coronavirus infection is suspected.
15. Avoid contact with farm or wild animals (alive or dead), animal markets, and products that come from animals (such as uncooked meat).
16. Wear a facemask if you are sick and are around other people or visiting a health facility or if you are caring for someone who is sick

General management

All the patients with confirmed COVID-19 should be quarantined. Not all patients need hospital admission. In view of rapidly increasing demand, countries are developing hospitalization policies. In general, high-risk patients, or those with severe infection need admission in isolation units in designated hospitals. Supportive care, namely bed rest, nutritional and fluid support, maintenance of blood pressure and oxygenation are important measures, as for all critically ill patients.

[B] The impact of COVID-19 infection on kidneys

There is no evidence that COVID-19 infection affects the kidneys adversely in those with mild to moderate infection. However, amongst those who develop severe infection and require hospitalization, kidney abnormalities are seen in 25-50% of subjects, manifested as increased excretion of protein and red blood cells in urine. A small proportion (less than 15%) develop a decline in filtration function of kidneys (acute kidney injury). The long-term health effect of kidney injury on survivors of COVID-19 infection is not known.

[C] COVID-19 in patients with chronic kidney disease

COVID-19 infection presents a special threat to patients with CKD, especially to those on dialysis and kidney transplant recipients. Hemodialysis patients may have milder clinical disease than other patients with COVID-19 infection. Kidney transplant patients should undertake the measures above recommended to prevent infection. All patients should continue all medicines in prescribed doses including ACE inhibitors unless advised otherwise by their treating doctors.

Strategies for management of patients on dialysis

COVID-19 infection presents particular challenges for patients on dialysis, in particular, in-center hemodialysis (HD). Uremic patients are particularly vulnerable to infection and may exhibit greater variations in clinical symptoms and infectivity. Further, unlike other individuals who may have COVID-19 infection, patients with COVID-19 infection still need to come to the dialysis center for regular dialysis. This increases the risk of transmission of infection, including to medical staff and facility workers, other patients and all others in contact.

As part of routine infection control, dialysis facilities should have established policies and protocols in place to prevent or reduce the spread of infectious disease.

The Chinese Society of Nephrology⁸, and the Taiwan Society of Nephrology⁹, have recently developed guidelines for dialysis units during the COVID-19 outbreak, in addition to the American Society of Nephrology/ Centers for Disease Control (CDC)¹⁰, and the European Renal Association (ERA-EDTA)¹¹. A summary of these guidelines is provided below.

Recommendations for hemodialysis unit staff

Facility and staff

1. Posters/notices should be placed at the entrances and waiting areas highlighting symptoms of COVID-19 infection.
2. Posters/notices should be placed at the entrances and waiting areas advising on hygiene measures (hand washing/sanitization procedures and cough/sneeze etiquette).
3. A working team consisting of dialysis physicians, nursing staff and technologists should receive training in updated clinical knowledge of epidemic COVID-19, notification of infection at risk, epidemic prevention tools, and guidelines from the government, academic society, and hospital authority. The list of staff should be recorded and be retained by dialysis hospitals.

4. Information on travel, occupation, contacts, and clusters history (TOCC) of each medical staff, dialysis patient, their family members, residents of the same institution, and colleagues at work should be collected and updated regularly.
5. Latest care recommendations and epidemic information should be updated and delivered to all medical care personnel.
6. Group activities, including group rounds, group studies, and case discussions should be avoided or minimized.
7. It is recommended that staff members have meals at different time to avoid dining together. Goggles, masks, and hats should be removed before meals, and hands washed with flowing water. Talking during meals should be minimized to reduce the spread of droplets.
8. Staff should self-monitor their symptoms and should inform the team leader in case they or their family members develop symptom(s) suggestive of COVID-19 infection.
9. Entrance control, identification and shunting of people at risk of infection, body temperature measurement, hand washing, wearing proper (surgical or N95) masks throughout the dialysis process, machine disinfection, environmental cleanliness, good air conditioning and ventilation conditions, should be instituted.
10. Do not touch patients or use stethoscope unless essential

