

# Hemodialysis Unit Preparedness **During And After** COVID-19 Pandemic



---

**COVID-19 Kidney Health Action Group**

(v 1 date 19 April 2020)

## INTRODUCTION

---

COVID-19, a respiratory illness caused by a newly discovered coronavirus, has become a pandemic affecting over 1.9 million people with over 130,000 deaths in 210 countries.

Some people become infected with the virus but do not develop symptoms. When they appear, symptoms are non-specific, with fever, cough, shortness of breath, sore throat, fatigue, and headache being the most common. Symptoms are usually mild and benign in a vast majority (>80%) and recede gradually, leading to a full spontaneous recovery.

A small number become seriously ill, develop difficulty in breathing and complications related to other organs. They may require hospitalisation and a smaller subset need ICU care. The mortality is relatively higher in the latter group. This risk goes up in the elderly and those with co-morbidities (such as hypertension, diabetes, cardiac disease, kidney failure). Still, it is essential to emphasise that everybody is at risk for severe disease (including the relatively young and healthy dialysis staff).

The strategy of physical distancing, case finding, contact tracing and quarantine/isolation of positive cases and high-risk contacts is critical to controlling the spread of this infection. This strategy is being implemented through nationwide lockdown during the period of intense transmission. Still, physical distancing is likely to remain in force after the end of the current lockdown to prevent disease spread.

The virus spreads mainly from person-to-person through droplets produced especially when an infected person coughs or sneezes, and can be passed on to others in close proximity (within about 6 feet) or through contact with the surfaces that have the virus on it followed by touching their face, mouth, nose or eyes. Dialysis staff remains in close vicinity to patients for long periods of time. Finally, dialysis units have a lot of surfaces including beds, chairs, equipment etc that can get potentially contaminated.

Patients with chronic conditions need to receive regular medical care. In particular, patients on maintenance in-center hemodialysis need to come to their dialysis centers two to three times every week in order to receive this life-saving therapy.

In addition to dialysis units, patients are likely to get this infection in their communities as well. In turn, one infected patient can pass on this infection to other patients and staff in the unit. It is crucial, therefore, for the dialysis units to develop strategies that protect ALL patients and staff.

A number of bodies, including the International and National Societies of Nephrology and hospitals around the world have developed guidance for the operation of dialysis units. They were sourced from journals, web portals and personal communications. These guidelines, including those by the Indian Ministry of Health and Family Welfare, were reviewed by members of this group, and a consensus was reached through a series of email exchanges and videoconferences. In addition, the group also considered the challenges being faced during the implementation of such guidance.

During their review, the group recognised that guidance by the various expert groups/bodies are broadly similar, suggesting that this checklist is valid and should be applied in all circumstances.

It is currently believed that those who have recovered from COVID-19 would develop antibodies that will confer protection from future infection. While this is likely to be the case, the group felt that this still remains to be proven, more so for dialysis patients with impaired immune response. Also, it is unknown how long such immunity will last. Finally, the virus might mutate (like common influenza virus) and infect those who have had previous infections with different strains. The hope is that a vaccine will allow generation of quick immunity. Until then, all dialysis patients and staff should be considered at risk.

## **WHY THIS PREPAREDNESS CHECKLIST AND HOW TO USE IT?**

---

Given the increased infection risk, and recognising that a coronavirus positive person can spread the virus before developing symptoms, mitigation steps need to be in place and followed in all dialysis units at all times.

As coronavirus spreads through our country, dialysis patients and staff will remain at risk of exposure to the coronavirus in the course of their normal activities even after the initial peak. Preventing disease spread will require a fundamental change in the way human interaction takes place in dialysis units. Since patients and dialysis staff interact closely for extended periods, units will need to be prepared for a 'new normal' where they always follow the precautions described here.

Dialysis staff are used to following protocols. As with the WHO Safe Surgery Checklist, the current preparedness checklist has been developed to standardise processes further, reduce errors and avoidable complications, improve teamwork and increase communication, thereby leading to consolidation of the culture change in response to the pandemic. This checklist requires making changes in the way units operate currently, including a shift in mindset, mainly by providing more clear role-definition and guidance around attention to detail.

