CSN/SCN Community

EPISODE 2

CSN COVID-19 Rapid Review Program

MANAGEMENT OF PATIENTS WITH ACUTE KIDNEY INJURY (AKI)

Dr. Edward (Ted) Clark
Dr. Swapnil Hiremath

Management of Patients with AKI

Working Group Members:

- Edward Clark
- Steven Soroka
- Matthew Weir
- Swapnil Hiremath
- Ron Wald

Management of Patients with AKI

Purpose:

- Suggestions/considerations regarding best care for patients with AKI in the ICU setting during COVID-19 pandemic.
- Guide for optimal management of AKI and provision of KRT while prioritizing safety of patients and healthcare workers.

Based on information available as of April 15, 2020….

The Washington Post

Democracy Dies in Darkness

Coronavirus Live updates U.S. map World map FAQs How to help

Coronavirus destroys lungs. But doctors are finding its damage in kidneys, hearts and elsewhere.

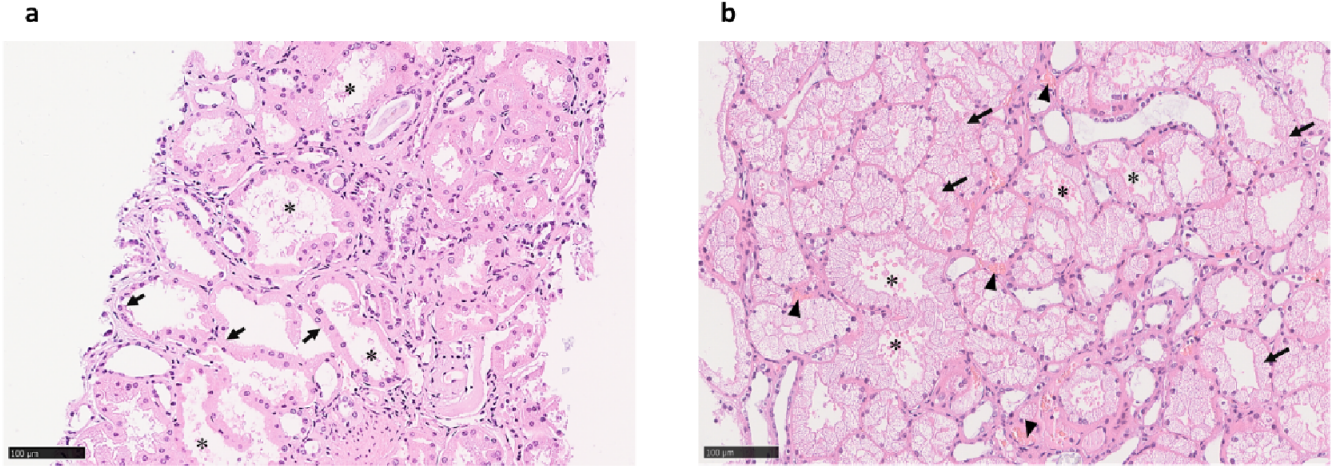
By **Lenny Bernstein**, **Carolyn Y. Johnson**, **Sarah Kaplan** and **Laurie McGinley**

April 15, 2020 at 7:00 a.m. EDT

FAKE NEWS??

Pathophysiology

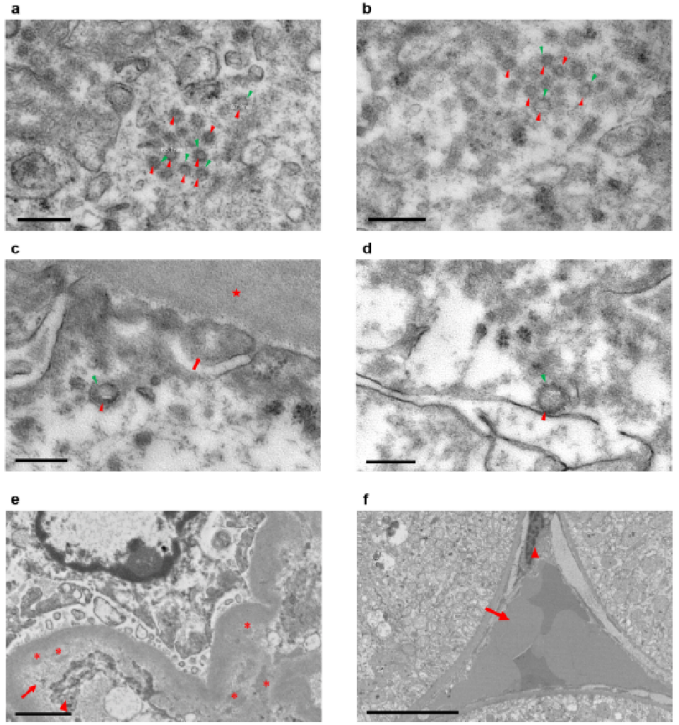
- Proteinuria and Hematuria reported at 30-70% (varying quality of studies)
- Data from Su et al. Kidnev International 2020



Pathophysiology

- ACE2 is expressed on proximal tubular cells
- Could there be direct viral invasion of tubular cells?

