

Permissive Underdialysis During the COVID19 Pandemic

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Disclosures COI



Consultancy fees, sample medications:


Astra Zeneca (SZC)


Ostuka (Patiromer)



Learning Objective

Demonstrate how rigorous surveillance and targeted interdisciplinary interventions can permit a reduction in dialysis frequency thereby providing high-value care that is patient-centered, efficient, and safe





Dialysis
frequency is
not fixed

HD is traditionally prescribed 3 times weekly

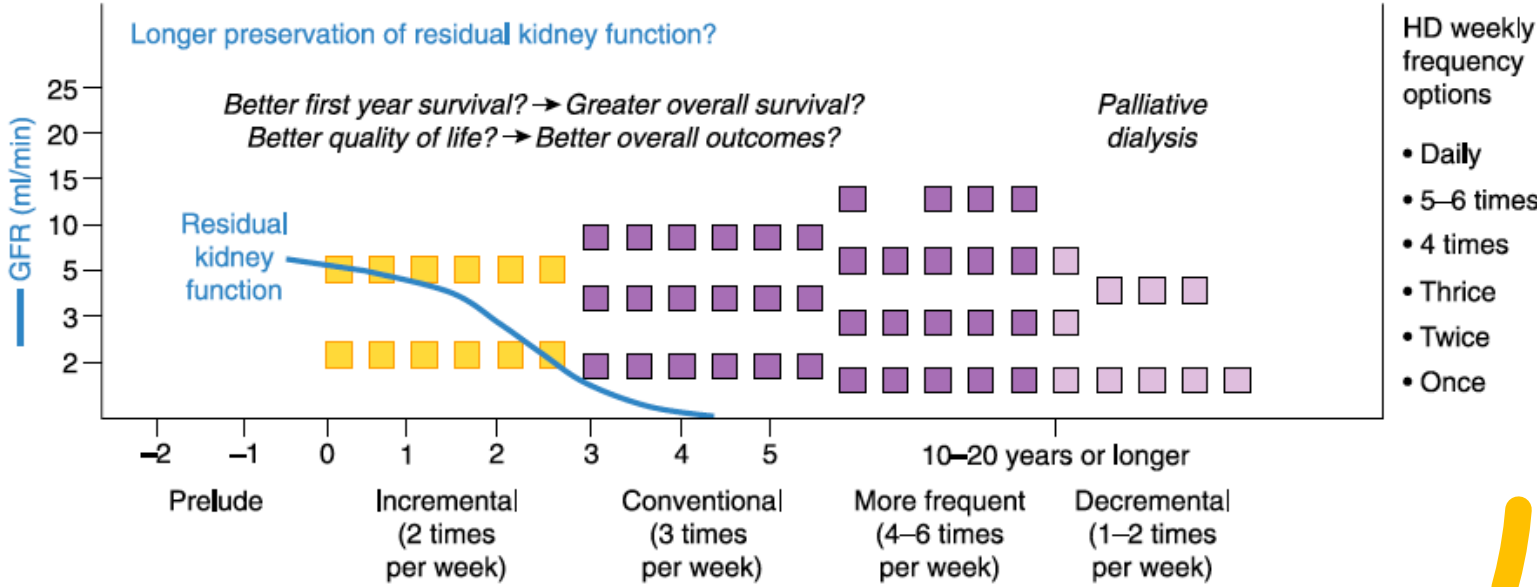
There is an expanding role for relative
underdialysis



Incremental and Twice-Weekly Hemodialysis Program in Practice

Mariana Murea¹ and Kamyar Kalantar-Zadeh^{2,3,4,5}
 CJASN 16: ●●●-●●●, 2021. doi: <https://doi.org/10.2215/CJN.04170320>

Prescribed frequency could vary



Incremental dialysis for preserving residual kidney function—
Does one size fit all when initiating dialysis?

Anna T. Mathew¹ | Yoshitsugu Obi² | Connie M. Rhee² | Jason A. Chou² |
Kamyar Kalantar-Zadeh^{2,3,4}

Relative
underdialysis
guides exist

Selection for Incremental HD:

- Substantial residual urine
- Stable blood tests
- Good nutritional status
- Infrequent hospitalizations



Permissive underdialysis during COVID

Incremental HD is a strategy for new starters

Can relative underdialysis be extended safely
to patients receiving HD chronically?

