



Recommendations Of The Brazilian Society Of Nephrology Regarding Pediatric Patients On Renal Replacement Therapy During The Covid-19 Pandemic

Recomendações da Sociedade Brasileira de Nefrologia para Pacientes Pediátricos em Terapia de Substituição Renal Durante a Pandemia Covid-19


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ABSTRACT

Introduction: The impact of the new coronavirus (SARS-CoV-2) and its worldwide clinical manifestations (COVID-19) imposed specific regional recommendations for populations in need of specialized care, such as children and adolescents with kidney diseases, particularly in renal replacement therapies (RRT). We present the recommendations of the Brazilian Society of Nephrology regarding the treatment of pediatric patients with kidney diseases during the COVID-19 pandemic. **Methods:** Articles and documents from medical societies and government agencies on specific recommendations for children on RRT in relation to COVID-19 as well as those focused on epidemiological aspects of this condition in Brazil were evaluated and analyzed. **Results:** We present recommendations on outpatient care, transportation to dialysis centers, peritoneal dialysis, hemodialysis, and kidney transplantation in children and adolescents during the COVID-19 pandemic in Brazil. **Discussion:** Despite initial observations of higher mortality rates in specific age groups (the elderly) and with comorbidities (obese, diabetics, and those with cardiovascular diseases), patients with chronic kidney disease (CKD) on RRT are particularly prone to develop COVID-19. Specific measures must be taken to reduce the risk of contracting SARS-CoV-2 and developing COVID-19, especially during transport to dialysis facilities, as well as on arrival and in contact with other patients.

Keywords: Coronavirus; SARS-CoV-2; COVID-19; Pediatric; Hemodialysis; Peritoneal dialysis; Kidney transplant; Immunosuppression; Recommendations

RESUMO

Introdução: O impacto do novo coronavírus (SARS-CoV-2) e as suas manifestações clínicas (Covid-19) em todo o mundo impôs recomendações regionais específicas a populações que necessitam de cuidados especializados, como crianças e adolescentes com doenças renais, particularmente em terapias de substituição renal (TRS). Apresentamos as recomendações da Sociedade Brasileira de Nefrologia em relação ao tratamento de pacientes pediátricos com doenças renais durante a pandemia Covid-19. **Método:** Foram avaliados e analisados os artigos e documentos sobre recomendações específicas para Covid-19 de sociedades médicas e órgãos governamentais sobre crianças em TRS, bem como aqueles focados em aspectos epidemiológicos dessa condição no Brasil. **Resultados:** Apresentamos as recomendações sobre atendimento ambulatorial, transporte para centros de diálise, diálise peritoneal, hemodiálise e transplante renal em crianças e adolescentes durante a pandemia de Covid-19 no Brasil. **Discussão:** Apesar das observações iniciais de taxas de mortalidade mais altas em grupos etários específicos (idosos) e com comorbidades (obesos, diabéticos e aqueles com doenças cardiovasculares), pacientes com doença renal crônica (DRC) em TRS apresentam risco significativo de evoluir com Covid-19. Medidas específicas devem ser tomadas para reduzir o risco de contrair SARS-CoV-2 e desenvolver a Covid-19, principalmente durante o transporte para instalações de diálise, bem como na chegada e no contato com outros pacientes.

Palavras-chave: Coronavírus; SARS-CoV-2; Covid-19; Pediátrico; Hemodiálise; Diálise Peritoneal; Transplante Renal; Imunossupressão; Recomendações.

INTRODUCTION

The pandemic involving the new coronavirus SARS-CoV-2 and its clinical manifestations (COVID-19) to the World Health Organization recommending procedures in order to limit the spread as well as minimize the sudden and increasing lethality in distinct population groups. The Department of Pediatric Nephrology of the Brazilian Society of Nephrology (SBN in Portuguese) prepared this manuscript regarding recommendations for children and adolescents with kidney diseases and their respective families to mitigate the risk of acquiring and spreading the disease in Brazil.

In Brazil, different profiles of children with chronic kidney disease (CKD) were described by Konstantiner *et al*¹ (2015) emphasizing that areas with lower social and economic indexes have unsatisfactory access to medical facilities, which is corroborated by a higher proportion of patients with undefined etiology for CKD in such areas. Fernandes *et al*² (2010) have reported that as much as 30% of patients live more than 50 km away from the referral Nephrology center.

