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JOURNAL ACITN

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IN THIS ISSUE

CANNT|ACITN
Canadian Association of Nephrology Nurses and Technologists
l'Association canadienne des infirmières et infirmiers et des technologues de néphrologie

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Letter from the Editors

Greetings to one and all! We sincerely hope you had a wonderful summer. At CANNT, the end of summer always means being recharged for the upcoming conference at the end of October. As always, the conference planning committee has worked hard to select oral and poster presentations that will enrich nephrology nursing and technological practice. There is something for everyone – nurses, nurse practitioners, technologists, and industry partners. The theme for this year's conference, *CANNT Stop! Won't Stop! Finding Creative Ways to Bridge the Gap*, is so fitting because it describes our collective work ethic and philosophy at CANNT. Much like the passion for exemplary patient care we all share, the entire CANNT organization is indefatigable about supporting and sustaining this passion through dissemination of mutual knowledge. We learn from you as much as you partake of our educational offerings. We have a distinct feeling that attendees will have some difficulty deciding which concurrent sessions to attend at this year's conference (cue smiling emoji). We look forward to seeing you in Charlottetown, PEI, on October 26–28, 2023.

We would like to acknowledge the contributions that our outgoing CANNT President, Cathy Cake, has made throughout her collective tenure including Atlantic Vice-President and CANNT President-Elect. Cathy is a force of nature – she has never wavered in her passion for nephrology nursing and patient care. Following the tradition of her predecessors, she leaves behind a legacy of many accomplishments through hard work and collaboration with many partners in the nephrology field in Canada and abroad. She helped steer the organization through the pandemic. We will miss her trademark ebullience and collaborative spirit. Cathy, thank you for your outstanding commitment and leadership.

In this issue, we present the manuscript *Hemodialysis patient perspectives on cessation of intradialytic exercise during the COVID-19 pandemic* by Ingram et al. (2023). In the spirit of collaboration, we are extremely pleased to work with our kinesiology partners in delivering this article to you. The authors engaged in a quality initiative survey to analyze perceptions of patients receiving hemodialysis of the suspension of the intradialytic exercise (IDE) program in Calgary, Alberta during the pandemic. Findings from this survey have implications for the physical, emotional, and mental health of our patients. In our CE offering *A review of the expanding applications of SGLT2 inhibitors in chronic kidney disease and heart disease*, Meng and Battistella (2023) provide a much-needed primer on the renoprotective effects of this important class of medications in the CKD population. We have also included the diverse yet inclusive abstracts that will be showcased in full as oral or poster presentations in the CANNT conference.

We will be hosting our inaugural workshop at this year's conference. We encourage you to seek us out. We are both very passionate about promoting Canadian nephrology nursing and technological scholarship. We are always on the lookout for observational studies, clinical trials, case reports, solutions to clinical bedside issues, and quality improvement projects, to publish. We have always maintained there is a huge talented pool of writers in the vast land of ours, some of whom may be undiscovered yet. If the proverbial walls in our respective clinical and non-clinical spaces could talk, we would have much to share with our colleagues across the country and abroad. Let's chat in Charlottetown.

Sincerely from your *CANNT Journal* co-editors,

Jovina Bachynski
MN-NP Adult, RN(EC), CNeph(C), PhD Student

Rosa M. Marticorena
CNS, CNeph(C), DClinEpi, PhD

Message des rédactrices

Bonjour à tous et à toutes! Nous espérons de tout cœur que vous avez passé de belles vacances. Ici, à l'ACITN, on s'assure d'avoir fait le plein d'énergie avant la fin de l'été pour mieux préparer la conférence annuelle de la fin octobre. Comme toujours, le comité de planification a travaillé fort pour sélectionner des présentations, orales et par affiches, qui sauront enrichir la pratique des infirmières et des technologues en néphrologie. Tout le monde y trouvera son compte, infirmières et infirmières praticiennes, technologues et partenaires de l'industrie. Le thème de cette année, *CANNT Stop! Won't Stop! Finding Creative Ways to Bridge the Gap* (*L'ACITN en action : trouvons des moyens créatifs de combler l'écart*), renvoie parfaitement à l'éthique de travail et à la philosophie de l'association. Forte de sa passion collective pour les soins exemplaires aux patients, toute l'organisation de l'ACITN est infatigable quand il s'agit de nourrir cette passion par la transmission de connaissances mutuelles. Nous apprenons tout autant de vous, nos membres, que vous de nos offres de formation. Il est d'ailleurs possible que les participants à la conférence de cette année aient du mal à choisir parmi toutes les séances offertes (émoticône sourire). Nous sommes impatientes de vous voir à Charlottetown, Î.-P.-É., du 26 au 28 octobre 2023.