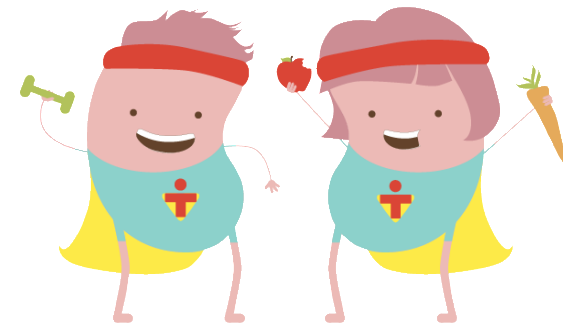


Permissive underdialysis during COVID

Potential benefits of one less HD session weekly:

- Reduced exposure risk during transport to/from HD
- Reduced exposures to other patients in HD
- Reduced exposures to front-line nurses

- More time at home
- Improved quality of life
- Preservation of residual kidney function



Permissive underdialysis during COVID

Potential risks of one less HD session weekly:

- Volume overload
- Electrolyte derangements
- Uremia
- ER visits



Permissive underdialysis 1st wave

Methods

End-March 2020 we identified chronic HD recipients who we believed could safely tolerate a reduction in dialysis frequency

K<5.5

IDWG<1.5kg

No recent admissions

Reliable follow up

Permissive underdialysis 1st wave

Methods

Subsequently all COVID+ cases were also considered for 2/week (8 eventually were selected)

Only patients who agreed to the temporary reduction in dialysis frequency were included

Patients reassured that they would switch back to 3/week if they felt unwell



Permissive underdialysis 1st wave

Methods

Serial electrolyte assessments

Clinical assessments: weekly

- Review of avg weight gains
- Review of symptoms



Permissive
underdialysis
1st wave

Methods

Dialysate K content followed usual protocol

Dietary advice from HD dieticians as usual

Weekly home BP monitoring as usual

HD pharmacists reviewed EPO dosing



Permissive underdialysis 1st wave

Results

Évolution du nombre de cas confirmés de COVID-19 au Québec selon le type de confirmation et la date de déclaration des cas



Permissive underdialysis
program began March 30-31

27 patients included in total during 1st wave



Permissive underdialysis 1st wave

Results

Évolution du nombre de cas confirmés de COVID-19 au Québec selon le type de confirmation et la date de déclaration des cas



Permissive underdialysis
program began March 30-31

Permissive underdialysis
program ramped down June 1



Permissive underdialysis 1st wave

Results

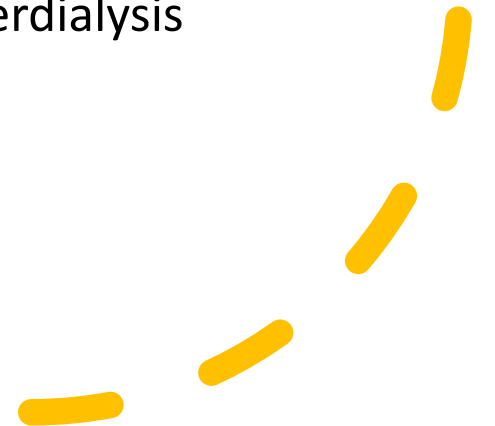
- 19/27 remained on 2/week through June 1
- All survivors returned to 3/week by July 13



Permissive underdialysis 1st wave

Results

- 2/27 died
 - 89M; hypotension, hypoxia while admitted with COVID19
 - 88F; palliative withdrawal from dialysis after dx COVID19
- 4/27 hospitalizations
 - DKA (COVID+), COVID pneumonia, femur #, CHF
 - DKA and CHF may be related to underdialysis



Permissive underdialysis 1st wave

Results

- 7/27 hyperkalemia ($K \geq 5.9$)
 - SZC (2), Patiromer (5)
- 6/25 survivors returned to 3/week early:
 - 2 with volume overload (1 admission [CHF])
 - 2 with nausea and lethargy (1 admission [DKA])
 - 1 with myoclonic jerks
 - 1 with refractory hyperkalemia



Permissive underdialysis 1st wave

Overview

1st wave permissive underdialysis

- 244 HD visits spared
- 2 admissions
- 7 patients used K-binders



Permissive
underdialysis
1st wave

Lessons
learned

Most selected patients can tolerate permissive underdialysis for 2-3 months

Hyperkalemia occur in a minority

Uremic syndromes have a delayed onset



Permissive
underdialysis
1st wave

Lessons
learned

Hyperkalemia on permissive underdialysis:

- Occurs only in a minority of patients
- Develops within first 1-4 weeks
- Responds well to K-binding resins, dietary advice