Each country has its own particularities regarding the management of COVID-19 in children and adolescents with kidney diseases. Nephrology Societies around the globe have adapted WHO recommendations³ to local conditions and realities, such as the Sociedad Española de Nefrología⁴, the British Association for Paediatric Nephrology⁵, the EUDIAL Working Group of ERA-EDTA⁶, the Chinese Society of Pediatric Nephrology⁷, and the National Kidney Foundation⁸. The Brazilian Society of Nephrology is the main medical society involved in the care of this pediatric population on dialysis and nephrology care. The present article summarizes the main recommendations for specific care and management of children and adolescents with chronic kidney disease, dialysis, transplantation, and under immunosuppression during the COVID-19 pandemic.

The present recommendations are based on documents of the Brazilian Society of Nephrology and Brazilian Association of Organ Transplantation (ABTO)⁹, both dated March 16th, 2020, and are in accordance with the Technical Note of the Brazilian Agency of Sanitation Surveillance (ANVISA) n.04/2020 from March 21st, 2020, and based on a brief review of medical literature and recommendations of other medical societies.

RECOMMENDATIONS

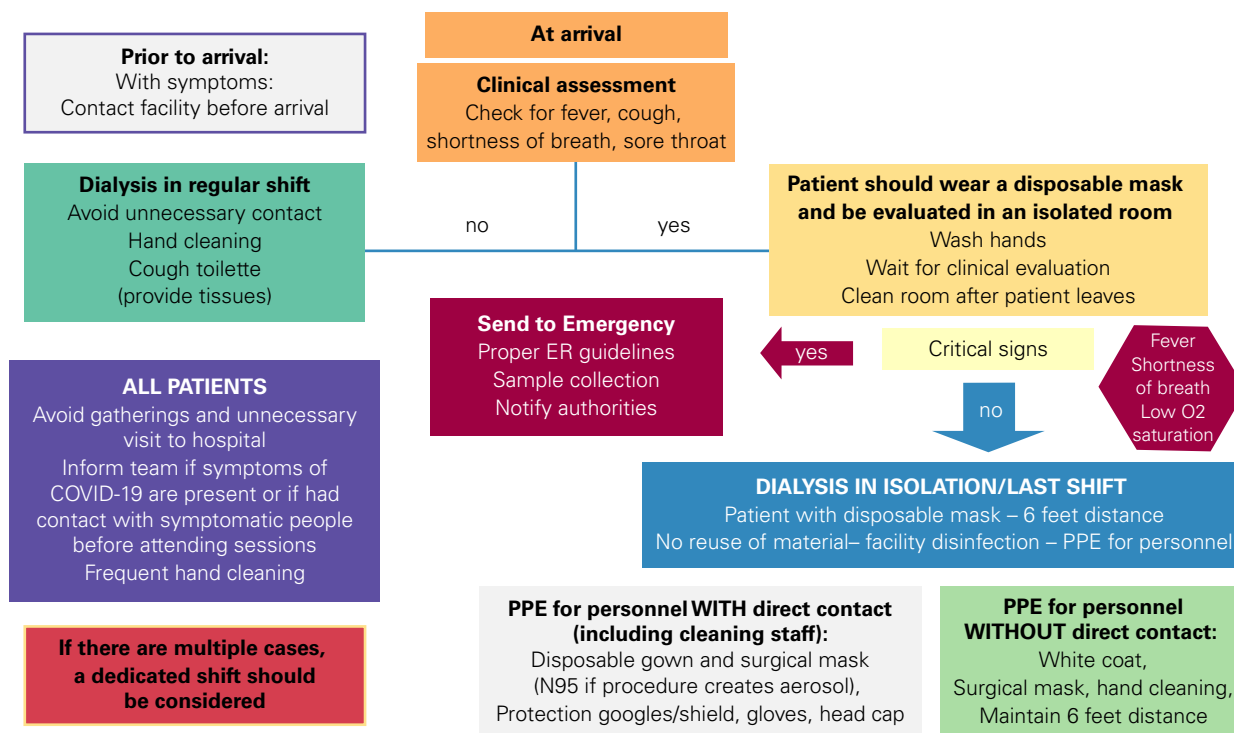
The care for pediatric patients involves many family and social aspects that should be considered by the Nephrology Center, which, in turn, must also be a center for continuing education regarding knowledge in all aspects of the COVID-19 pandemic, including isolation, prevention, and waste disposal at home.

PATIENTS ON HEMODIALYSIS

Transport to dialysis facilities by bus or other mode provided by health authorities (with other patients) is a common practice by children and their families.