(probably not)



Studies Reporting AKI Incidence (Non-ICU):

Study	Setting	Definition of AKI	Incidence of AKI	Need for KRT	Association with Outcomes
Guan et al. (9)	Multicentre 552 Hospitals 32 regions China	KDIGO	6/1099 (0.5%)	0.8%	NR
Wang et al. (2)	Zhongnan Hospital, Wuhan, China	NR	2/102	0%	NR
Cheng et al. (10)	Tongji Hospital, Wuhan, China	KDIGO	36/701 (5%) Stage 1 2% Stage 2 1% Stage 3 2%	NR	After adjustment for age, sex, disease severity, stage 2/3 AKI associated with mortality
Xiao et al. (7)	Hankou Hospital, Wuhan, China	KDIGO	55/287 (19%) Stage 1 14% Stage 2/3 5%	NR	Mortality: No AKI: 3% Stage 1: 7% Stage 2/3: 64%

ICU Studies:

Study	Setting	Definition of AKI	Incidence of AKI	Need for KRT	Association with Outcomes
Wang et al. (1)	Tongji Hospital, Wuhan, China	sKDIGO	86/344 (25%)	NR	80/86 (93%) with AKI died Overall 39% mortality
Wang et al. (2)	Zhongnan Hospital, Wuhan, China	NR	3/36 (8%)	(6%)	NR
Chen et al. (3)	Jin Yin-tan Hospital, Wuhan, China	Need for CKRT	9/23 (39%)	39%	NR
Arentz et al. (4)	Evergreen Hospital, Seattle, USA	KDIGO (Failure only)	4/21 (19%)	NR	NR
Yang et al. (6)	Jin Yin-tan Hospital, Wuhan, China	NR	15/52 (29%)	NR	NR
ICNARC (5)	All critical care units from England, Wales and Northern Ireland	'Renal support'	294/1689 (19%)	19%	NR

Planning for a Potential Surge of AKI-KRT

Suggestion:

Working with ICU colleagues, plan for the possibility that 20% or more of critically ill COVID-19 patients admitted to ICU will require acute KRT.

Other issues related to planning for the surge*:

- AKI typically follows ICU admission quite quickly.
- Consider scalable plans for providing KRT that align with plans for increased numbers of ICU beds.
- Consider physical layout of ICU rooms including water supply
- Inventory of available KRT resources
    - Machines and portable ROs
    - Supplies
    - **Nursing (ICU and hemodialysis)**
    - Dialysis technician support.

*which hopefully never comes!

Fluid Management:

Suggestions:

- Ensure judicious fluid administration to avoid fluid overload but factor in that insensible losses may be very high in patients with persistent or recurrent fevers.
- Under most circumstances, direct examination of patients admitted to ICU with suspected or confirmed COVID-19 does not need to be routinely performed by the nephrology consultation service. As such, close consultation with ICU colleagues and nurses will be required to determine ultrafiltration goals for KRT.

Timing and Dose of KRT:

Suggestions:

- Traditional indications for starting KRT should be utilized and ‘pre-emptive’ initiation should be avoided.

- Precise calculation of the established minimum dose of CKRT should be used.

Modality Choice:

Suggestions:

- During the COVID-19 pandemic, nephrology programs should primarily continue to utilize the acute KRT modalities with which they have the most expertise.
- We suggest not using hemoperfusion for COVID-19 patients.

MDC multidisciplinary clinic

Vascular Access:

Suggestions:

- Favour internal jugular (IJ) site
- Consider temporary HD catheter (or ‘trialysis’ catheter) in patients with worsening kidney function who are imminently planned for prone ventilation even in the absence of an acute indication for starting KRT.
- Ensure that temporary hemodialysis catheters are locked with citrate or heparin immediately after placement.

Anticoagulation for KRT:

Suggestions:

- Higher than standard blood flow rates (Qb)
- In patients without a contraindication, use full dose anticoagulation for KRT that includes a bolus through the filter with every new circuit.
- For patients already on systemic anticoagulation, still consider a bolus of anticoagulation through the filter when starting KRT (or a new circuit).
- For patients on CKRT with an element of hemofiltration and on heparin anticoagulation, consider giving most of the replacement fluid 'pre-filter' (e.g. 80-90%).
- For programs with experience using regional citrate anticoagulation (RCA) for CKRT, consider using it preferentially for all COVID-19 patients.
- For programs with experience using RCA for CKRT, consider running RCA plus additional anticoagulation (e.g. heparin bolus and infusion) for patients with clotting issues.
- Programs that do not have experience using RCA protocols for CKRT should not start doing so during the COVID-19 pandemic.

