



CSN COVID-19 Rapid Review Program

Dr. Deborah Zimmerman

This webinar is organized by CSN to field home and in-centre hemodialysis questions.

Purpose of the Program

- Patients with renal disease are high risk from COVID-19
- The CSN is in a unique position to **collate guidance documents** from the renal community
- Our goal is to deliver the **best possible care** for the **largest number** of patients while **ensuring the safety** of our health care team
- **Home dialysis** minimizes the number of interactions required between patients and the health care system

Principles

1. We acknowledge that:

- ❖ clinicians and administrators are working in a swiftly evolving environment which will require rapid decision making with limited resources and uncertainty
- ❖ local context and government priorities will shape decision making and that previous sacrosanct standards may need to be temporarily adjusted

2. We must protect our healthcare team from COVID-19 so that we are able to deliver care to patients

3. We must ensure that patients with kidney disease continue to receive appropriate treatments regardless of their COVID-19 status and that virus exposure amongst patients is limited



Methods

- CSN developed the COVID-19 rapid response team (RRT):
 - Volunteers from within the CSN board
 - Experts within the renal community
- Collected COVID-19 documents from programs across the country
- Reviewed webinars and literature from national and international renal agencies
- Selectively reviewed the published literature
- Draft document reviewed by entire COVID-19 RRT, community nephrologist and ethicists
- Final revisions will be done after today's webinar

Recommendations

1) Peritoneal Dialysis (PD) catheter placement to prevent acute HD starts and encourage transition from conventional HD to PD

- Suggest: PD catheter insertions (bedside and surgical) be designated as “urgent/emergent” procedures and continue:
 - For patients who are expected to require dialysis in the next 2 months (eGFR <12 and declining)
 - Supported by ASDIN and VASA

ASDIN American Society of Diagnostic and Interventional Nephrology; VASA Vascular Access Society of the Americas

Recommendations

1) Peritoneal Dialysis (PD) catheter placement to prevent acute HD starts and encourage transition from conventional HD to PD

Recommend:

- Each program maintain a list of patients who have completed **all PD assessment tasks** (including an evaluation for the most appropriate catheter insertion method)
 - Use the list to support the need for ongoing PD access procedures

Recommendations

1) Peritoneal Dialysis (PD) catheter placement to prevent acute HD starts and encourage transition from conventional HD to PD

- Suggest: For surgical placement of PD catheters, nephrologists perform the medical pre-op assessment to facilitate the process
 - If access to pre-operative internal medicine clinics becomes a limiting step
- Patients who were planned and/or wishing to convert from conventional HD to PD should be considered for urgent PD catheter insertions

Recommendations

2) PD/Home hemodialysis (HHD) training

- We suggest that to reduce COVID-19 transmission, home dialysis be offered to all eligible patients that require chronic renal replacement therapy
 - PD is preferred to HHD because of the shorter training time
 - workflow needs to be tailored to accommodate higher volumes of patients being trained on PD/HHD
 - For most patients starting PD, train for CAPD only to minimize contact and time spent
 - Create streamlined CAPD training curriculum
 - Use video/online modules to decrease the time that patients need to attend local clinic
 - For patients already treated with CAPD, delay CCPD training
 - For patients with residual renal function, use high doses of diuretics prn to maintain extracellular fluid volume

CAPD continuous ambulatory PD, CCPD continuous cycling PD, CRRT chronic renal replacement therapy

Recommendations

2) PD/Home hemodialysis (HHD) training

- Recommend: For HHD, proceed with training where possible
 - Select patients who are fast training candidates
 - For patients with dialysis CVC, delay needle training of AVA until later to facilitate faster training
 - For patients with AVA but no CVC, proceed as usual with needle training
 - Place a CVC if needling delaying discharge home

AVA, arteriovenous access; CVC central venous catheter

Recommendations

2) PD/Home hemodialysis (HHD) training

- For programs with multiple HD platforms, focus on the one with the shortest learning time and minimal home reno
- For programs with conventional HD systems only, HHD training should proceed but with attention to local trades
 - To ensure home modifications do not become a barrier to discharge
- Suspend all travel programs for home dialysis patients

