

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

Authors

José A. Moura-Neto^{1,2} 
 Lilian M. P. Palma^{1,3} 
 Gabriel F. Marchiori^{4,5} 
 Raquel S. B. Stucchi³ 
 Ana Maria Misael¹ 
 Ronaldo D'Avila^{1,6} 
 Dirceu Reis da Silva^{1,7} 
 Maria Cláudia Cruz Andreoli^{1,8} 
 Angiolina Krachete¹ 
 Kleyton Bastos^{1,9} 
 Marcelo Mazza do Nascimento^{1,10} 

¹Sociedade Brasileira de Nefrologia, São Paulo, SP, Brazil

²Grupo CSB, Salvador, BA, Brazil.

³Universidade Estadual de Campinas, Campinas, São Paulo, SP, Brazil.

⁴Sociedade Brasileira de Patologia Clínica, São Paulo, SP, Brazil.

⁵Laboratório Franceschi, Campinas, São Paulo, SP, Brazil.

⁶Pontifícia Universidade Católica de São Paulo, Faculdade de Medicina, Sorocaba, SP, Brazil.

⁷Hospital de Clínicas de Porto Alegre, Porto Alegre, RS, Brazil.

⁸Hospital do Rim, Fundação Oswaldo Ramos, Universidade Federal de São Paulo, São Paulo, SP, Brazil.

⁹Universidade Federal de Sergipe, São Cristóvão, SE, Brazil.

¹⁰Universidade Federal do Paraná, Curitiba, PR, Brazil.

Correspondence to:

José A. Moura-Neto
 E-mail: jamouraneto@hotmail.com

DOI: <https://doi.org/10.1590/2175-8239-JBN-2020-S102>

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

RESUMO

A pandemia da Covid-19 trouxe desafios ao sistema de saúde em diversas esferas: diagnóstico, tratamento e medidas para evitar a disseminação da doença. Com a maior disponibilização e variedades de testes diagnósticos, torna-se fundamental sua adequada interpretação. Este posicionamento pretende orientar unidades de diálise em relação ao uso de critérios clínicos e testes diagnósticos para a tomada de decisão referente à descontinuação do isolamento de pacientes com suspeita ou confirmação de Covid-19, assim como para o retorno às atividades laborais de colaboradores com suspeita ou confirmação de Covid-19.

Palavras-chave: Covid-19; Infecções por Coronavirus; Diagnóstico; Unidades Hospitalares de Hemodiálise; Diálise Renal; Pessoal de Saúde; Pandemias.

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 masse².

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

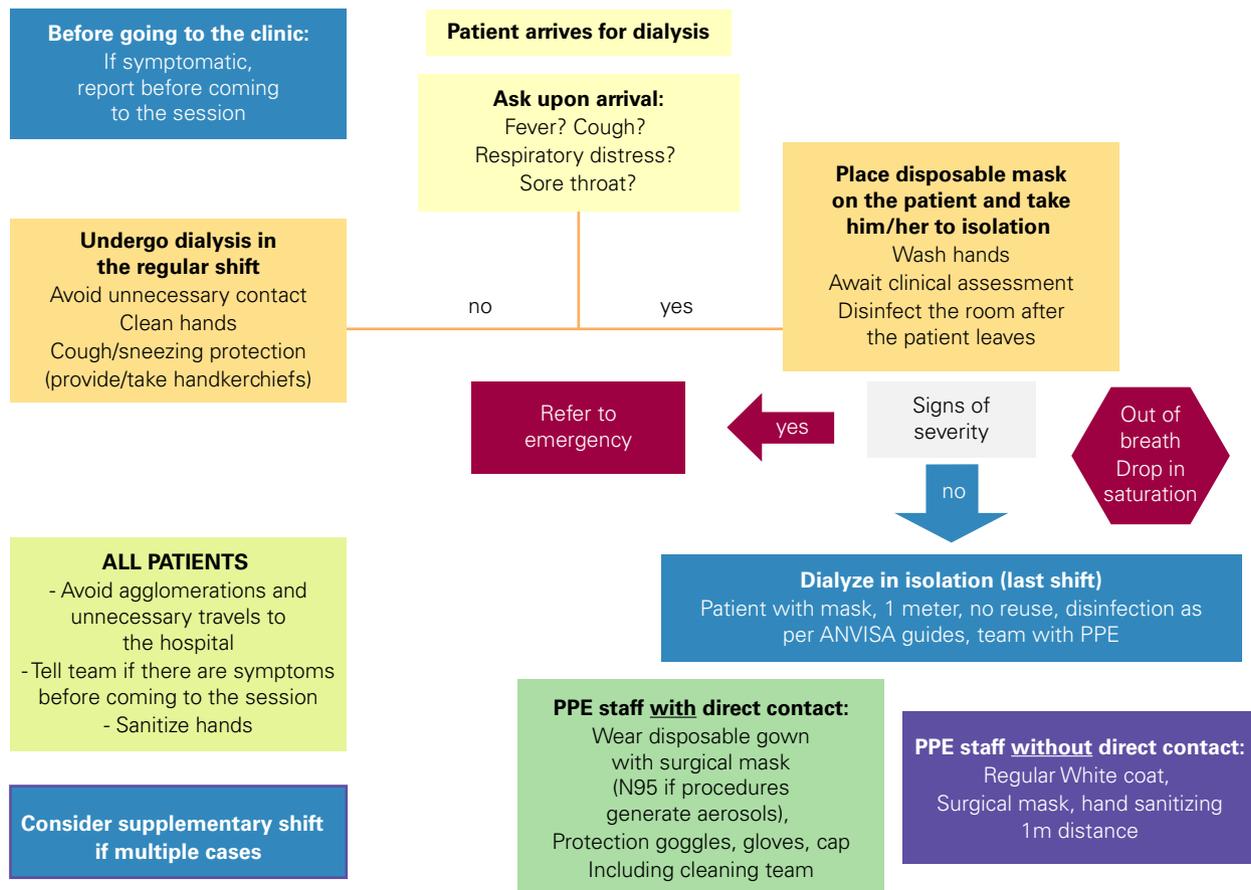
analytical sensitivity (detection threshold) and analytical specificity (less interference from other substances or antigens)³.