Reducing Infection Risk to Healthcare Workers:

Suggestions:

- Consider preferentially utilizing KRT modalities that reduce the number of healthcare workers exposed to COVID-19 patients (and accompanying PPE use).
- Consider the use of tubing extensions to allow for KRT machines to be operated by healthcare workers at a further distance from COVID-19 patients.
- Utilize the remote-control feature of KRT machines that are equipped with it.

Considerations if KRT-related Resources Become Limited During the COVID-19 Pandemic:

Very dependent on how provision of KRT is organized at the local level and the shortage(s):

- Shortage of CKRT machines
- Shortage of CKRT supplies
- Shortage of IHD/SLED Capability (Nurses and/or Machines)
- In the context of an acute shortage of other KRT modalities, acute peritoneal dialysis (PD) could be considered.

Considerations if KRT-related Resources Become Limited During the COVID-19 Pandemic:

<u>Delaying the Need for KRT:</u>

- Pre-emptive KRT (i.e. before an acute indication is present) requires additional resources and is not evidence-based.
- Depending on the clinical context, clinicians may consider using high dose diuretics (including serial nephron blockade) and off-label use of potassium-binding resins to delay the need for KRT depending on the clinical context and resource availability.

Shortage of CKRT machines:

- Have a lower threshold to start IHD (or transition patients to IHD from CKRT) with respect to patients' hemodynamic stability
- Can use conventional HD machines to do SLED for more hemodynamically unstable patients.
- At centres that use both CKRT or SLED for hemodynamically unstable patients, consider preferentially using SLED.
- Can consider using CKRT machines to provide Prolonged Intermittent Kidney Replacement Therapy (PIKRT) for more patients.
- Consider use of acute peritoneal dialysis.

Shortage of CKRT solutions:

- Consider having a lower threshold for using IHD in patients in whom hemodynamic instability is likely to be manageable with increased vasopressor dosing.
- Consider using conventional HD machines to do SLED in more hemodynamically unstable patients.
- In centres that use both CKRT and SLED for hemodynamically unstable patients, favour the use of SLED.
- Consider using a lower dose of CKRT (e.g. 10-15 ml/kg/hr) once metabolic control has been achieved.
- Consider mixing CKRT solutions locally. A recent publication reports one such recipe (Burgner *et al.* CJASN 2020).
- Consider use of acute peritoneal dialysis.

Shortage of IHD/SLED Capability (Nurses and/or Machines):

- **To free up resources for critically ill patients, consider switching to two days per week HD for stable maintenance HD patients** without significant fluid overload or metabolic abnormalities as outlined in the related CSN HD guidance document.
- **Ensure any outdated, but still operable, IHD/SLED machines and portable ROs have been brought out of storage.**
- **Ensure all dialysis trained staff have been redeployed from other areas to provide necessary support.**
- **Consider using home hemodialysis vendor stockpile to supplement available IHD/SLED machine numbers.** Nursing training may be required to allow for use of different machines.
- **Consider shortening SLED duration to 6 hours for 3 patients daily.** If machines are available but hemodialysis nursing is limited can consider having one hemodialysis nurse supervise multiple SLED treatments by having patients physically close to each other with staggered start and stop times.
- At centres where SLED is the modality typically used for hemodynamically unstable patients and it is usually provided by ICU nurses (which is not widely done), can consider using it rather than IHD for hemodynamically stable patients to reduce hemodialysis nursing needs and PPE use (if ICU resources allow).
- **Consider helping build capacity for KRT in community hospitals that have maintenance hemodialysis units but where acute KRT is not routinely provided in ICU.** Staffing issues need to be carefully considered as well as potential need for additional KRT machines (and/or RO portable units).

Use of Acute Peritoneal Dialysis to Meet AKI-KRT Needs During the Pandemic:

Suggestion:

- **In the context of an acute shortage of other KRT modalities, acute peritoneal dialysis (PD) could be considered.**

Rationale: Acute PD can successfully be used to treat critically ill patients in a variety of settings. General guidelines for the use of PD in AKI have previously been reported.

Additional Considerations: Acute PD for COVID-19

- Depending on the centre, in addition to nephrologists, surgeons and/or interventional radiologists may perform acute PD catheter insertion and early planning with those specialists is warranted if resources for non-PD KRT modalities are likely to become scarce during the COVID-19 pandemic.
- Nursing exposure to COVID-19 infection risk (and PPE use) would be best limited through use of a cycler/automated PD.
- Given that volume control may often be the primary concern in COVID-19 patients with AKI, higher glucose concentration solutions may be required (e.g. starting with 2.5% glucose solutions then titrating according to achieved ultrafiltration).
- PD may be more complicated in patients that require prone ventilation although its acute use in a prone patient has previously been reported to have been successful.
- Lower dialysate volumes with shorter dwell times have several potential advantages in this setting: they may enable better ventilation relative to using larger volumes; they may make peri-catheter leaks less likely as catheters will be used almost immediately after insertion without any healing time for the catheter tract.