AVA, arteriovenous access; CVC central venous catheter

Recommendations

3) Home dialysis management

- Patients have 4 wks of PD/HHD supplies and meds in case of self-isolation or disruption in delivery
- Visitation minimized, except for assistance with dialysis
- Strengthen hand hygiene protocols
 - Written and visual instruction
 - HC or locally produced hand sanitizer (60-80% ethanol/isopropyl alcohol)
 - Procedural steps for liquid soap
- Education for all team members on hand hygiene and PPE, and home unit is adequately equipped with soap, paper towels, alcohol-based sanitizer that are easily accessible

Recommendations

4) Personal Protection Equipment (PPE)

PPE for PD/HHD Patients:

- Based on ISPD 2016 guidelines, masks are not necessary for PD dialysate exchanges in asymptomatic patients
- For patients with respiratory symptoms, surgical masks may be considered
- Data supporting routine use of mask for CVC access or AVF with buttonholes is lacking (despite standard of care in many programs)
 - CDC supports not using masks for connecting access in this time where supply is limited

Recommendations

4) Personal Protection Equipment (PPE)

- Provide all patients with information on signs and symptoms of COVID-19
- Remind patients of their responsibility to report their symptoms and be reassured that any symptoms will not affect their treatment
- Screening questions **required** before clinic visit or before PD home staff visits
 - If yes to any screening question, we recommend approach as COVID positive with appropriate PPE, following local IPAC guidelines

Recommendations

4) Personal Protection Equipment (PPE)

PPE for staff caring for COVID swab or COVID-negative:

- PPE needs to be available to all staff members and used according to local practices and national guidelines based on the nature of contact with the patient
- PPE policies may require revision for the healthcare team with direct patient contact regardless of COVID status
 - Due to potentially increased incidence of asymptomatic COVID patients

Recommendations

4) Personal Protection Equipment (PPE)

Ensure delivery of a product is conducted in a safe manner:

- Suggest ongoing open communication with dialysis vendors and suppliers to ensure *timely and safe* delivery

Recommendations

5) Minimizing in-person contact with health care providers

- We suggest routine elective procedure such as peritoneal membrane characteristics and clearances by delayed
- We suggest delaying transfer set changes unless there is compromised integrity (patient self-assessment with photo documentation if possible)
 - Does not apply to programs using bleach-containing agents
- Suggest: Access flow measurements for HHD only done when clinically indicated
 - Educate patients to monitor for arteriovenous access dysfunction



Recommendations

5) Minimizing in-person contact with health care providers

- Review patient lists to determine clinical stability
 - For stable patients - reduce lab test frequency from 1-2 mos to 2-3 mos to minimize lab visit
- Change all PD and HHD visits to virtual except for unwell patients who require a detailed assessment
 - Educate patients to call unit for worsening medical symptoms to avoid “crashing” into the ER

Recommendations

6) Assisted PD coverage in the community

- Assisted PD coverage should continue to be offered to reduce conversion to in-center hemodialysis
- Suggest: Rapid training of willing family members
- For programs dependent on 3rd party agencies:
 - Open, frequent communication to verify staffing levels and services
 - Screening, hand hygiene and PPE apply to these agencies

Recommendations

6) Assisted PD coverage in the community

If workforce for assisted PD becomes overwhelmed, we suggest:

- Liaising with home and community care providers for assistance if possible
- Reach out to family members if this has not already been done
- Consider alternate day PD as follows:
 - 1) NIPD and good RRF ($>3\text{mL}/\text{min}$), should tolerate alternate day cycling for 2 weeks or more (consider 16 hour cycling on alternating days)
 - 2) NIPD and poor RRF ($<3\text{ml}/\text{min}$), should tolerate up to 2 weeks alternate day cycling (consider 18 hour cycling on alternating days)
 - 3) CCPD and poor RRF ($<3\text{ml}/\text{min}$) significant risk of complication with alternate day cycling (only as last resort, consider 18 hours on alternating days)

Recommendations

6) Assisted PD coverage in the community

- Despite best efforts, we suggest that units be prepared to bring some PD patients in-center in case of technique, supply, or support failure.
- In-centre IPD may be possible for some patients and favored over conversion to HD



Limitations

- For reasons of expediency, no attempt was made to do a systematic review of the literature but rather to focus on the questions posed within the Canadian Senior Renal Leaders Forum and others



Implications

- These recommendations are intended to provide the best care possible during a time of reduced resources.
- Protection of patients and healthcare providers by limiting potential exposure to COVID-19 was paramount in these recommendations.