Nous aimerions aussi prendre le temps de souligner les contributions de notre présidente sortante, Cathy Cake, tout au long de son double mandat à titre de vice-présidente de la section Atlantique et de présidente désignée de l'ACITN. Cathy est une force de la nature; sa passion pour les soins infirmiers en néphrologie et les soins aux patients n'a jamais faibli. Suivant les traces de ses prédécesseurs, elle laisse derrière elle l'héritage de nombreuses réussites, rendues possibles par son travail acharné et par sa collaboration avec de nombreux partenaires du domaine de la néphrologie, au Canada et à l'étranger. Cathy a su tenir le gouvernail de l'organisation pendant la pandémie; son énergie débordante et son esprit coopératif vont beaucoup nous manquer. Cathy, merci pour ton dévouement et ton leadership hors du commun.

Nous présentons dans ce numéro l'article *Hemodialysis patient perspectives on cessation of intradialytic exercise during the COVID-19 pandemic*, par Ingram et ses collaborateurs (2023). Fidèles à notre volonté de collaboration, nous sommes ravies d'avoir travaillé avec nos partenaires en kinésiologie pour vous faire parvenir cet article. Les auteurs ont effectué un sondage d'évaluation de la qualité d'initiative afin d'analyser les points de vue des patients hémodialysés sur la suspension du programme d'exercice intradialytique à Calgary, en Alberta, pendant la pandémie. Les résultats de ce sondage en disent long sur la santé physique, émotionnelle et mentale de nos patients. Dans notre section sur la formation continue, *A review of the expanding applications of SGLT2 inhibitors in chronic kidney disease and heart disease*, l'article de Meng et Battistella (2023) propose une indispensable introduction aux effets néphroprotecteurs de cette importante classe de médicaments chez les patients atteints de néphropathie chronique. Le numéro comprend également les résumés, à la fois diversifiés et inclusifs, des présentations qui seront données par affiches ou à l'oral à l'occasion de la conférence de l'ACITN.

Nous animerons également l'atelier inaugural de la conférence de cette année; surtout, n'hésitez pas à venir nous trouver! Nous promouvons toutes deux avec passion l'expertise des infirmières et des technologues dans le domaine de la néphrologie au Canada. Nous sommes toujours à la recherche d'études

Suite à la page prochaine…

Le *Journal ACITN* est la publication officielle de l'Association canadienne des infirmiers/infirmières et technologues en néphrologie. 4, rue Cataraqui, bureau 310, Kingston (Ontario) K7K 1Z7.

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observationnelles, d'études cliniques, de rapports de cas, de solutions à des problèmes cliniques et de projets d'amélioration de la qualité à publier. Nous avons toujours été d'avis qu'il existe un immense bassin d'auteurs de talent dans notre grand pays, dont plusieurs n'ont encore jamais été découverts. Si les murs de nos espaces cliniques et non cliniques respectifs avaient des oreilles, ils auraient des tas de choses à rapporter à nos collègues de tout le pays et d'au-delà de nos frontières… mais nous aurons l'occasion d'en discuter à Charlottetown.

Salutations cordiales de la part des rédactrices de la *Revue de l'ACITN*,

Jovina Bachynski
Sc. inf., IP (adulte), inf. aut. (catégorie spécialisée), CNeph(C), doctorante

Rosa M. Marticorena
ICS, CNeph(C), D.E.S. Épidémiologie clinique, Ph. D.

President's Message

I am both saddened and excited to be writing my final report to you as your CANNT President. As I reflect on my many years with CANNT in various roles, as Atlantic representative, vice-president, and now president, I am saddened to leave. Volunteering with CANNT has allowed me the benefit of making new professional relationships that have developed into close friendships. I consider all members of our executive team as part of my extended family who are always supportive and committed to CANNT. Our Events Management Plus team is another integral part of everything CANNT has accomplished, and I thank you for your hard work. During my presidency, I have had many opportunities to network with nephrology colleagues from all over the world while promoting our Canadian nephrology care. These experiences, including attending the ANNA and EDTNA conferences, were invaluable, and the memories will always be very dear to me. I am sincerely grateful for these many opportunites of a lifetime.