1. Transportation to dialysis facilities should be provided by health authorities when not possible by the patient/family; standing patients during transport should not be allowed. The following procedures are recommended during transport to dialysis facilities^{10,11}:
 - 1.1. Use of cloth face covering or surgical mask when available, even in asymptomatic patients and accompanying persons. Potential virus spreading should be minimized even during transport. A medical/surgical mask must be used by anyone who has respiratory symptoms; hand hygiene should be performed after disposing of the mask;
 - 1.2. Social distancing (at least 1 m) from individuals with respiratory symptoms.
2. The frequency of dialysis sessions should be maintained as prescribed by the medical staff. We strongly recommend that patients do not skip or shorten dialysis sessions.
3. In hemodialysis clinics, patients and families should be actively asked about respiratory complaints and symptoms of COVID-19 (fever, cough, sore throat, shortness of breath, muscle aches, malaise) before entering the treatment area. Body temperature measurement is strongly recommended. According to health status and respiratory complaints at arrival, the following procedures should be considered to all patients:
 - 3.1. Symptomatic, suspected, or COVID-19 confirmed: patients should be dialyzed in the last session of the usual scheduled dialysis day preferably and when possible at a dedicated COVID-19 dialysis unit; they should wear disposable surgical masks. Health professionals

Figure 1. Flow chart of management of suspect and confirmed cases of COVID-19 in pediatric patients on hemodialysis facilities.



should wear N95 or FFP2 masks when available (or disposable surgical masks otherwise), eye protection (goggles or face shield), gloves, and gown. Lines and materials should be discharged to avoid contamination of personnel involved with reuse.

3.2. A minimal distance of 1 m between patients should be kept and unnecessary contact avoided. Ideally, COVID-19 confirmed or suspected cases should be dialyzed in the same dialysis machines in the subsequent sessions;

3.3. Asymptomatic and non-suspicious patients: following WHO recommendations, hand hygiene should be done frequently with an alcohol-based hand rub if hands are not visibly dirty or with soap and water if hands are dirty; touching eyes, nose, and mouth should be avoided; respiratory hygiene should be practiced by coughing or sneezing into a bent elbow or tissue and then immediately disposing of the tissue. The immunization schedule should be up-to-date (especially against influenza);

3.4. The Nephrology team should be informed if someone in the patient’s home has had recent respiratory symptoms.

PATIENTS WITH CHRONIC KIDNEY DISEASE UNDER EVALUATION FOR A KIDNEY TRANSPLANT

At the present time, Brazil is under quarantine and the urge for kidney transplantation must be evaluated on an individual basis, according to the Brazilian Association of Organ Transplantation recommendations. Donor and recipient must be considered at risk.

PEDIATRIC KIDNEY TRANSPLANT RECIPIENTS

In order to minimize the exposure to the virus, non-emergency consultations and hospital visits should be avoided. Use of a surgical mask when at hospitals or for blood sampling is advisable. In case of respiratory symptoms and/or fever, the transplantation center must be communicated. In confirmed cases, the same procedures as for children with COVID-19 on dialysis should be followed: health professionals should wear N95 or FFP2 masks preferably (or disposable surgical masks), eye protection (goggles or face shield), gloves, and gown. Immunosuppression therapy will be changed according to the Center’s preferences.

The most common approach is stopping the anti-metabolite drug. *In vitro* studies showed that calcineurin inhibitors may play a protective role in coronavirus infections¹². Clinical evidence of this approach for COVID-19 remains to be defined. Hospital admission is advisable in specific cases.

PEDIATRIC PATIENTS ON PERITONEAL DIALYSIS (PD)

Children and adolescents on PD with fever and/or respiratory symptoms must notify the referral center. The patient's condition must be reviewed and the dialysate aspect has to be evaluated (fever can be the only initial sign of peritonitis). Social isolation for at least 14 days is recommended (including from house contacts). Dyspnea should be promptly evaluated in the dialysis facility, and the health staff should be notified of the patient's arrival in order to minimize contamination risks at the unit. The delivery team (for dialysis materials) should be warned in order to minimize contact (avoid entering the patient's house, use of surgical mask, and handwashing by the driver/delivery team is strictly recommended).

CONCLUSIONS

Considering the continental proportion of Brazil, regional differences will demand emphasis on specific aspects of nephrology care of pediatric patients, mainly outpatient dialysis units (such as during transport). The interface between the health team and patients on any form of RRT should be maintained and strengthened during the pandemic. The present recommendations will need to be updated in the future as more research on COVID-19 is conducted.

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