CSN COVID-19 Rapid Review Program

Dr. Rita Suri

This webinar is organized by CSN to field home and in-centre hemodialysis questions.

Outpatient Hemodialysis During COVID-19 Pandemic

Hemodialysis Working Group:

- Rita Suri, Quebec (**Lead**)
- John Antonsen, BC
- Elena Qirjazi, Alberta
- Jennifer MacRae, Alberta
- Joanne Kappel, Sask
- Anna Mathew, Ontario
- Louise Moist, Ontario
- Fabrice MacWay, Quebec
- Karthik Tennankore, NS
- David Clark, Nova Scotia
- Cheryl Banks, PEI

Ethics Reviewer:

- Sara Davison, Alberta

Internal Reviewers:

- Bhanu Prasad (SK)
- JP Harmon (ON)

Infection Control Consultation:

- BC Hemodialysis Infection Control Working Group
- Dr. Charles Frenette (McGill and INSPQ)

Basis of Recommendations

- ✓ Attempt to align with most provincial public health recommendations
- ✓ Consider variable rates of prevalence of COVID-19 in the community at different times
 - periods of low prevalence before AND towards resolution of the pandemic
- ✓ Consider that dialysis centers are of varying size with different patient populations and different access to resources
- ✓ Attempt to uphold ethical principles that balance the needs and rights of the individual patient against the public good in the setting of finite resources
- ✓ Best judgement of working group after consideration of literature and user opinions

Sources

- Provincial Public Health Agency Documents/ Websites
- Literature (published and non-peer reviewed pre-prints)
- Expert opinion of the working group, consultants, and reviewers
- Opinions of knowledge users via this webinar



Scope

- **Outpatient hemodialysis only**
- Does not cover: Home Dialysis, Vascular Access, Inpatient hemodialysis for ESRD, Acute kidney Injury, GN, Predialysis and Chronic Kidney Disease Clinics
- Recommendations pertain to the unique circumstances of outpatient hemodialysis patient care. General infection control and care practices should follow the most current policies from provincial/federal public health agencies

General Principles of ESRD Care in the COVID-19 Era

- I. Identify and treat individuals affected with COVID-19 safely
- II. Prevent transmission to other patients
- III. Ensure safety of staff
- IV. Optimize use of resources
- V. Maintain patient centered care as much as possible for all patients (*unaffected and affected*) with respect to: privacy, treatment location, rights to visit loved ones, and provision of optimal medical care

Working group Recommendations for Discussion

DRAFT

A. Identification of Patients with COVID-19 in the Dialysis Unit

A1. Screening in the Dialysis Unit	<i>All dialysis units should implement <u>their own formalized screening process</u> to detect individuals infected with SARS-CoV-2.</i>	Principles I, II, III
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- Health care workers with appropriate knowledge should screen all patients at dialysis unit entry.
- Screening Tools:
 - Formal questionnaire** (from PHA) on symptoms AND exposure history
 - consider **informal inquiry** for atypical symptoms: eg. change from prior well-being or in neurological status
 - Take **temperature**. *If readily available, measure oxygen saturation.*
- Reduce time in / avoid waiting room. If in waiting room, ensure distance of >2 m between chairs.
- Inform patients of responsibility to self-report symptoms. Reassure that their dialysis will continue.
- If outbreak in dialysis unit, consult local public health authority.
- If severe symptoms meeting admission criteria, redirect patient for medical appropriate care

A. Identification of Patients with COVID-19 in the Dialysis Unit

A2. Call Ahead	<i>All dialysis patients should be advised that if they develop symptoms they should inform the dialysis unit BEFORE their scheduled treatment.</i>	Principles I, II, III, IV
<ul style="list-style-type: none">• All patients should be informed of the signs and symptoms of COVID-19. Consider giving standardized pamphlets from the public health office, if available in the patient's language.• Patients should be instructed to call the dialysis unit if they develop symptoms at home.• If resources allow, consider requesting a nurse to call all HD patients before the upcoming shift to inquire about symptoms.		



