Recommendations from the Brazilian Society of Nephrology for approaching Covid-19 Diagnostic Testing in Dialysis Units

Recomendações da Sociedade Brasileira de Nefrologia para abordagem de exames diagnósticos da Covid-19 nas unidades de diálise

ABSTRACT

The Covid-19 pandemic brought several challenges to the healthcare system: diagnosis, treatment and measures to prevent the spread of the disease. With the greater availability and variety of diagnostic tests, it is essential to properly interpret them. This paper intends to help dialysis units concerning the use of clinical criteria and diagnostic tests for decision making regarding the discontinuation of isolation of patients with suspected or confirmed Covid-19, as well as the return to work activities for employees with suspected or confirmed Covid-19.

Keywords: Covid-19; Coronavirus infections; Diagnosis; Hemodialysis Hospital Units; Renal Dialysis; Healthcare Personnel; Pandemics.

INTRODUCTION

This document intends to help dialysis units regarding the use of laboratory tests for COVID-19, and the use of clinical criteria as tools to aid decision making regarding: 1) ending the isolation of patients with suspected or confirmed COVID-19 and 2) return to the activities of healthcare professionals and employees with suspected or confirmed COVID-19.

These technical recommendations, mostly adapted from the guidelines of the Center for Disease Control and Prevention (CDC - United States of America)¹, must be adapted for our local context and reality, and depend on the support of public managers, as for example, the availability and financial support to carry out laboratory tests for COVID-19, and to define the flow of collection from regional laboratories. Still, decision-making must be individualized.

Finally, we emphasize the lack of well-established data on virus behavior, the natural history of the disease and test availability. Changes to this document may be necessary due to new information and evidence that may crop up.

1. COVID-19 TESTING CONSIDERATIONS

Today, we have two types of tests to diagnose COVID-19: RT-PCR and serology, which are available in the usual modes, such as ELISA, Chemiluminescence and Immunochromatography, with antigen
and immunoglobulin dosage, in the most diverse combinations (Antigens, Total Antibodies, Immunoglobulins A, M and G)².

The gold standard test in the acute phase for active infection still is RT-PCR (reverse transcription polymerase chain reaction)³, which consists of a qualitative or quantitative assessment of viral RNA, collected from two different sites. However, its methodology and complex validation phase make it difficult to carry out this type of test en masse³.

Given their low cost, serological tests have a good diagnosis rate in the late phase, in view of the available methodologies, and wide distribution in laboratories (public and private). The essential factor is the time between symptoms onset/contact with a person with a confirmed diagnosis and the test being performed².

Regardless of antibodies showing up in the individual, the ability to measure these antibodies by laboratory methods depends on a series of test characteristics, which make up the test performance, such as analytical sensitivity (detection threshold) and analytical specificity (less interference from other substances or antigens)³.

Ten days after the condition onset, immunoglobulin sensitivity (IgA, IgM and IgG) increases progressively, reaching between 79.8% to 94.3%,⁴,⁵ depending on the antibody evaluated, close to 14 days after symptoms onset. The tests do not have a high Negative Predictive Value; thus, it should not be used to help decide if a person should return to work, end of isolation and other measures of this nature².

2. END OF ISOLATION OF PATIENTS WITH SUSPECTED OR CONFIRMED COVID-19 IN DIALYSIS UNITS

After clinical suspicion or laboratory confirmation, ideally the patient should undergo dialysis in an isolation room, following the measures recommended in the “SBN good practices recommendations to dialysis units regarding the epidemic of the new Coronavirus (COVID-19)”, described in the flowchart below (Figure 1)⁶,⁷.

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**Figure 1.** Flowchart for the evaluation and management of patients suspected of having COVID-19 in dialysis units.
The flowchart below helps on criteria for discontinuing the isolation and other precautions against COVID-19 transmission in the dialysis unit, instituted during suspected (Figure 2) or confirmed cases (Figure 3), such as, 1) patient wearing a surgical mask, 2) not reuse of lines and dialyzers, 3) dressing with a disposable apron for the healthcare professional in direct contact and 4) the minimum distance of 1 meter. However, we consider it prudent in case the patient is removed from isolation before the end of 14 days, to keep wearing a surgical mask until 14 days after the onset of symptoms.

**Figure 2.** Flowchart with criteria for removing patients with suspected COVID-19 from isolation.

Adapted from CDC, 2020

The flowchart defines two strategies: one that considers exclusively clinical criteria, and another which is a laboratory strategy, based on COVID-19 testing. All criteria must be met according to the strategy adopted. The laboratory strategy should be preferable in hospitalized and severely immunodepressed patients.

It should be emphasized that decision-making must be individualized, considering the context, local particularities and clinical perception, sometimes subjective, of the patient.

3. **Recommendations for healthcare professionals and staff with suspected or confirmed COVID-19 in dialysis units to return to their activities**

Dialysis staff suspected of having COVID-19, regardless of symptom severity, should be temporarily removed from work. Their return to activities will depend on laboratory diagnostic confirmation and/or clinical evolution (symptoms improvement and fever resolution). The flowchart presented below guides these decisions (Figure 4), also defining two strategies: one that considers exclusively clinical criteria and another laboratory strategy, based on testing for COVID-19. Again, it is important to stress that the approach must be individualized, and consider the context and local particularities, as well as the epidemiological moment of the pandemic.

This strategy based on clinical criteria can be used in cases with mild symptoms, low suspicion of COVID-19 or if the laboratory test (serology or RT-PCR) is not available.
Figure 3. Flowchart with criteria for removing from isolation those patients with confirmed COVID-19.

Adapted from CDC, 2020

Patient with COVID-19 (confirmed) in isolation and with precaution measures to avoid transmission

Criteria to suspend isolation

Clinical criteria

• 72 hours without fever (no antipyretic)
• Symptom resolution
• Minimum of 7 days of symptom onset

Yes
Consider suspending isolation
Consider wearing surgical mask until completing 14 days

No
Complete 14 days of isolation

Laboratorial criteria

• Fever resolution (without medication)
• Symptom resolution
• Two consecutive negative RT-PCR results (interval longer than 24 hours) from nasopharynx swab

Positive
Complete 14 days of isolation

Negative
Considerar repetir teste se alta suspeição clínica

Figure 4. Flowchart with criteria for employees of Dialysis Units with suspicion or confirmation of COVID-19 to return to work.

Employee with suspected COVID-19

Employee with confirmed COVID-19

Initial leave of 7 days

Clinical criteria

• 72 hours without fever (no antipyretic)
• Symptom resolution
• Minimum of 7 days of symptom onset

Yes
14 days on leave
Consider return to work

No
Negative
Complete 14 days of leave
Consider return to work

Laboratorial criteria

• COVID-19 test (RT-PCR after the third day or serology after the seventh day)

Positive
Complete 14 days of leave
REFERENCES