An added benefit of this checklist is a likely reduction in the risk of non-COVID infectious complications in dialysis units, including catheter-related bacteremias.

In the opinion of the group, the checklist needs to be gone through at least once every day, or more frequently (such as before and after every shift) if required. Each unit should designate a leader who will go through this list at a pre-determined frequency (e.g. daily) and monitor its implementation.

## **DIALYSIS FACILITIES**

---

There is broad consensus that all cases with confirmed Coronavirus infection who need to be in a healthcare facility should be managed in an isolated area, and should have dedicated staff

without change in duty areas. This includes Coronavirus positive patients who need dialysis. Since it can be anticipated that coronavirus infection will become widespread in the long run, all units need to develop an isolation facility for COVID-19 patients. At this time patients are being referred to designated hospitals for dialysis, which is impractical in the long run.

The issue of cohorting patients with suspected CoV infection was discussed. The group agreed that since a substantial proportion are likely to test negative, they should not be dialyzed with those confirmed to have the infection. It was agreed that dialysing them in a separate shift or clear physical separation is the most feasible strategy at this time.

The In-charge of the Dialysis Unit must put together a working team consisting of physicians, nursing staff, and technologists. They should receive training in updated clinical knowledge of COVID-19, notification of cases, epidemic prevention tools, and guidelines. The list of staff should be recorded and retained by dialysis units.

In the worst-case scenario, we can expect sick patients with COVID-19 to develop kidney failure that will lead to a surge in patients requiring dialysis. Some of this surge will divert resources from ESKD patients on chronic dialysis, leading to a forced reduction in service provision. Several interventions have been suggested to manage this situation. For patients - these include enforcement of fluid restriction, use of potassium binding resins and oral alkali (non-potassium containing) or 'total-nephron blockade' (use of multiple diuretic combination with complementary mechanisms of action to maximise urine output (in non-anuric patients). Other considerations to augment capacity include using peritoneal dialysis, preparing locally-made replacement fluids for CRRT, and reducing frequencies of intermittent therapies (HD, SLED).