A. Identification of Patients with COVID-19 in the Dialysis Unit

<p>A3. Categorization of Patients</p>	<p><i>All dialysis patients should be categorized based on known SARS-Co-V test results, OR <u>symptoms plus exposure history</u> to determine optimal care pathway.</i></p> <ul style="list-style-type: none"> • COVID-19+ Confirmed • P1 or P2 = Probable or Suspected COVID = <u>patients with symptoms</u> • P3 = Asymptomatic WITH known exposure • P4 = Asymptomatic, NO known exposure 	<p>Principles I-V</p>
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Table 1:

	Symptoms +	Symptoms –
Exposure +	P1 = Probable COVID	P3 = High Risk
Exposure –	P2 = Suspected COVID	P4 = Low Risk

**exposure includes travel outside of Canada, close contact with a person known to have COVID-19, or contact with bodily fluids from a person with COVID-19 as per Canadian Public Health Agency*

B. Hemodialysis of Patients with Confirmed COVID-19

B1. Assessment of Stability	<i>All patients with COVID-19 should be assessed for suitability to be dialyzed in the dialysis unit.</i>	Principles I-V
<ul style="list-style-type: none">• All patients with COVID-19 meeting admission criteria or deemed to be otherwise unstable should be dialyzed in an isolation room in a location that does not put them or others at risk. This may require transfer to another facility, emergency room or ICU, as appropriate. <p>These criteria include:</p> <ul style="list-style-type: none">-new requirement for oxygen-new onset of persistent hypotension-new altered level of consciousness.		



B. Hemodialysis of Patients with Confirmed COVID-19

B2. Treatment Location for Stable Patients	<p><i>All dialysis patients with COVID-19 who are stable should continue to dialyze in an outpatient dialysis unit.</i></p> <p><i>They should receive “protected dialysis” away from patients not known to have COVID-19.</i></p> <ul style="list-style-type: none">• Ideally this means dialysis in an isolation room with droplet/contact precautions.	Principle I, II, III, IV
<ul style="list-style-type: none">• If no isolation room is available, cohorting COVID-19+ patients on a separate dialysis shift may be considered, preferably during the last shift of the day to allow adequate time for disinfection• If even this is not possible, see section G.		

- *Hemodialysis is NOT an aerosol generating medical procedure (AGMP). Therefore N95 masks are not needed during usual hemodialysis.*

B. Hemodialysis of Patients with Confirmed COVID-19

B3. Transportation	<i>Whenever possible, all dialysis patients with confirmed COVID-19 should be transported in a private vehicle without other patients.</i>	Principle I, II, IV
<ul style="list-style-type: none">• Private transportation may include driving oneself, private taxi, or special transportation for disabled individuals provided by provincial health agencies. Most optimal method should consider the patient's financial resources and physical/cognitive function.• If single patient transportation cannot be provided, consider <u>cohorting</u> patients with confirmed COVID-19 in the same vehicle provided all patients are wearing a mask.• Renal programs should advocate for:<ul style="list-style-type: none">- <u>provision</u> of drivers for patients with confirmed COVID-19- <u>definition</u> of drivers of dialysis patients as an essential service with access to PPE, cleaning supplies, and plastic sheet seat covers, and appropriate education on how to use these to safely transport patients with COVID-19		



B. Hemodialysis of Patients with Confirmed COVID-19

B4. Escort to the Dialysis Unit	<i>Whenever possible, all dialysis patients with confirmed COVID-19 should be escorted by security or other hospital/facility personnel from the entrance of the building to the dialysis unit.</i>	Principles I, II, III
<ul style="list-style-type: none">• Patients with confirmed COVID-19 should not wait in the waiting room, whenever possible. If they must wait in the waiting room, they must wear a mask.• They should be discouraged from going to other areas within the hospital/ facility.		