I am excited to be starting a new chapter in my life, as I enter retirement after 38 years of nursing. Although I am leaving my role as dialysis clinical educator, I hope to pursue other professional opportunities within nephrology, as nursing will always be an integral part of me and what I do. I am also eager to spend more time enjoying my family and friends, and indulge in my passion of travelling.

I would like to welcome Dr. Alicia Moonesar as your new CANNT President. Alicia promises to move CANNT forward with her initiatives that will increase networking and collaboration with our nephrology partners. Her background as a nurse practitioner will bring a wealth of experience, knowledge, and leadership to the role. I trust CANNT will only get better at meeting your needs under her guidance.

Our upcoming conference in PEI is fast approaching and promises to be one of our greatest accomplishments yet. It is jam-packed with educational and informative sessions that are relevant and current to your nephrology practice. I hope to see you all in October in the beautiful East coast. I want to thank our industry partners for their generous financial support and informative interactive sessions, which make this conference possible and successful each year.

To conclude, I would like to encourage everyone to become members of and support CANNT. It can easily meet your professional goals of increasing your knowledge and advancing your practice while meeting like-minded colleagues. I promise it will exceed your expectations with monthly webinars presented by all members of our nephrology team. I promise to continue to support CANNT into the future.

Sincerely,

Cathy Cake,
M.Ed., BN, RN, CNeph(C)
CANNT President
2021–2023

Message de la présidente

Je suis à la fois triste et émue de vous écrire mon tout dernier rapport à titre de présidente de l'ACITN. Quand je repense à toutes les années que j'ai passées au sein de l'ACITN à plusieurs titres, que ce soit celui de représentante de la division Atlantique, de vice-présidente ou de présidente, la perspective de mon départ m'attriste. Être bénévole au sein de l'ACITN m'a permis de tisser de nouvelles relations professionnelles avec des personnes devenues de grandes amies. Je considère chacun des membres de notre équipe de direction comme faisant partie de ma famille élargie, unie par son soutien et son engagement à l'endroit de l'ACITN. Notre équipe de gestion événementielle (Events Management Plus) fait aussi partie intégrante de tout ce que l'association a accompli, et je la remercie du fond du cœur pour son travail. Tout au long de ma présidence, j'ai eu l'occasion de réseauter avec des collègues en néphrologie du monde entier, tout en promouvant le travail que nous effectuons au Canada. Ces expériences, parmi lesquelles ma participation aux conférences de l'ANNA et de l'EDTNA, ont été inestimables, et ce sont des souvenirs que je chérirai toujours. Je suis sincèrement reconnaissante d'avoir eu de telles occasions au cours de ma vie.

Cela dit, je suis heureuse d'amorcer un nouveau chapitre, puisque je prends ma retraite après 38 ans de soins infirmiers. Bien que je quitte mon poste à titre d'éducatrice clinique spécialisée en dialyse, j'espère avoir d'autres occasions professionnelles en néphrologie, puisque les soins infirmiers dans ce domaine feront toujours partie de moi et de mon quotidien. J'ai également hâte de passer plus de temps avec ma famille et mes amis, tout en m'adonnant à ma passion pour le voyage.

J'aimerais souhaiter la bienvenue à la docteure Alicia Moonesar à titre de nouvelle présidente de l'ACITN. Alicia promet de faire avancer l'association grâce à ses initiatives qui multiplieront les occasions de réseautage et de collaboration avec nos partenaires en néphrologie. Forte de son expérience professionnelle en tant qu'infirmière praticienne, elle saura apporter un trésor d'expérience, de connaissances et de leadership au poste. Je suis persuadée que l'ACITN ne pourra que répondre encore mieux à vos besoins sous sa gouverne.

Notre conférence à l'Île-du-Prince-Édouard aura lieu bientôt, et promet d'être l'une de nos plus grandes réussites à ce jour. Elle sera composée d'une foule de séances formatives et éducatives, à la fois actuelles et pertinentes dans le cadre de votre pratique en néphrologie. J'espère toutes vous voir en octobre, sur notre magnifique côte est. J'aimerais aussi remercier nos partenaires de l'industrie pour leur généreux soutien financier et leurs séances d'information interactives, qui nous permettent chaque année d'organiser la conférence et contribuent à son succès.

