Paradoxical Protection of Keeping In-Center Short Daily Hemodialysis Schedule During the First Two Years of COVID-19 Pandemic

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BACKGROUND

Covid-19 Pandemic imposed several restrictions to the general population, including stay at home guidance. Most dialysis patients are challenged by mandatory transportation and thrice-weekly long stays in their Units. Home dialysis and/or reduction of hemodialysis frequency have been promoted to mitigate the spread. Notwithstanding, we report the contrasting experience of keeping a long-term in-center short daily hemodialysis program while enforcing protective measures and an unique transportation arrangement.

OBJECTIVES

We report the impact of keeping a long-term in-center short daily hemodialysis program while enforcing protective measures and an unique transportation arrangement.

METHODS

From March 16, 2020 to March 15, 2022 dialysis patients who were symptomatic, hospitalized for other reasons or had contact with confirmed cases of Covid-19 were tested for Sars-Cov-2 by RT-PCR. We examined outcomes of those who tested positive. Eighty private-insured patients (48M; 62.1±14.3yrs) on incenter short daily hemodialysis (6-7x/wk; 115.4±11.2min; single-use high-flux dialyzer) were studied. Roundtrip transportation was provided by a fleet of 12 dedicated minivans. Eating during dialysis was abolished and isolation room for confirmed or suspected cases was adopted. A 3-dose vaccination started in January 2021 and covered all patients and staff members.

RESULTS

Forty out of 80 patients (50%) contracted Covid-19 (21M; 60.2±16.8yrs) and four were reinfected. Thirty of the 44 infections were symptomatic (68%) and 14 asymptomatic (32%). Ten of the 40 infected patients were hospitalized (25%), 1 required mechanical ventilation and died, while 39 recovered well (5% fatality rate pre-vaccination, 0% post-vaccination). Over the 2 years dialysis mortality and transplantation rates were 5.6% (9/80 patients). Average dialysis frequency was 5.9 sessions/week. Our 100-member staff presented 33 Covid-19 infections.

CONCLUSIONS

During the two years of Covid-19 Pandemic we kept our in-center short daily hemodialysis schedule as usual while applied comprehensive transportation and restrictive measures. There was one death attributable to Covid-19, in sharp contrast with the death toll on dialysis population worldwide (20-30% fatality rate). This benign course may reflect a combination of strict prophylactic discipline (limiting transmission among patients and staff) with a potential inflammatory mediators removal by high-frequency high-flux hemodialysis (perhaps preventing cytokine storm).

DISCUSSION

Challenging early guidelines regarding SARS-Cov-2 infections, we have decided to keep our DAILY IN-CENTER hemodialysis schedule - ongoing for the last 15 years - assuming the risks of doubling its adverse consequences.

Protective transportation arrangements, rigorous preventive measures for all patients and staff members (including suspension of food intake during sessions) and frequent testing were adopted to oppose the presumable higher risks of Covid-19 spread at our daily schedule.

Conversely, high-frequency high-flux hemodialysis, in addition to having promoted metabolic and hemodynamic stability, may have remarkably removed inflammatory mediators what prevented the cytokine storm in our Covid-19 infected patients.

REFERENCES

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80 PATIENTS ON MAINTENANCE IN-CENTER SHORT DAILY HEMODIALYSIS

WHERE

Free-of-Charge Door-to-Door Transportation Program

- *Twelve Dedicated Drivers/Vans*
- *To and From the Dialysis Unit*
- *Timely*
- *Reliable*
- *Safe*

Dialysis Unit Waiting Room Reconfiguration

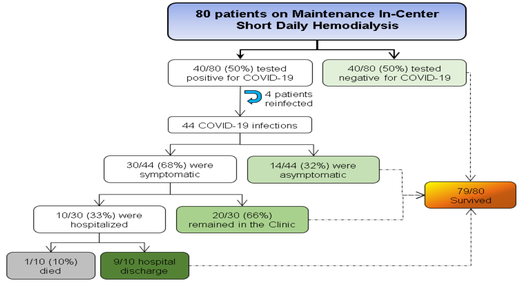
- *Screening/Inquiring Area*
- *Personal Protective Equipment*
- *Hand Sanitizer Dispenser*
- *Adequate Spacing and Cleaning*
- *Minimum Waiting Time*

Hospitalization of Covid-19 Chronic Dialysis Patients

- *Ten out Forty Infected Patients*
- *ICU for 10/10*
- *High-flux Daily HD for 9/10*
- *CRRT + Intubation for 1/10*
- *Hospital Stays > 12 days*

WHAT

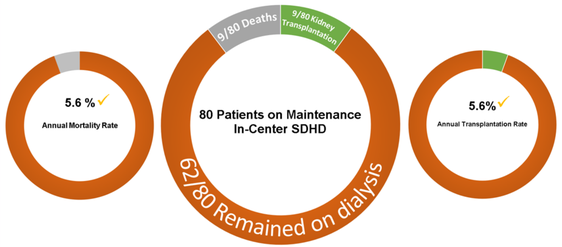
TWO-YEAR FOLLOW-UP DURING THE PANDEMIC



COVID-19's TOLL ON DIALYSIS POPULATION

	CBN&D	Brazil (SBN)*	Brazil (HCPA)**
	(n = 80)	(n = 37,852)	(n = 1,545)
	(6xWk – 2y)	*(3xWk - 4m)*	*(3xWk -1y)*
Incidence	50.0 %	3.41 %	17.3 %
Mortality Rate	2.5 %	0.94 %	3.43 %
Fatality Rate	5.0 %	27.72 %	19.9 %

CBN&D PERFORMANCE DURING THE PANDEMIC



WHY

Preventive Measures for Transportation of Non-Covid Patients

- *Up to Three Patients per Trip*
- *Facial Masking Home/Unit/Home*
- *Windows Open for Ventilation*
- *Frequent Cleaning of Seats/Surfaces*
- *Changing Mask at Unit Arrival*

Isolation Room for Positive or Suspected Patients

- *Masks/Visors, Gowns/Gloves*
- *Separated Shifts for Covid-19 +*
- *Personnel Refreshing Training*
- *Staff Members Infections: 33%*
- *Stable Missed Treatment: 3.4%*

Possible Mechanism of Cytokine Storm Prevention