B. Hemodialysis of Patients with Confirmed COVID-19

B5. Masks and Hand Hygiene	<i>All dialysis patients should wear a mask from the moment he/she leaves her house, until he/she returns home. This includes: in transport vehicle, in hospital/dialysis facility, and during treatment. All dialysis patients should wash their hands with hand-sanitizer upon entry to and exit from the dialysis unit.</i>	Principle II, III, IV
<ul style="list-style-type: none">• All dialysis patients with confirmed COVID-19 should be provided with an extra procedure mask at the end of each treatment to wear in the vehicle on the way to the next dialysis session.• If the dialysis unit does not have enough masks, then the patient should wear a cloth mask.• There should be hand sanitizer at the entry to the dialysis unit.		
B6. Counselling on Home Isolation	<i>All dialysis patients should be counselled on how to safely isolate themselves from others who live in their household.</i>	Principle II
<ul style="list-style-type: none">• Dialysis patients should be provided with a standardized pamphlet from the provincial public health agency on how to practice home isolation if such a pamphlet exists in their own language.		

B. Hemodialysis of Patients with Confirmed COVID-19

B7. Discontinuation of Isolation Procedures	<i>The above recommendations should be followed until the patient can be declared negative according to the provincial public health agency guidelines.</i>	Principles II, III
<ul style="list-style-type: none">At the current time, this recommendation is that isolation should be continued for a minimum of 14 days, AND until the patient is asymptomatic, AND until the patient has 2 negative tests separated by at least 24 hours.		
B8. Visitors	<i>Visitors should not be permitted at the bedside of patients with confirmed COVID-19.</i>	Principle II
B9. Contact Tracing	<i>The local infection control team should be notified of patients with confirmed COVID-19 in order to do contact tracing for all staff and patients who may have been exposed.</i>	Principle II, III

C. Hemodialysis of Patients Not Yet Known to Have COVID-19

C1. Assessment of Stability	<i>All patients with <u>symptoms of COVID-19 (P1/P2)</u> should be assessed for suitability to be dialyzed in the dialysis unit.</i>	Principles I-V
C2. Dialysis of Stable Patients	<i>All stable patients should continue to be dialyzed in the outpatient dialysis unit.</i> <i>Patients categorized as probable COVID-19 (P1), suspected COVID-19 (P2), asymptomatic and exposed to COVID-19 (P3), or asymptomatic and not exposed to COVID-19 (P4) may be treated as per the care pathways outlined below.</i>	Principles I-V
<ul style="list-style-type: none">• Table 1: Low prevalence• Table 2: High prevalence <p><i>*Definition of low and high prevalence determined by public health agency.</i></p>		

Table 1: CARE PATHWAY FOR LOW PREVALENCE OF COVID-19 IN COMMUNITY

	P1 + Sxs + Exp PROBABLE	P2 + Sxs – Exp SUSPECTED	P3 – Sxs + Exp EXPOSED	P4 – Sxs – Exp LOW RISK
Patient wears mask on entry, <u>during dialysis</u> , and in transport vehicle	YES	YES	YES	NO
“Protected Dialysis” (isolation)	YES	YES	IF POSSIBLE	NO
<u>Droplet/contact PPE</u> (HCW)	YES	YES	NO	NO
Test for SARS-CoV-2	YES	WHEN POSS.	NO	NO
Shared transportation	NO	NO	NO	YES
Wait in waiting room	NO	NO	NO	OK
Wander in facility	NO	NO	NO	OK
Counsel on home isolation	YES	YES	YES	NO
Discontinue Isolation procedures	<i>If COVID neg: 14 days from exposure</i> <i>If COVID pos: See Section B</i>	<i>If COVID neg: when symptoms resolve</i> <i>If COVID pos: See Section B</i>	14 days from exposure	n/a
Visitors	NO	NO	One	One