Pour conclure, j'aimerais vous encourager à devenir membres de l'ACITN et à soutenir l'organisation. Vous pourrez ainsi atteindre vos objectifs professionnels d'approfondissement des connaissances, tout en rencontrant des collègues qui partagent vos centres d'intérêt. Je vous promets que l'association sera bien au-delà de vos attentes, vous offrant tous les mois des webinaires présentés par les membres de notre équipe de néphrologie. Je vous promets, enfin, de continuer de soutenir l'ACITN dans les années à venir.

Cordialement,

Cathy Cake, M. Éd., B. Sc. inf., inf. aut., CNeph(C)
Présidente de l'ACITN, 2021–2023

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Your Board in Action

It always is a pleasure to write to you as your President-Elect/Treasurer for The Canadian Association of Nephrology Nurses and Technologists/L'Association Canadienne des Infirmieres et Technologues en Nephrologie (CANNT-ACITN). I continue to express my sincere and deep appreciation for your unrelenting perseverance and dedication.

Over the last few months, we have been busy preparing for the upcoming conference and spearheading important initiatives that will provide value to our members and nephrology practice.

We celebrated *Living Donation Week* on September 10–16, 2023. This is a public awareness event with support from the transplant community across Canada and beyond, meant to raise awareness and improve access to living kidney and living liver donation, celebrate living donors, transplant recipients and Team Transplant, and inspire those currently waiting for a transplant and those who care for them to explore living organ donation. The theme this year is *What's your story*

CANNT member Paulette Benoit (BN, RN, CNeph(C), regional clinical educator/vascular access lead, Renal Care Program-Western Zone, NL Health Services) shared a picture with CANNT that came with the story (see picture below). The incredible story features Sheri Sheppard, a transplant coordinator from Newfoundland, who entered the Paired Exchange Program with her mother. Sheri donated a kidney to a stranger, and her mom received a kidney from a stranger. I encourage you to watch the video of this story online at **Sheri & Marina | Kidney Donor and Recipient | UHN (greatactions.ca)**.

Renal Care Program-Western Zone, NL Health Services
Back (L-R): Katrina Cassell, Lisa Blanchard, Paulette Companion (CANNT Member), Sheri Sheppard, Ruth Banks (CANNT Member), Michelle King (CANNT Member). Front (L-R): Paulette Benoit (CANNT Member), Tara Ball, Emily Mercer (CANNT Member)

CANNT hosted a presentation with Dr Ali Iqbal (MD, FRCPC, transplant nephrologist, St. Joseph's Healthcare Hamilton; assistant professor, McMaster University, Hamilton) on *The dark side of transplant: Organ trafficking and forced organ harvesting* this spring. CANNT has put together a working group, chaired by CANNT Director of Communications, Rachael Blair, and CANNT Ontario Vice President Lisa Robertson, with members Megan Carter and Kokab Younis. The working group is focused on creating a patient pamphlet titled *Organ Trafficking and Transplant,* that contains relevant information for patients with kidney disease across Canada. We are looking forward to launching this pamphlet by the upcoming conference in October 2023 and greatly appreciate the work our members have been putting into this important issue.

Our conference will highlight sessions focused on transplant, and more than 40 of our members currently work in transplant units throughout Canada. We are proud to be a resource of education and encourage our members to let us know what topics you want to learn more about, what would be of value to you in your kidney care practice, and share what stories inspire you.

CANNT has hosted webinars this year on *Living kidney donation: The preferred treatment option for CKD patients*; *Guiding best practice: Routine use of ultrasound in hemodialysis is important to optimize health, function, and longevity of the AV fistula/graft*; and *Pure water for dialysis – Design considerations*. CANNT members have access to these webinars and can collect continuing education (CE) credits.

This year, CANNT has also been working on building partnerships with other renal associations, as we strive to create relationships that will allow our membership access to more education and resources. Day to day, we work closely with our technologists, dietitians, social workers, and pharmacists, and we are eager to connect on ways we can provide opportunities, so our memberships can collaborate and learn from each other. We are very excited to continue to explore this initiative and look forward to updating our membership.