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}.

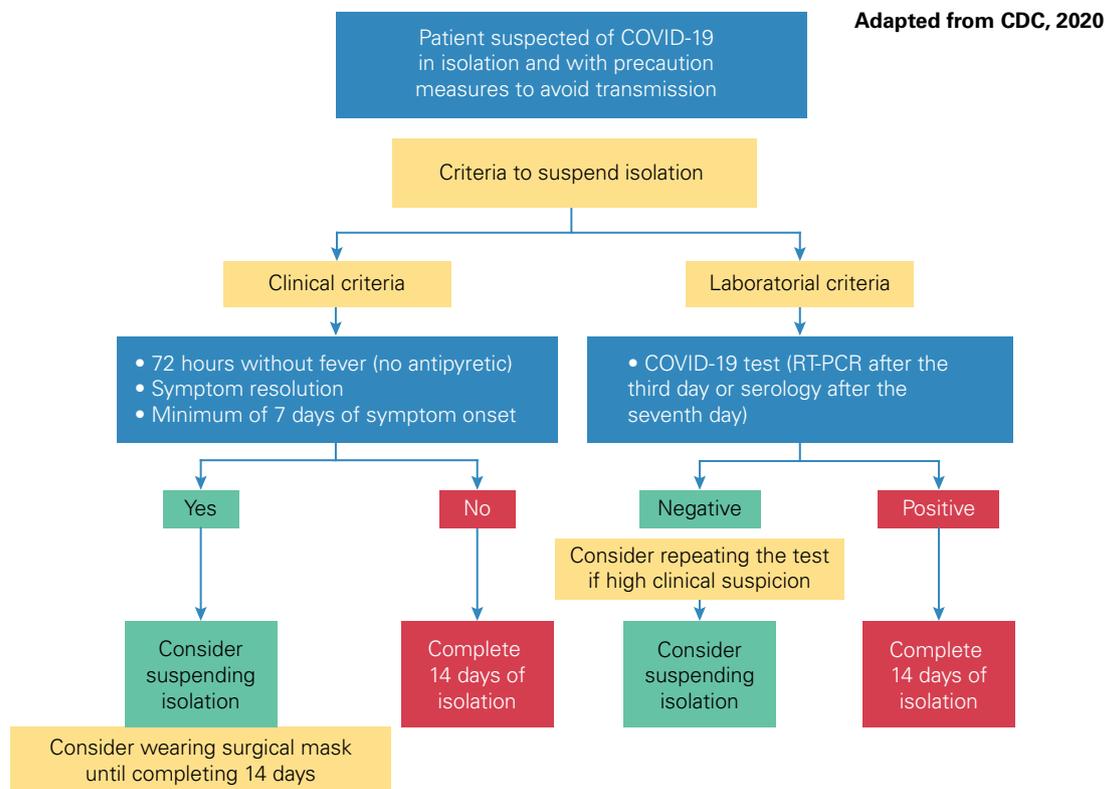
Figure 1. Flowchart for the evaluation and management of patients suspected of having COVID-19 in dialysis units.