TABLE 2: CARE PATHWAY FOR HIGH PREVALENCE OF COVID-19 IN COMMUNITY

	P1 + Sxs + Exp PROBABLE	P2 + Sxs – Exp SUSPECTED	P3 – Sxs + Exp EXPOSED	P4 – Sxs – Exp MAY BE EXPOSED
Patient wears mask on entry, <u>during dialysis</u> , and in transport vehicle	YES	YES	YES	YES
“Protected Dialysis” * (isolation)	YES*	YES*	IF POSSIBLE*	NO
<u>Droplet/contact PPE</u> (HCW)	YES	YES	Mask and Visor	Mask and Visor
Test for SARS-CoV-2	YES	YES	NO	NO
Shared transportation	NO	NO	NO	Try to avoid
Wait in waiting room	NO	NO	NO	Try to avoid
Wander in facility	NO	NO	NO	NO
Counsel on home isolation	YES	YES	YES	Only if recommended for population
Discontinue Isolation procedures	<i>If COVID neg: 14 days from exposure</i> <i>If COVID pos: See Section B</i>	<i>If COVID neg: when symptoms resolve</i> <i>If COVID pos: See Section B</i>	14 days from exposure	n/a
Visitors	NO	NO	NO	NO

Isolation Rooms and PPE

- *Ideally*, P1 and P2 patients should be dialyzed in separate isolation rooms. If not possible, see section G.
- *Ideally*, P3 (asymptomatic) patients should be dialyzed in separate isolation room. If not, consider use of plexiglass screens or disposable plastic sheets to separate treatment stations.
- Neg pressure ventilation rooms are N95s are NOT required for routine dialysis.

Waiting Rooms

- If feasible, medically stable patients can opt to wait in their car or transport vehicle and be contacted by cellphone when their treatment spot ready in order to avoid the waiting room (CDC).

Special “P3” Populations

- Asymptomatic patients exposed to outbreaks in their living facility (eg **nursing home patients**) should be isolated until 14 days after the outbreak is cleared from their facility.
- Duration of isolation may be longer than 14 days for immunocompromised patients – consult local infectious disease / control experts.

D. Visitors

D1. Visitors	<i>During periods of high community prevalence of COVID-19, visitors should not be permitted in the dialysis unit</i> <i>Exception: a visitor is needed to facilitate the dialysis treatment AND the patient is P3 or P4.</i>	Principles II, III, IV, V
<ul style="list-style-type: none">• All visitors who enter the unit should be screened with the screening questionnaire. Only asymptomatic visitors with no known exposure should be permitted to enter the unit. All visitors should be required to wear a mask and practice social distancing.• All visitors should be provided with reassurance that their loved one will continue to receive the best possible and safest hemodialysis care.		



E. Testing for SARS-CoV-2

E1. Testing	<i>All patients presenting with symptoms compatible with COVID-19 (P1 and P2) should be tested for SARS-CoV-2, preferably in the hemodialysis unit after nurses have received proper training.</i>	Principles I, III, V
<ul style="list-style-type: none">• RNs performing COVID-19 testing should use PPE for droplet/contact precautions as per provincial health agency guidelines. N95 masks are <u>not</u> required.• Renal programs should advocate for expedient results (ideally within 24 hours) to allow planning of future dialysis treatment location depending on COVID status.• CT scan is not required for diagnosis of COVID-19.• Repeat testing should be decided based on local public health recommendations.		



F. Resuscitation

F1. <u>Level of Intervention</u>	<i>All dialysis patients should have level of intervention (code status) and goals of care clearly documented in the dialysis AND hospital chart.</i>	Principles I, II, IV, V
<ul style="list-style-type: none">• For patients who are unlikely to benefit from attempted resuscitation, a “Do Not Resuscitate” status should be considered.• A copy of the level of intervention form should be given to the patient to keep at home.		
F2. Minimize risk of needing resuscitation in the dialysis unit	<i>See recommendations B1 and C1</i>	Principles I, II, III
F3. <u>Early Assessment</u>	Any patient with <u>probable</u>, suspected or confirmed COVID-19 and signs of clinical deterioration noted during hemodialysis (such as hypoxemia and/or respiratory distress) should have rapid assessment for early controlled intubation.	Principles I, II, III