With more than 300 members, your CANNT Board continues to evaluate ways we can provide useful resources to our membership, and opportunities that allow our membership to grow, learn, connect, and share, so that we can all continue to provide the best nephrology care and practice to our patients.

Now, as we look forward to the upcoming CANNT Conference, get ready to connect with your peers, make new connections, gain valuable insights, and have fun. We are looking forward to providing a platform for our nephrology professionals across the country to come together and share their expertise. There are sessions of interest for each specialty. We invite you to review the abstracts to be presented at the upcoming CANNT Conference in this issue.

Looking forward to seeing you in Charlottetown, PEI on October 26-28, 2023.

Regards,

Alicia Moonesar

Dr. Alicia Moonesar, DNP, MScN, NP-PHC (she/her)
CANNT President-Elect/ Treasurer 2021–2023

Votre conseil d'administration à l'œuvre

C'est toujours pour moi un honneur de vous écrire à titre de présidente désignée et trésorière de la Canadian Association of Nephrology Nurses and Technologists/L'Association Canadienne des Infirmières et Technologues en Néphrologie (CANNT-ACITN). Une fois de plus, je tiens à vous exprimer ma sincère et profonde reconnaissance pour votre persévérance et votre dévouement continus.

Ces derniers mois, nous avons été très occupées à préparer notre prochaine conférence et à faire avancer d'importantes initiatives, porteuses de valeur pour nos membres et dans le cadre de notre pratique en néphrologie.

Cette année, la *Semaine des dons vivants* a eu lieu du 10 au 16 septembre 2023. Il s'agit d'un événement de sensibilisation soutenu par la communauté des greffés, au Canada et au-delà de ses frontières, qui vise à conscientiser le public, à améliorer l'accès aux dons de rein et de foie de personnes vivantes, à célébrer les donneurs, les receveurs et Team Transplant, et à inciter les personnes en atteinte d'une greffe, ainsi que leurs proches, à explorer l'option des dons d'organes de personnes vivantes. Le thème de cette année est *What's your story?* (« Quelle est votre histoire »?).

Paulette Benoit, membre de l'ACITN (B. Sc. Inf., inf. aut., CNéph[C], éducatrice clinique régionale/responsable de l'accès vasculaire, programme de soins rénaux – zone de l'Ouest, services de santé de T.-N.-L.), nous a fait parvenir la photo qui accompagne l'un des récits (voir ci-dessous). C'est l'histoire incroyable de Sheri Sheppard, une coordonnatrice de greffe de Terre-Neuve-et-Labrador, qui a choisi d'intégrer le programme de don croisé avec sa mère. Sheri a donc donné l'un de ses reins à une personne inconnue, et sa mère a elle aussi reçu un rein d'une personne qu'elle ne connaissait pas. Je vous invite à visionner la vidéo de cette histoire en ligne, à l'adresse **Sheri et Marina | Donneuse et receveuse de rein | UHN (greatactions.ca)**.

Programme de soins rénaux – zone de l'Ouest, Services de santé de T.-N.-L. Rangée du fond (de gauche à droite) : Katrina Cassell, Lisa Blanchard, Paulette Companion (membre ACITN), Sheri Sheppard, Ruth Banks (membre ACITN), Michelle King (membre ACITN). Rangée avant (de gauche à droite) : Paulette Benoit (membre ACITN), Tara Ball, Emily Mercer (membre ACITN)

Ce printemps, l'ACITN a accueilli une présentation du Dr Ali Iqbal (M.D., FRCPC, néphrologue spécialisé en greffes, St Joseph's Healthcare de Hamilton; professeur adjoint, Université McMaster, Hamilton), intitulée *The dark side of transplant: Organ trafficking and forced organ harvesting* (*Le côté sombre des greffes : trafic et prélèvement forcé d'organes)*. L'ACITN a mis sur pied un groupe de travail dirigé par Rachael Blair, directrice des communications de l'association, et Lisa Robertson, vice-présidente du chapitre ontarien de l'ACITN, avec Megan Carter et Kokab Younis comme membres. Ce groupe de travail avait pour mission de créer un feuillet informatif intitulé *Organ Trafficking and Transplant* (*Le trafic d'organes et les greffes*) pour transmettre des renseignements pertinents aux patients atteints de maladies du rein dans tout le Canada. Nous avons hâte à la publication de ce feuillet, qui devrait avoir lieu d'ici notre conférence d'octobre 2023, et remercions chaleureusement nos membres pour le travail acharné qu'elles ont consacré à cet enjeu d'envergure.