COVID-19 Drug Dosing in AKI

Suggestion:

- Consider the need for dose adjustment of medications used to treat COVID-19 in patients with kidney dysfunction.

- http://www.nephjc.com/news/covidaki

AKI acute kidney injury; MDC multidisciplinary care

Recommendations: AKI/ICU

Limitations:

- A full systematic review was not done.
- Suggestions have not been proven in the clinical environment
- **Local context may impede implementation of suggestions.**
- **New developments daily – things may have changed by tomorrow!**
  - http://www.nephjc.com/news/covidaki

Recommendations: AKI/ICU

Implications:

- Best practices may not be delivered to all patients given time constraints, resource constraints and local health authority priorities.
- The priority is to maximize benefits for the greatest number of patients.
- Given that most acute KRT related to COVID-19 is likely to initially be required in the ICU setting, close collaboration and planning between critical care and nephrology programs at the local level is required.
- Suggestions may require updating as newer evidence becomes available.

CSN Rapid Response Committee

Cheryl Banks – Prince Edward Island
David Clark – Nova Scotia
Edward Clark – Ontario (Lead AKI/ICU)
Michael Copland – British Columbia
Sara Davison - Alberta
Aviva Goldberg - Manitoba
Juliya Hemmett - Alberta
Swapnil Hiremath - Ontario
Joanne Kappel - Saskatchewan
Fabrice MacWay - Quebec
Brendan McCormick - Ontario
Louise Moist - Ontario
Sarah Moran – Ontario
Elena Qirjazi - Alberta
Jennifer M. MacRae - Alberta
Rajinder Singh – British Columbia
Steven Soroka – Nova Scotia
Rita Suri - Quebec (Lead HD)
Karthik Tennankore – Nova Scotia
Susan Thanabalasingam – Ontario
Matt Weir – Ontario
Ron Wald - Ontario
Christine White – Ontario (Lead GN/MCKC)
Deborah Zimmerman - Ontario (Lead Home)

Steering Committee
Adeera Levin
Reem Mustafa
Gihad Nesarallah
Steven Soroka
Deborah Zimmerman

CSN/SCN Community

EPISODE 2

CSN COVID-19 Rapid Review Program

MANAGEMENT OF PATIENTS WITH ADVANCED CHRONIC KIDNEY DISEASE

Dr. Christine White

Management of Patients with Advanced Chronic Kidney Disease

Working Group Members:

- Joanne Kappel
- Adeera Levin
- Sarah Moran
- Sanjay Pandeya
- Susan Thanabalasingam
- Christine White

Management of Patients with Advanced CKD

Purpose of Guidance Document :

- Provide guidance for optimal management of patients with advanced CKD in the environment of COVID-19 using a different model of care with different available resources while prioritizing safety of patients and care providers

Based on information available as of April 15, 2020

Management of Patients with Advanced CKD

Basis of the CSN Guiding Principles:

- International and national societies provide few recommendations on advanced non-dialysis CKD care
- There is no evidence available in the literature to guide recommendations
- Considered current practice of CKD providers in Canada
- Considered the *current* status of COVID-19 prevalence in Canada and of health care resources
- Aimed to provide a balance between optimal kidney care, resource allocation, and safety for patients and care providers

Management of Patients with Advanced CKD

Basis of the CSN Guiding Principles (cont'd):

- Goal to optimize patient outcomes and avoid "crash starts", hospital admissions with uremia and other severe adverse events, while minimizing nonessential in-person contact between patients and the health care system
- Acknowledge uncertainty in the evolution of the pandemic over time
- Recognize that COVID-19 prevalence may vary substantially by location
- Recognise that available resources could dramatically change, necessitating review of local protocols and guidelines
- Consider that CKD teams across the country are of varying size and have different access to resources which may influence their ability to implement guidance statements

Management of Patients with Advanced CKD

Development:

- Established working group of academic and community-based nephrologists
- Conducted literature searches and reviewed recommendations from other jurisdictions (provincial, national and international) where available
- Conducted survey to ascertain current status of multidisciplinary CKD care across the country
- Incorporated experiential perspective of European nephrologists
- Developed guiding principles after consideration of above and input from an infection control expert and ethicist
- Refined via teleconference and email exchanges
- Will be revised considering comments from knowledge users generated by webinar

CSN Multidisciplinary CKD Care Survey

- Conducted April 06-13, 2020
- 23 CKD programs: all 10 provinces, community (n=8) and academic (n=15)