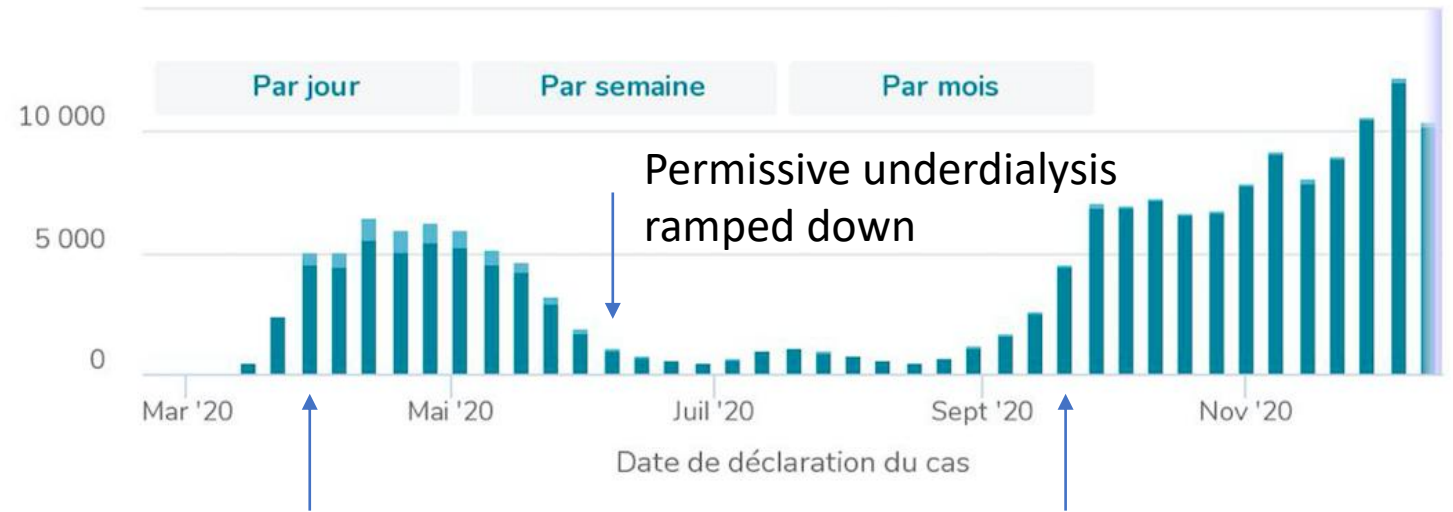
Novel K binders are tolerated in HD recipients

- 0 stopped binder due to adverse event
- Patiromer may be associated with hypercalcemia



Pandemic Evolution

Évolution du nombre de cas confirmés de COVID-19 au Québec selon le type de confirmation et la date de déclaration des cas

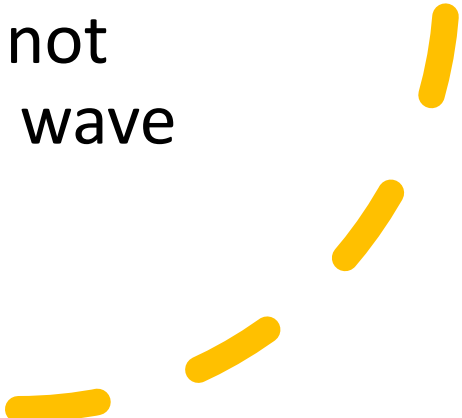


Permissive underdialysis
Program began

Permissive underdialysis
for 2nd wave began

Permissive underdialysis 2nd wave

Methods

- Candidates were identified in a similar fashion as in the 1st wave
 - Patients on K-binders during 1st wave were not included in the cohort for the 2nd wave
 - Patients who did not tolerate 2 full months of underdialysis in 1st wave were not included in the cohort for the 2nd wave
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Permissive underdialysis 2nd wave

Results

- Program began Sep 30
 - 10 patients included
- 10/10 patients remained 2/week through Jan



Permissive underdialysis 2nd wave

Results

- 0 died
- 0 hospitalizations
- 1 developed hyperkalemia ($K \geq 5.9$)
- 0 returned to 3/week prematurely



Permissive underdialysis 2nd wave

Results

“I feel better on 3/week than I ever did on 2/week”

“It’s all good doc”

“I feel great. I watch my intake rigorously, and it allows me to come here less often during the pandemic”



Permissive underdialysis 2nd wave

Overview

2nd wave permissive underdialysis

- 160+ HD visits spared
- 0 ER encounters
- 1 patient using K-binder



Permissive underdialysis 2nd wave

Summary

- A subset of chronic HD recipients can tolerate relative underdialysis for a 2-3 month duration
- Rigorous surveillance and interdisciplinary interventions can prolong the duration that underdialysis is tolerated for



Permissive underdialysis 2nd wave

Summary

- This strategy has contributed to 2 hospital admissions while sparing over 400 visits to the HD unit during the pandemic
- Implementing this strategy during periods of heightened viral transmission locally thus provides high-value care that is patient-centered, efficient, and safe



Many thanks
to the entire
team!



- Myra Angeles
- Front-line RN's, LPN's
- Dialysis pharmacists
- Dialysis dieticians
- Dialysis unit coordinators

- Dr. Mark Lipman
- Dr. Sharon Nessim
- Dr. Gershon Frisch
- Dr. Ramseh Sabbagh