F. Resuscitation

F3. Resuscitation Protocol	<i>All dialysis units should review their resuscitation procedures and protocols to ensure that:</i> <i>-the proper equipment is available in the dialysis unit or will be brought by the code team</i> <i>-all personnel are educated on the local resuscitation protocols that should be followed, including <u>when</u>, for <u>whom</u> and <u>how</u> a “protected code blue” is to be used</i>	Principles I, II, III
<ul style="list-style-type: none">• A protected code blue includes using a designated (negative pressure ventilation) isolation room for resuscitation. If one is not available, decisions on whether and how to modify the protected code blue protocol should be made with the local resuscitation / intensive care unit team.• For satellite dialysis units outside a hospital with <u>no code team within the building</u>, decisions as to whether and how the protected code blue procedure will be modified should be made <u>in conjunction with local resuscitation / intensive care unit experts</u>.• The protected code blue protocol should contain detailed information on: location, PPE to be used, who should enter room, what type oxygen mask is to be used, whether an AED should be used, whether chest compressions should wait until after intubation, where the patient should be transferred after being resuscitated, and decontamination procedures.		

G. Dialysis Under Fixed Dialysis Resources

G1. Communication with Patients	<i>Patients should be informed early in the pandemic that their dialysis schedules may change but that these changes will only be temporary, and will only undertaken if they can be done safely for them.</i>	Principle I, V
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G2. Shortage of Isolation Rooms	<i>When there is a shortage of isolation rooms, several options may be considered.</i>	Principle I, IV
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Options:

- 1) Cohort patients with confirmed COVID-19 on a separate shift. Cohorting should be avoided for P1 and P2.
- 2) Asymptomatic (P3) exposed: may use clear plexiglass screens which should be disinfected between treatments, or disposable plastic sheets to be removed after each treatment.
- 3) If resources allow, consider using some home dialysis training rooms as additional isolation rooms for P1/P2 patients under investigation. However, this should NOT be at the expense of reducing home dialysis training which facilitates transitioning people away from the hospital/dialysis unit.
- 4) If resources allow, consider converting other single rooms within the facility to “dialysis ready” rooms.



<p>G3. Shortage of Nursing Staff</p>	<p><i>Staff in local regional network who have experience in dialysis but are not currently working in the area should be identified, including retired hemodialysis nurses/staff.</i></p> <p>If there remains a severe shortage of hemodialysis nursing staff (ie from illness, quarantine or deployment to other units), then several additional options may be considered.</p>	<p>Principle I, IV</p>
<p><u>Options:</u></p> <ol style="list-style-type: none"> 1) Maximize use of the dialysis unit open hours by allowing “staggered shifts” rather than 3 fixed shifts a day. 2) Open dialysis unit on Sundays to reduce the number of nurses required during a single shift 3) Decrease nurse to patient ratios (eg. from 1:3 to 1:4 or even less if non-dialysis nurses can assist with nursing care in the dialysis unit if within their scope of practice). 4) Increase overtime of existing nurse to allow a 4th dialysis shift per day. May entail shortening patient treatments by 30 mins for patients who can tolerate it and staggered shifts. May pose transport problems for 4th shift. 5) Open the dialysis unit overnight. May cause nursing fatigue, is disruptive to patients, and requires special transport arrangements. Also, many dialysis units already have night shifts. 6) <u>Reduce treatments to 2 per week for patients who can safely tolerate it.</u> Patients may be prioritized for dialysis based on residual renal function, average weight gains and pre-dialysis serum potassium with caveats: 		

Proposed Decision Support System for initiating and maintaining incremental (twice-weekly) hemodialysis (HD) treatment (adapted from Kalantar-Zadeh *et al.*¹, Rhee *et al.*², and Obi *et al.*³)