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 mask⁶, 2) not reuse of lines and dialyzers⁶, 3) dressing

with a disposable apron for the healthcare professional in direct contact⁶ and 4) the minimum distance of 1 meter⁸. 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 symptoms⁹.

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



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 patients¹.

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 pandemic⁹.

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 available¹.

Figure 3. Flowchart with criteria for removing from isolation those patients with confirmed COVID-19

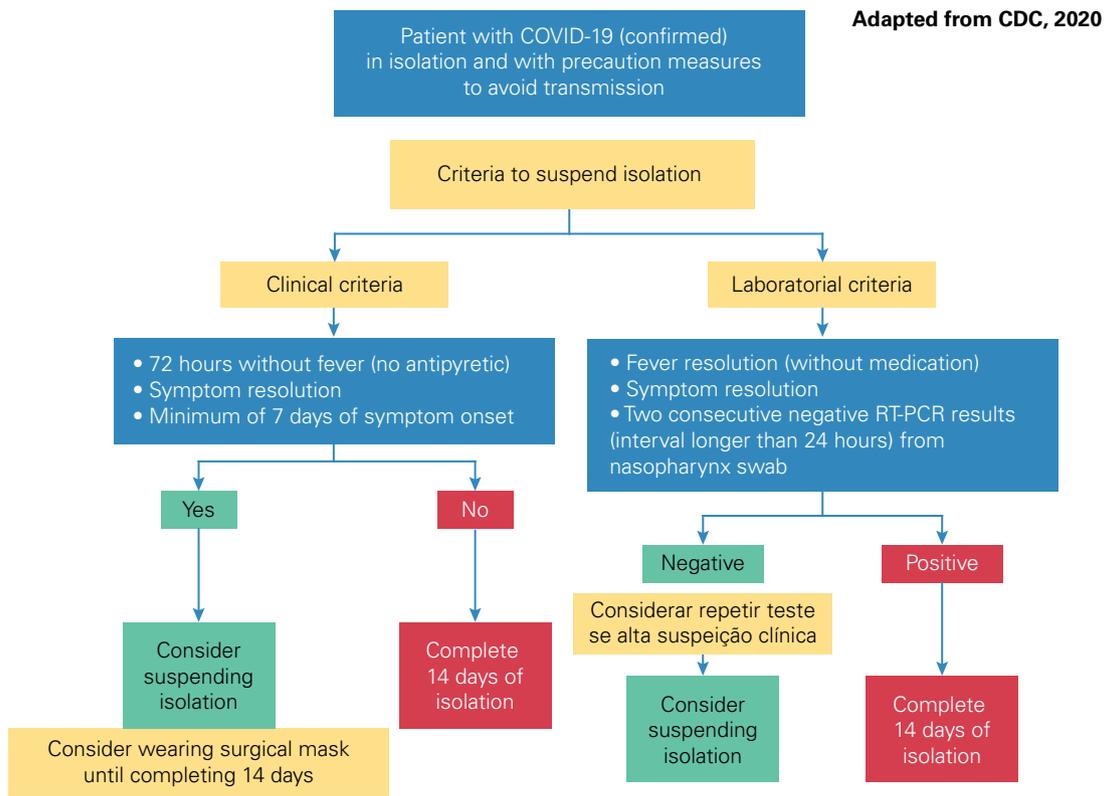
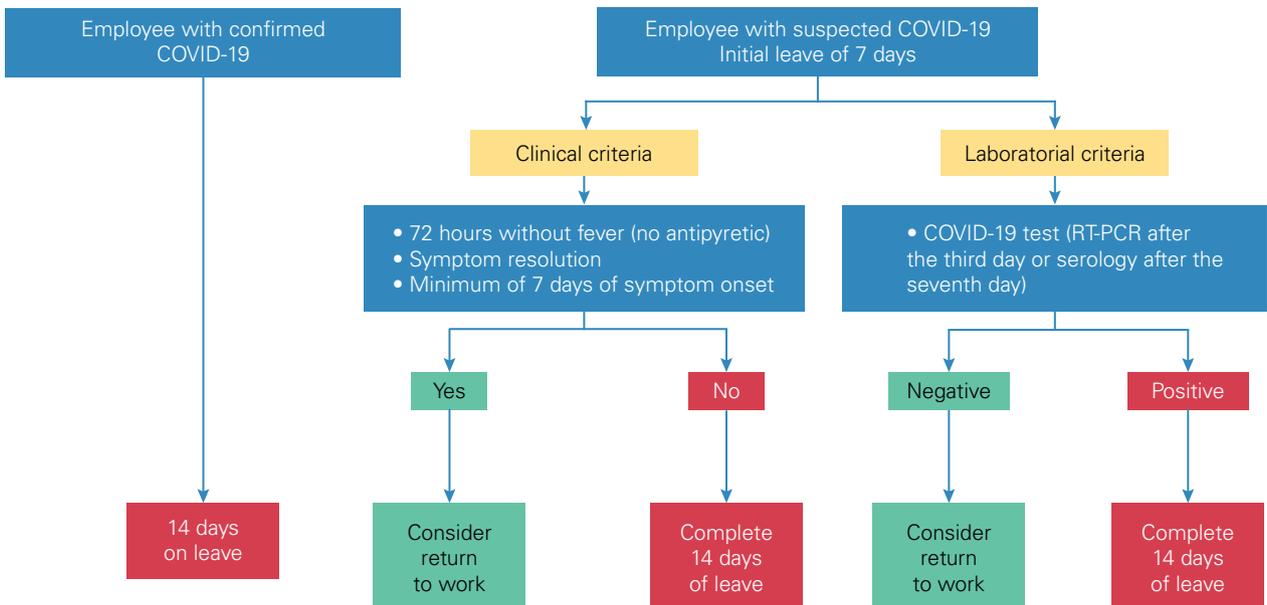