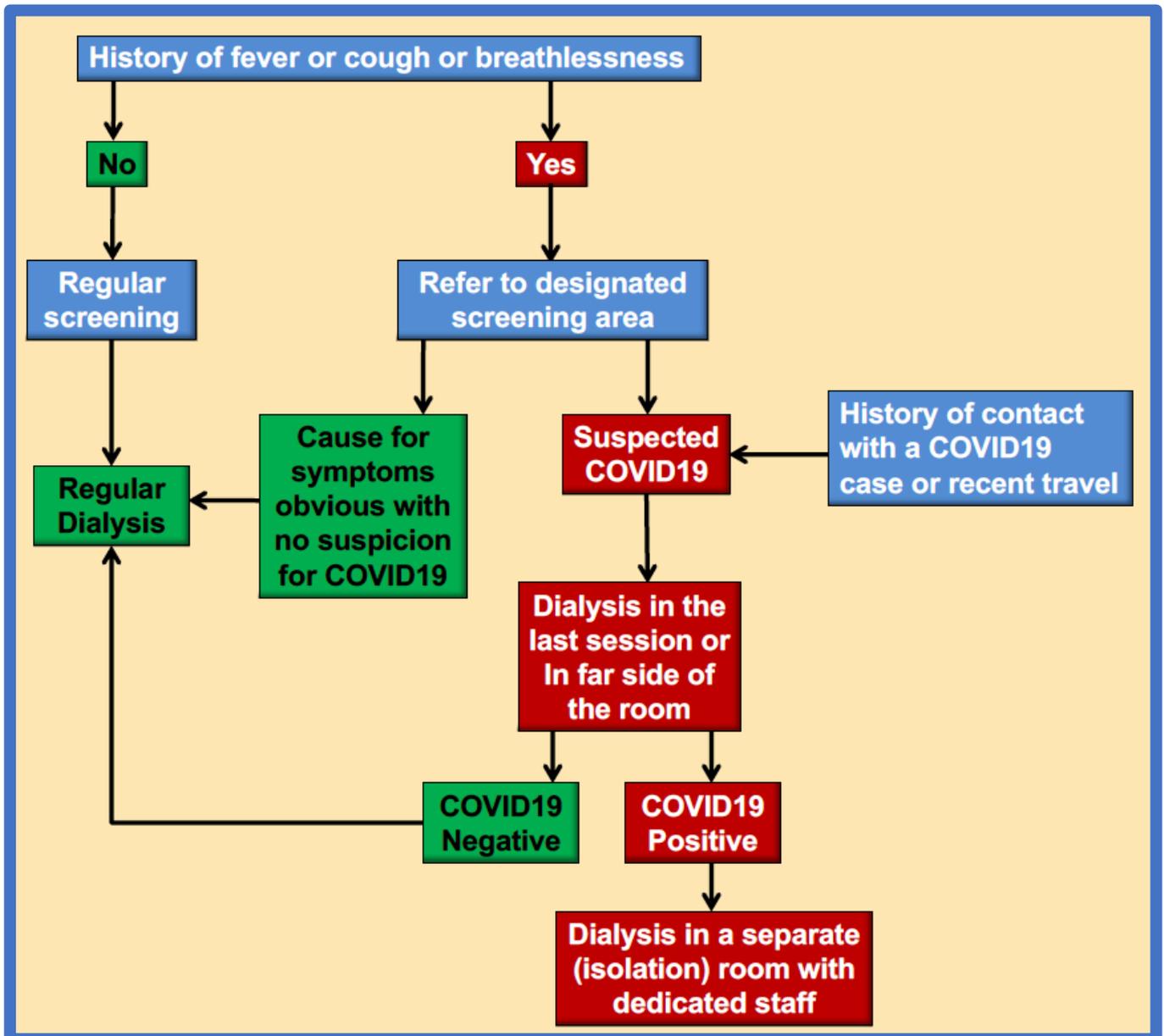
If the number of Coronavirus positive cases grows, shortage of resources is likely to present a major challenge. Resource conservation, both manpower and supplies, is therefore important.

As the sick COVID-19 patients are likely to receive multiple pharmacological interventions - including novel antiviral agents - considerations about drug dose adjustment and interaction should be kept in mind. Many of these drugs have likely not been tested in dialysis patients and therefore carry unpredictable toxicities.

Closure of even one dialysis unit places an undue burden on the patients who needs to find another facility (which is likely to be already full). Therefore, shutting down a dialysis unit should be a measure of last resort.

Information should be provided in a way that prevents panic and undue burdening of dialysis staff. All units should have a protocol for testing staff or patients. A suggested flow is shown in the figure on the following page.

## Suggested algorithm for COVID screening in a dialysis unit



An important question is what to do when a dialysis patient or dialysis staff is found to be COVID-19 positive. In usual healthcare settings, the contacts of the patient are quarantined and tested if symptomatic. However, in the context of a dialysis centre, this means shutting down the dialysis centre or significantly scaling down services. The group does not recommend quarantining all staff or closing down of dialysis units as they provide essential and lifesaving treatment for which there is no alternative. The likelihood of a staff not involved in direct care of such a patient being at risk of getting this infection is very low. India does not have

extra dialysis capacity to accommodate closure of dialysis units. Moreover, this situation can be repeated in the next unit. The likelihood of death from coronavirus for a dialysis patient is likely in the 1-10% range. However, the possibility of death from missing dialysis is 100%.

In case a dialysis patient or staff is found to be COVID-19 positive, the unit should undergo full disinfection over 24 hours and then resume dialysis. All patients & staff should be tested for COVID-19, but ONLY those who test positive and/or are considered as 'high risk' contacts (directly involved in care of the positive person) should be quarantined. Staff who test negative can come back to work and be closely monitored for symptoms suggestive of COVID-19.

## DIALYSIS STAFF

---

Dialysis staff is the most valuable resource for ensuring the continued operation of units. The administrators must provide all staff with the necessary protective gear. Because PPE likely will need to be deployed for many weeks or months in this current pandemic, care must be taken to establish policies that will not exhaust available supplies of these precious resources.