Dalhousie University (NS)
Halton Health Care (ON)
Health Sciences North (ON)
Lakeridge Health (ON)
McGill University (QC)
McKenzie Health (ON)
McMaster University (ON)
Memorial University (NL)
Peterborough Regional Health Center (ON)
Queen Elizabeth Hospital (PEI)
Queen's University (ON)
Saint John Regional Hospital (NB)
University of Alberta (AB)
Trillium Health Partners-Credit Valley (ON)
Université de Montréal (QC)
Université Laval (QC)
University of British Columbia (BC)
University of Calgary (AB)
University Health Network (ON)
University of Manitoba (MB)
University of Ottawa (ON)
University of Saskatchewan (SK)
Western University (ON)

*No program reported significant human resource concerns at time of survey
*Most programs have adopted very similar approaches to CKD care

CSN/CKD Survey Results

Topic	Survey Response
Frequency of visits	• Most continuing prescheduled visits, prolonging f/u visits if stable • Minority of programs are cancelling clinic visits based on eGFR and screening
Type of visit	• All have converted almost exclusively to telehealth visits except for a small number of urgent patients requiring in-person visits • Most are using telephone visits finding video conferencing challenging for patients
Blood work frequency	• Most recommending patients to have blood work done, though reduced frequency • Remote locations, blood work is not always easily attained
Multidisciplinary care	• Most programs are continuing with multidisciplinary care
Education	• Offered if deemed urgent, and mostly provided using telehealth
Fistulas	• Most programs report that access to AVF creation is difficult
PD catheters	• Most, but not all, report that PD catheters continue to be placed

Recommendations: Multidisciplinary CKD Clinic

A. Clinic Visit Schedules

A1. Visit scheduling: Suggest adhering to clinical visit schedules where resources permit

- Provide kidney care according to best practices
- Reduce “crash starts”, hospital admissions for advanced uremia and other serious intercurrent events that may occur in the absence of usual surveillance and care
- Detailed screening of charts to triage visits is time consuming

A3. Communication : Suggest pre-emptively communicating the plan for ongoing care to patients to reduce pateint initiated cancellations and being ‘lost to follow up’

- Locally developed letter to all MDC patients

Recommendations: Multidisciplinary CKD Clinic

B. Clinic Visit Type

B1. Telehealth visits: Suggest patients receive telehealth visits unless an in-center visit is deemed necessary

- Provides routine care without exposure to COVID-19
- Evidence in several jurisdictions supports use of telehealth in CKD care with similar renal outcomes, hospital admissions, mortality, clinic adherence with lower costs
- Telephone visits may be easier for patients to manage than videoconferencing

B2. Pre-clinic communication: Suggest that in advance of telehealth visit, patient is called to be reminded:

- To do blood work
- Have an updated medication list created
- Record daily blood pressure readings and weights
  - Improve clinic efficiency and effectiveness

Recommendations: Multidisciplinary CKD Clinic

C. Provision of Multidisciplinary Care

C1. Multidisciplinary care team: Suggest that multidisciplinary care be provided as resources permit.

- Evidence of non-inferiority for telehealth multidisciplinary CKD care compared to standard in-person care
- A multidisciplinary approach will allow for division of the workload between care professionals and provides patients with varied expertise/supports

Recommendations: Multidisciplinary CKD Clinic

C. Provision of Multidisciplinary Care

C2. Care provider social distancing: Suggest care providers be socially distanced during all clinical encounters (in-person and telehealth)

- **C2a.** Physically distanced: Suggest providers work using physically distanced spaces, computers and telephones as resources permit
- **C2b.** Communication: Suggest providers communicate when possible with one another via phone and secure email
- **C2c.** Paperwork: Suggest paperwork generated by clinical visits be handled by as few individuals as possible

C3. Documentation: Suggest clinic documentation continue and information be conveyed to primary care provider as per usual

C4. Team functioning: Consider use of video or other 'visual' means to continue interaction amongst team members to foster improved understanding of patient needs

Recommendations: Multidisciplinary CKD Clinic

D. Bloodwork

D1. Safety: Suggest patients should be informed that outpatient laboratories are held to strict disinfectant standards and have been instructed in safe methods to draw blood, including limiting numbers of patients in waiting areas, and appropriate PPE. This reassurance may be necessary, as there is much fear on behalf of patients

D2. Completion: Suggest patients continue to have blood work done prior to clinic appointment provided local COVID-19 prevalence rates remain low and laboratory resources are available

D3. Results follow-up: Suggest establishing systems to f/u on lab values in a time-sensitive manner if a clinic visit is deferred

D4. Decreased frequency: Suggest decreasing frequency of standing bloodwork as appropriate on individual basis