- Adequate KRU of >3 ml/min/1.73m² (requires 24-hour urine collection for urea, creatinine and recent blood work – assuming ready lab availability)
- Adequate residual urine output >600 ml/day
- Limited fluid retention between two consecutive HD treatments with a fluid gain <2.5 kg (or less than 5% of the ideal dry weight)
- Limited or readily manageable cardiovascular or pulmonary symptoms without clinically significant fluid overload
- Suitable body size relative to residual renal function; patients with larger body size may be suitable for twice-weekly hemodialysis if not hypercatabolic
- No Hyperkalemia (K >5.5 mEq/L)
- Good nutritional status without florid hypercatabolic state
- Infrequent hospitalization and easily manageable comorbid conditions

MUHC PROPOSED SCHEME FOR DIALYSIS PRIORITY using the NEPHROCARE electronic medical record

PRIORITY A	<ul style="list-style-type: none"> • Average weight gain <u>≥ 2 kg</u> during the <u>last month</u> <p>OR</p> <ul style="list-style-type: none"> • Cannot miss based on opinion of treating physician eg. <u>inability</u> to tolerate small weight gains due to tenuous cardiac status, noncompliant with <u>Kayexalate</u>, etc. 	Cannot miss any treatments safely
PRIORITY B	<ul style="list-style-type: none"> • <u>2 or more</u> K values >5.5 during the <u>last 3 months</u> 	<p>Ideally should not miss any treatments If must miss one treatment, use <u>Kayexalate</u> 30 g daily until next treatment.</p>
PRIORITY C	<ul style="list-style-type: none"> • <u>one</u> K value >5.5 in the <u>last 3 months</u> 	<p>*Can temporarily miss one treatment in a week if absolutely necessary. Prescribe <u>Kayexalate</u> 15 g/d until next treatment</p>
PRIORITY D	<ul style="list-style-type: none"> • All others 	<p>*Can temporarily miss one treatment in a week if absolutely necessary The need for <u>Kayexalate</u> should be determined by the treating physician based on knowledge of the patient's average K, compliance, and residual renal function</p>

*Patient should not miss two consecutive treatments, *and no more than two treatments in 6 weeks.*

*Patients with serious dialysis access related issues with decreased blood flows and potential pre-existing underdialysis should NOT miss any treatments.

*Treating physician has the discretion to override this algorithm for individual patients.

H. Routine Care

H1. <u>Bloodwork</u>	<i>Consider reducing the frequency of routine <u>bloodwork</u> and access flow measurements for stable patients.</i>	Principles IV, V
<ul style="list-style-type: none">• Routine <u>bloodwork</u> should be no more frequent than every 6 weeks unless clinically indicated.• Ensure patients receiving less frequent dialysis are included in the routine <u>bloodwork</u> schedule.• Consider a method to stagger <u>bloodwork</u> to distribute the lab's work over several weeks.• If possible, review blood work remotely and order appropriate changes through the EMR to reduce exposure to paper charts.• Prescriptions should be called in/faxed directly to the patient's pharmacy.		



H. Routine Care

- *This topic was very controversial as practice and opinions vary by center.*

H2. Physician Rounds	<i>During the COVID-19 pandemic nephrologists and their teams should develop a plan to ensure continuity of necessary medical assessment and direction of each hemodialysis patient's care, while maintaining appropriate infection control precautions.</i>	Principle III, IV, V
<ul style="list-style-type: none">• Nephrologists caring for hemodialysis patients should be available for in-person assessment of patients where patient safety and care planning demands face-to-face assessment• When in the hemodialysis unit patient care area, follow appropriate infection prevention and control procedures as per local infection control recommendations. These may include:<ul style="list-style-type: none">-Wearing mask and eye protection while in the patient care area-Maintaining 2m distance from patients and other staff unless physical examination is indicated-Using full droplet/contact precautions when performing physical examination• In certain circumstances, the nephrologist may provide care virtually by phone, video or other communication when in the interests of patient and staff protection.		

CSN Renal COVID-19 RRT

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David Clark – Nova Scotia
Edward Clark – Ontario (Lead AKI/ICU)
Michael Copland – British Columbia
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