Figure 4. Flowchart with criteria for employees of Dialysis Units with suspicion or confirmation of COVID-19 to return to work.



REFERENCES

1. Centers for Disease and Control Prevention. Discontinuation of Transmission-Based Precautions and Disposition of Patients with Covid-19 in Healthcare Settings (Interim Guidance). <https://www.cdc.gov/coronavirus/2019-ncov/hcp/disposition-hospitalized-patients.html>.
2. Sociedade Brasileira de Patologia Clínica. Métodos Laboratoriais para Diagnóstico da Infecção pelo SARS-CoV-2. Recomendações da Sociedade Brasileira de Patologia Clínica/Medicina Laboratorial. 2020. <http://www.sbpc.org.br/wp-content/uploads/2020/04/MetodosLaboratoriaisDiagnosticoSARS-CoV-2.pdf>.
3. World Health Organization. (2020). Laboratory testing of 2019 novel coronavirus (2019-nCoV) in suspected human cases: interim guidance, 17 January 2020. World Health Organization. <https://apps.who.int/iris/handle/10665/330676>.
4. Xiao SY, Wu Y, Liu H. Evolving status of the 2019 novel coronavirus infection: Proposal of conventional serologic assays for disease diagnosis and infection monitoring. *J Med Virol.* 2020 May;92(5):464-467. doi: 10.1002/jmv.25702. Epub 2020 Feb 17.
5. Guo L, Ren L, Yang S, Xiao M, Chang D, Yang F, et al. Profiling Early Humoral Response to Diagnose Novel Coronavirus Disease (Covid-19). *Clin Infect Dis.* 2020 Mar 21;ciaa310. doi: 10.1093/cid/ciaa310.
6. Sociedade Brasileira de Nefrologia (SBN). Recomendações de boas práticas da Sociedade Brasileira de Nefrologia às unidades de diálise em relação à pandemia do novo coronavírus (Covid-19). *Braz. J. Nephrol. (J. Bras. Nefrol)*, In press.
7. Sociedade Brasileira de Nefrologia (SBN). Recomendações da Sociedade Brasileira de Nefrologia para pacientes pediátricos em terapia de substituição renal durante a pandemia de Covid-19. *Braz. J. Nephrol. (J. Bras. Nefrol)*, In press.
8. Agência Nacional de Vigilância Sanitária (BR). Nota Técnica GVIMS/GGTES/ANVISA Nº 04/2020. Orientações para Serviços de Saúde: Medidas de Prevenção e Controle que Devem Ser Adotadas durante a Assistência aos Casos Suspeitos ou Confirmados de Infecção pelo Novo Coronavírus (SARS-Cov-2). 2020. <http://portal.anvisa.gov.br/documents/33852/271858/Nota+T%C3%A9cnica+n+04-2020+GVIMS-GGTES-ANVISA/ab598660-3de4-4f14-8e6f-b9341c196b28>
9. Hassel Dias VMC, Cunha CA, Vidal CFL, Corradi MFB, Michelin L, Muglia V et al. Orientações sobre diagnóstico, tratamento e isolamento de pacientes com COVID-19. *Journal of Infection Control* 2020; 9(2): 56-75. Disponível em: <http://jicabih.com.br/index.php/jic/article/view/295>.