Recommendations: Multidisciplinary CKD Clinic

E. Patient Education/Support

E1. ESKD: Suggest education be delivered virtually for patient approaching KRT

- Content delivered via telehealth has benefit of being flexible, adaptable to patient learning styles/preferences and easily amenable to repetition and reinforcement
- In case of limited internet access, suggest mailing educational materials or conveying via phone

E2. Uremic symptoms: Suggest reinforcing education around uremia during visits and reminding patients of the need to immediately contact the MDC team if any symptoms of uremia are noted

E3. Sick days: Suggest mailing patients a physical copy of educational material on medication changes for sick days to avoid preventable AKI

- Verbally reinforce during clinic visits specific medications

Recommendations: Multidisciplinary CKD Clinic

H. Kidney Replacement Therapy (KRT)

H1. Promotion of home therapies: Suggest promotion of home therapies over in-center therapies to reduce contact and COVID-19 transmission risk

- All patients and their caregivers should be assessed to ascertain readiness, ability and safety to perform home therapies

H2. PD catheter and fistula creation: Suggest kidney care providers and administrators advocate strongly for PD catheter insertion and fistula creation to be considered essential not elective services.

- PD catheter and fistula creation should be prioritized given they facilitate avoidance of "crash" hemodialysis line insertions with their attendant adverse consequences
- PD catheter insertions has been recommended to be designated as "urgent/emergent" procedures by the American Society of Diagnostic and Interventional Nephrology and the Vascular Access Society of the Americas

Recommendations: Multidisciplinary CKD Clinic

I. Medications

I1. New agents and medication changes: Suggest disease-modifying agents* continue to be prescribed in accordance with best practice provided monitoring is feasible and patient is agreeable

- **I1a. ESA Education:** Suggest delivering education via telehealth, ideally videoconferencing
- **I1b. ESA Dispensation:** Suggest providers and patients adhere to social distancing practices and arrange for ESA dispensation with minimal contact (deliver medication to the patient in their vehicle)

* e.g. erythropoietin stimulating agents, intravenous iron, SGLT2 inhibitors, ACEi/ARB, diuretics

Recommendations: Multidisciplinary CKD Clinic

I. Medications

I2. ACEi/ARB: Evidence lacking for any harm/benefit from interaction between the RAAS system and SARS CoV-2

- **I2a. Ongoing use:** Suggest ACEi/ARBs not be discontinued as a result of the COVID-19 pandemic
  - Supported by Canadian Cardiovascular Society and others

- **I2b. When to hold:** Suggest holding ACEi/ARBs in patients with symptoms of COVID-19 and other dehydrating illnesses as per usual given the increased risk of AKI and increased risk of more severe disease with COVID-19 infection in CKD unless compelling reasons to continue

Recommendations: Multidisciplinary CKD Clinic

K. COVID-19 Risk in CKD

CKD appears to be associated with increased risk of severe COVID-19 infection. Data is insufficient to determine if non-immunosuppressed CKD patients not requiring dialysis are at increased risk of infection

K1. Employment: Suggest that decisions be made on a case-by-case basis as whether patients with CKD should refrain from working, with consideration given as to the exposure risk and presence of comorbidities

Sarah’s Turn

- Questions/comments/suggestions at the end

Recommendations: Multidisciplinary CKD Clinic

G. Referral to MDC Clinic

G1. New referrals: Suggest new referrals to MDC clinic be requested only if the patient is anticipated to require KRT within the next 3 months or if requiring MDC care

- maintain continuity

KRT kidney replacement therapy; MDC multidisciplinary care

CSN/SCN Community

EPISODE 2

CSN COVID-19 Rapid Review Program

MANAGEMENT OF PATIENTS WITH GLOMERULONEPHRITIS (GN)

Dr. Sarah Moran

Management of Patients with Glomerulonephritis (GN)

Working Group Members:

- Sarah Moran
- Heather Reich
- Michelle Hladunewich
- Sean Barbour
- Jocelyn Garland
- Joanne Kappel
- Adeera Levin
- Sanjay Pandeya
- Susan Thanabalasingam
- Christine White

Management of Patients with GN

Purpose:

- Suggestions on optimal provision of care for patients living with GN during the COVID-19 pandemic

Scope - these recommendations:

- Pertain to care of patients with GN who would typically receive multidisciplinary GN care
- Are limited to the unique aspects of GN care. Other general care practices should follow the most current provincial public health policies.

Based on information available as of April 15, 2020….