- Dialysis staff should be instructed to maintain physical distancing and wear masks when interacting with colleagues and patients at all times, including when they come to and leave work.
- Staff should not sit in close proximity while eating or drinking.
- If the dialysis units are arranging living quarters for their HCW then they need to be given individual quarters and not cohorted in one hall.

Several personal and societal consequences of COVID-19 have been noticed, including the impact on mental health and social stigmatisation. Creating awareness and support for prevention and countering myths and social stigma is important. The most important support, however, is the provision of full and role-appropriate PPEs.

In case of shortages, acceptable alternatives should be agreed upon and sourced. For example, waterproof rain pants and jackets can be worn under a standard reusable or disposable sterile gown along with a shower cap, shoe covers, a home-made face shield and N95 mask. In case of shortage of N95 masks, they should be prioritised for those taking care of positive or suspected patients and/or during aerosol-generating procedures.

It is important to emphasise that even during shortages, all efforts should continue to procure proper PPEs (as described in the checklist) at the earliest.

While supplies can be replenished relatively rapidly but it is hard to find a substitute for skilled workforce engaged in providing dialysis. It is important, to optimize staffing and HD patient scheduling and cross-training staff in multiple tasks.

## **PATIENTS**

---

Transport to and from dialysis units is a crucial issue for patients. While the choice of transport will depend upon the resources available, it should be guided by the principle of distancing and avoidance of coming in close contact with someone who cannot be traced. Patients should be advised not to take public transport since reliable physical distancing is difficult. Patients should come unaccompanied whenever possible and not bring any personal items with them. Eating is not allowed in the dialysis room since it requires the removal of masks and generates aerosols.

Patients should be advised not to visit a healthcare facility unless essential. Units should extend teleconsultation services, using telephones, social media or other online platforms.

All patients need to have regular access to essential medicines needed to manage their health. Where possible, refilling of supplies should be coordinated with dialysis visits.

## About COVID-19 Kidney Health Action Group

---

This document was developed and will be maintained by the [COVID-19 Kidney Health Action Group](#), a voluntary group of nephrologists committed to improving the care of patients with and at risk of kidney disease in India. Members of the group are:

- **Divya Bajpai**, Seth GS Medical College and KEM Hospital, Mumbai
- **Natarajan Gopalakrishnan**, Madras Medical College, Chennai
- **Noble Gracious**, Government Medical College, Trivandrum
- **Ajay Kher**, Max Hospital, Vaishali, Uttar Pradesh
- **Vijay Kher**, Medanta the Mediciti, Gurgaon. Past-President, Indian Society of Nephrology
- **Dinesh Khullar**, Max Hospital, Saket, New Delhi
- **Valentine Lobo**, KEM Hospital, Pune
- **Sandeep Mahajan**, All India Institute of Medical Sciences, New Delhi
- **Gopesh Modi**, Samarpan Kidney Center, Bhopal
- **Ajit S Narula**, Fortis Escorts Kidney Institute, New Delhi
- **Sreejith Parameswaran**, Jawaharlal Institute of Medical Education and Research, Puducherry
- **Narayan Prasad**, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow. Hon. Secretary, Indian Society of Nephrology
- **Mohan M Rajapurkar**, Muljibhai Patel Urological Hospital, Nadiad, Past-President, Indian Society of Nephrology
- **Raja Ramachandran**, Postgraduate Institute of Medical Education and Research, Chandigarh
- **Manisha Sahay**, Osmania General Hospital, Hyderabad
- **Vivekanand Jha**, George Institute for Global Health India, New Delhi

**This checklist is not a guideline or an official document. It is intended to be used as a constant reminder and practice guide, so that these practices and principles on which they are based are internalised in the day-to-day working of the staff in the dialysis unit, and by patients and their caregivers. It should be used in conjunction with local policies and official guidance from health authorities or hospitals.**

**Please address any correspondence to [vjha@georgeinstitute.org.in](mailto:vjha@georgeinstitute.org.in).**