Patient management

1. All patients should have their temperature monitored on arrival for dialysis.
2. Patients and accompanying persons should be given hands-free hand sanitizer while entering the dialysis room.
3. Patients should avoid meals during dialysis. They can bring convenience food such as candy to prevent hypoglycemia.
4. Patients who have fever or respiratory symptoms should call their dialysis unit before arrival, be assessed in a room or area separate from the dialysis area and should be screened for COVID-19 infection. Patients with suspected COVID-19 infection should receive "Fixed Dialysis Care Model" as below during the 14-day period of quarantine.
 - i. Place of dialysis treatment: patients should continue hemodialysis at the original hemodialysis center and not change to another center.
 - ii. Dialysis shift and personnel: Do not change dialysis shifts and caregiver staff to avoid cross contamination and infection.
 - iii. Patients who need vascular access surgery should be screened for novel coronavirus before the surgery. Operations on patients with confirmed or suspected novel coronavirus infection should be carried out in a designated room with necessary protection for medical staff.
 - iv. Transportation: Public transport should not be used. Patients should arrange personal transportation and take fixed transportation routes. Transport personnel and escorts should wear surgical grade or N95 masks throughout.
 - v. All patients who have fever should be screened for novel coronavirus infection, and should be given dialysis in the last shift of the day until COVID-19 infection is excluded.
 - vi. Pass route for entering hospital and dialysis unit: The pick-up and drop-off should not be shared with other dialysis patients. Entering and exiting with other patients at the same time should be avoided. The route, mode and time of transport of dialysis personnel should be fixed.
 - vii. Precautions in dialysis unit: Patients should not be in close proximity, with a space of at least 6 feet between patients; treatment and waiting areas should have good air conditioning and ventilation to remove droplet particles from the air.
 - viii. Designated care personnel: All personnel involved in direct patient care should undertake full protection, including long-sleeved waterproof isolation clothing, hair caps, goggles, gloves and medical masks (surgical mask grade or above). Hand hygiene should be strictly implemented.
 - ix. Dialysis machines: Equipment that may come into contact with patients or potentially contaminated material should be disinfected according to standard protocols.
5. If a new confirmed or highly suspected case of COVID-19 infection in dialysis centers is identified, disinfection should be carried out immediately. Areas in close contact with these patients should not be used for other patients until cleared.
6. The medical waste from confirmed or suspected patients with COVID-19 infection should be considered as infectious medical wastes and disposed accordingly.
7. The health department should be notified in instances of suspected or confirmed COVID-19 infection.

The table below suggests the protective gear required for different levels of anticipated contact.

STAFF CATEGORY	HAND HYGIENE	EYE PROTECTION	N95 *** RESPIRATOR	SURGICAL MASK	APRON	GOWNS (Disposable)	GLOVES (Disposable)
Reception staff	Yes						
Triage Staff	Yes			Yes			
Healthcare worker* attending to the patient (routine examination)	Yes	Yes		Yes	Yes		Yes
Healthcare worker* Performing aerosol generating procedures ** and caring for a confirmed case of very ill patient	Yes	Yes	Yes		Yes (if gown is not available)	Yes	Yes
Housekeeping staff	Yes			Yes	Yes		Yes
Security officer/porter	Yes			Yes (only if the patient does not wear a mask)			
Staff transporting	Yes						

Recommendations for family members and caregiver

1. All the family members living with dialysis patients must follow all the precautions and regulations given to patients to prevent person-to-person (as above) and within family transmission of the COVID-19, which include body temperature measurement, good personal hygiene, handwashing, and prompt reporting of potentially sick people.
2. Dialysis patients, who have a family member or caregiver subject to "basic quarantine", can have dialysis as usual in accordance during the 14-day period.
3. Once the family members or caregiver of dialysis patients have been converted to a confirmed case, the patient's identity should be upgraded and treated in accordance with the above-mentioned recommendations.

In summary, COVID-19, a disease caused by a novel coronavirus, is a major global human pandemic. The impact of this infection in those with CKD has not been fully studied, and the management of patients on dialysis who have been suspected to have been in contact with COVID-19 should be carried out according to strict protocols to minimize risk to other patients and healthcare personnel taking care of these patients.

References

1. Wang D, Hu B, Hu C, et al. Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. JAMA,2020. doi:10.1001/jama.2020.1585.
2. World Health Organization. Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19). Available at <https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>. Accessed 02 Mar 2020

3. Huang C, Wang Y, Li X, Ren L, Zhao J. et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *The Lancet* 2020; 395: 497–506.
4. The National Health Commission of PRC. Guideline for diagnosis and treatment of novel coronavirus disease (version 6)[OB/EL]. 2020.02.18.
5. University of Minnesota Center for Infectious Disease Research and Policy. COVID-19 Lab Guidance & Diagnostics. Available at <http://www.cidrap.umn.edu/covid-19/lab-guidance-diagnostics>. Accessed 15 Mar 2020
6. <https://www.dpcedcenter.org/news-events/news/coronavirus-disease-covid-19-information-for-dialysis-patients/>; accessed 9 March 2020.
7. <http://www.nicd.ac.za/diseases-a-z-index/covid-19/covid-19-prevention/> ; accessed 9 March 2020.
8. Chinese Society of Nephrology. Recommendations for prevention and control of new coronavirus infection in blood purification center (room) (First trial version). Chinese Society of Nephrology, 2 March 2020
9. Hwang S-J. Guideline for dialysis facilities during COVID-19 outbreak, Taiwan Society of Nephrology, 16 February 2020.
10. American Society of Nephrology. Information for Screening and Management of COVID-19 in the Outpatient Dialysis Facility. February 28, 2020 <https://www.cdc.gov/coronavirus/2019-ncov/index.html>; accessed 11 March 2020
11. <https://www.era-edta.org/en/covid-19-news-and-information/>; accessed 12 March 2020.