Management of Patients with GN

Basis of the CSN Recommendations:

- Survey of nephrologists from April 9-15, 2020
- Consider the *current* status of COVID-19 prevalence in Canada and health care resources and aim to provide a balance between optimal kidney care, resource allocation, and safety for patients and care providers
- Overarching goals are to:
  - **Maintain continuity of GN care**
  - **Avoid adverse outcomes related to alterations in immunosuppression**
  - **Maximise provider potential to deliver clinical care while maintaining social distancing**
- Acknowledge uncertainty in the evolution of the pandemic over time and in different locations
- Recognise that available resources could dramatically change, necessitating review of local protocols and these guidelines

Development:

- as per advanced CKD recommendations

CSN GN Survey Results

Topic	Survey Response
Frequency of clinic visits	• Majority are continuing pre-scheduled visits • Some deferring f/u of “routine” stable patients up 3-6 months
Type of visit	• Near universal conversion to telehealth (mostly telephone, also video and hosted video) visits unless an urgent need for in-person visits is indicated • Video is challenging for some patients (lack of internet, lack of computer) • For in-clinic visits, patients prescreened & PPE utilized
Blood work frequency	• Bloodwork monitoring continuing
Multidisciplinary care	• All programs with pre-existing multidisciplinary care continue to provide it virtually
Renal biopsies	• Performed at physician discretion • Elective renal biopsies deferred while urgent biopsies continue with telephone screening for COVID-19 symptoms prior to procedure

CSN GN Survey Results

Topic	Survey Response
Challenges identified	• Potential medication supply chain disruptions (e.g., hydroxychloroquine) • More time needed for telehealth visits • Communication challenges with telephone consultations (e.g., lack of non-verbal cues, especially with new patients • Making informed decisions regarding immunosuppression both with active and remission of GN, • Lack of current knowledge of effect of COVID-19 on this population.
Success identified	• Ability to continue to deliver care in a rapidly changing environment • Ability to continue to deliver multidisciplinary team care • To mitigate against the risk of drug shortages, one provincial program has modified provincial drug dispensing to monthly

Key Issues and Suggestions

A. Clinic Visit Schedules

- **A1. Visit Scheduling:** Suggest adhering to clinic visit schedules *where resources permit*
  - Ensures patients continue to receive appropriate care, personalised advice regarding immunosuppression, support in case of COVID-19 infection

- **A2. Bloodwork and visit status:** Suggest an individualized approach regarding clinic visits if blood work is deemed routine or is unavailable
  - However, blood work is generally **not routine** in this population (disease activity, complications of therapy and drug level monitoring)

Key Issues and Suggestions

A. Clinic Visit Schedules

- **A3. Communication with patients:** Suggest pre-emptively communicating clinic's plan for ongoing GN care to all GN patients
  - Locally/provincially developed letter to all GN patients may be helpful

- **A4. Follow-up visits:** Consider increasing interval between subsequent follow-up visits as clinical status permits

Key Issues and Suggestions

B. Clinic Visit Type

- **B1. Telehealth visits:** Suggest patients receive *telehealth visits unless in-centre visit is deemed required*
  - Allows ongoing access to routine care while maintaining social distancing
- **B2. Pre-clinic communication:** Suggest patients are telephoned with instructions to gather specific information prior to telehealth visit (where resources permit)

Key Issues and Suggestions

B. Clinic Visit Type

- **B3. COVID-19 symptom education:** Suggest informing patients on how to seek medical care in case of developing COVID-19 symptoms.
  - Suggest patients contact their GN clinic if they develop COVID-19 symptoms for advice on medications.
  - Consider a formal letter or educated with telehealth visit.
  - We suggest that GN clinic contact information should include both contact phone number as well as out of hours contact information and/or instructions.

Key Issues and Suggestions

C. Provision of Multidisciplinary Care

- **C1. Multidisciplinary care team:** Suggest multidisciplinary care continue to be provided as resources permit
  - This approach has been successfully demonstrated via telehealth in CKD care management

Key Issues and Suggestions

D. Bloodwork

- **D1.** Suggest patients continue to have blood work done prior to clinic appointment
  - Advice *based on current Canadian COVID-19 prevalence rates remaining low*.
  - Suggest blood work be deferred to community laboratories where available.
  - Suggest drug level monitoring (tacrolimus, cyclosporine) continue as per local center discretion.

Key Issues and Suggestions

E. Patient Education/Support

- **E1. GN Education:** Suggest education about diagnosis and treatment plan be delivered virtually during the patient encounter and further supported by electronic or paper tools.
  - If access to internet and electronic devices is limited, suggest mailing education materials or conveying the information over the phone
  - Suggest compiling *vetted informational websites about GN* maintained by professional organizations and patient-driven online forums and sharing these with patients where appropriate.
    - https://www.cansolveckd.ca/gnregistry/about-gn
    - https://www.ontariorenalnetwork.ca/en/about/our-work/glomerulonephritis
    - https://nephcure.org

Key Issues and Suggestions

E. Patient Education/Support

- **E2. COVID-19 Education:** Suggest education about diagnosis and treatment plan in the setting of the COVID-19 pandemic be delivered virtually during the patient encounter and further supported by electronic or paper tools.
  - Consider sending a letter from the GN clinic to patients
  - If access to internet and electronic devices is limited, suggest mailing education materials or conveying the information over the phone

- Compile *vetted informational websites about COVID-19* maintained by professional organizations and patient-driven online forums and sharing these with patients where appropriate.
  - https://www.era-edta.org/en/covid-19-news-and-information/#toggle-id-4
  - https://www.kidneycareuk.org/news-and-campaigns/coronavirus-advice/
  - http://www.bcrenalagency.ca/health-info/prevention-public-health/novel-coronavirus-(covid-19)
  - https://www.ontario.ca/page/2019-novel-coronavirus

Key Issues and Suggestions

E. Patient Education/Support

- **E3. Sick Day Advice:** Suggest reinforcing existing sick day advice including explicit specific advice on which medications are to be held if unwell.
  - Consider reinforcement with existing written patient information leaflets
  - Particularly relevant for those prescribed long-term corticosteroids, immunosuppression, ACEi/ARBs and diuretics

Key Issues and Suggestions

E. Patient Education/Support

- **E4. Contact information:** Suggest giving GN patients clear guidance on *who to contact if any concerns arise*.
  - Written communication
  - Suggest consideration of a dedicated contact phone number
  - Include out of hours/weekend instructions

Key Issues and Suggestions

F. Home-based monitoring essentials

- **F1. Blood pressure:** Suggest patients monitor their BP at home (where resources permit), ideally using a Hypertension Canada-approved device.
  - If patient has private drug insurance: Rx or home BP-monitoring cuffs
  - Patients >65 years age may be eligible for provincial coverage
  - If patients are unable to obtain access to home BP monitoring, suggest referral to social work to help patients access local resources

Key Issues and Suggestions

G. Medication: Immunosuppression

- **G1. Infection risk:**
  - limited data available
  - Known increased severity and/or frequency of other infections
  - Initial COVID-19 reports indicate increased risk of ICU admission and requirement for mechanical ventilation in those with pre-existing CKD
  - Reports in the setting of GN are sparse. Rheumatologic registries including rheum-covid.org and UKIVAS have reported COVID-19 infection in 44 patients with lupus and 16 with vasculitis. Clinical outcomes and renal involvement are not currently reported

Key Issues and Suggestions

I. Medication: Immunosuppression

- **I2. Immunosuppression in chronic GN:** Suggest deferral of significant treatment reductions or changes until post-pandemic in clinically stable. This is to mitigate against the risk of disease recurrence or flare requiring re-induction.
  - Significant risk of disease relapse, flare or progression with cessation or interruption of immunosuppressive regimens
  - Hydroxychloroquine remains under investigation for the treatment of COVID-19. Patients already treated with hydroxychloroquine should continue uninterrupted.

Key Issues and Suggestions

I. Medication: Immunosuppression

- **I3. Immunosuppression in active GN:** Suggest continuing to prescribe using current best practice guidelines with regards to immunosuppression selection.

- **I4. Immunosuppression in the setting of COVID-19 infection:**
  - Individual dosing / decision to continue or modify immunosuppression should be made on a case-by-case basis.
  - Strategies reported in kidney transplant recipients have included reduction/withdrawal of antimetabolites first, followed by other IS based on clinical condition.
  - These strategies remain investigational and at physician discretion based on clinical status.

Key Issues and Suggestions

I. Medication: Immunosuppression

- **I5. Sites of administration of immunosuppression:** Suggest the site of administration of IV immunosuppression (e.g., infusion centres, hospital-based infusions centres) continue to be based on local best practices.

- **I6. Medication supply:** Recommend ensuring patients have one month's supply of medications available and adequate prescription refills (where appropriate) to allow for timely dispensing of immunosuppression.

Key Issues and Suggestions

J. Medication: Other

- **J1. ACEi/ARB:** ACE inhibitors and ARBs should not be discontinued as a result of the COVID-19 pandemic.
- **J2a. When to hold:** Suggest ACEi/ARBs be held in accordance with usual sick days guidance.
- **J2b. When to initiate:** Suggest ACEi/ARBs be initiated at individual physician's discretion based on clinical context, given the increased need for monitoring and potential for side effects

Key Issues and Suggestions

K. Employment:

- **K1. Employment:** Suggest a case-by-case approach when considering the question of whether patients with GN should refrain from work.
  - immunosuppressive burden
  - exposure risk inherent in their occupation
  - Concomitant comorbidities (e.g. diabetes, hypertension, cardiovascular disease)

Limitations

- For reasons of expediency, no attempt was made to do a full systematic review of the literature. Suggestions outlined here have not been formally proven in clinical environments and the local context may impede their implementation.

Implications

- These recommendations are intended to provide the best care possible during a time of reduced resources.

Questions / Comments / Insights?

The floor is open