Notre conférence mettra à l'avant-scène les séances portant sur les greffes; d'ailleurs, plus de 40 de nos membres travaillent actuellement dans des unités de transplantation un peu partout au Canada. Nous sommes fiers d'être une ressource éducative et encourageons nos membres à nous faire part des sujets qu'ils aimeraient approfondir, de ce qui leur serait utile dans leur pratique en néphrologie, et des témoignages qui les ont inspirés.

L'ACITN a organisé plusieurs webinaires cette année : *Living kidney donation: The preferred treatment option for CKD patients (Le don du rein de personnes vivantes : le traitement à privilégier pour les patients atteints de néphropathie chronique)*; *Guiding best practice: Routine use of ultrasound in hemodialysis is important to optimize health, function, and longevity of the AV fistula/graft* (*Vers des pratiques exemplaires : le recours habituel à l'échographie pendant l'hémodialyse est important pour optimiser la santé, le fonctionnement et la longévité de la fistule/du greffon artérioveineux)*; et *Pure water for dialysis – Design considerations (De l'eau pure pour la dialyse – considérations conceptionnelles)*. Les membres de l'ACITN ont accès à ces webinaires, grâce auxquels ils peuvent accumuler des crédits de formation continue.

Cette année, l'ACITN a également travaillé à bâtir des partenariats avec d'autres associations de soins du rein, aspirant à nouer des liens qui permettront à nos membres d'accéder à plus de formations et de ressources. Au quotidien, nous travaillons de près avec nos technologues, nos diététistes, nos travailleurs sociaux et nos pharmaciens, et sommes toujours motivés à offrir à nos membres de nouvelles occasions de collaborer et d'apprendre les unes des autres. Nous sommes donc ravies de continuer à explorer cette initiative et avons hâte d'accueillir de nouveaux membres.

Chapeautant une association de plus de 300 membres, votre conseil d'administration cherche toujours de nouveaux moyens d'offrir à ses membres

des ressources utiles ainsi que des occasions de croître, d'apprendre, de réseauter et d'échanger, pour que nous puissions tous continuer de prodiguer les meilleurs soins possibles à nos patients en néphrologie et de parfaire notre pratique.

À l'heure où nous préparons la conférence de l'ACITN, préparez-vous à rencontrer vos pairs, à créer de nouveaux liens, à faire de précieux apprentissages et à vous amuser. Nous avons hâte d'offrir aux professionnels en néphrologie de tout le pays une plateforme où se réunir pour faire profiter les autres de leur expertise. Les différentes séances portent sur des sujets d'intérêt pour chaque spécialité. Nous vous invitons à lire, dans ce numéro, les résumés des présentations prévues à la conférence de l'ACITN.

J'ai hâte de vous retrouver à Charlottetown, Î.-P.-É., du 26 au 28 octobre 2023!

Cordialement,
Alicia Moonesar

Dre Alicia Moonesar, DPI, M. Sc. Inf., IPSPL (elle)
Présidente désignée et trésorière de l'ACITN 2021–2023

NOTICE BOARD

- Canadian Nurses Association (CNA) Exam Timeline. **https://www.cna-aiic.ca/en/certification/about-certification**

	Spring 2023	Fall 2023
Initial exam or renewal by exam application window	January 11–March 31, 2023	June 5–September 30, 2023
Certification exam window	May 1–15, 2023	November 1–15, 2023
Renewal by continuous learning application window	January 11–December 16, 2023	

- **October 14–17, 2023**, 51st EDTNA/ERCA International Conference, Vilnius, Lithuania. https://www.edtnaerca.org/conferences/conferences-vilnius-2023
- **October 26–28, 2023**. CANNT National Conference - *CANNT Stop, Won't Stop – Finding Creative Ways to Bridge the Gap*, Charlottetown, PEI. **https://cannt-acitn.ca/2023-program/**
- **November 2–5, 2023**. American Society of Nephrology (ASN) 2023 Kidney Week. Pennsylvania Convention Center, Philadelphia, PA. **https://www.asn-online.org/education/kidneyweek/**
- **November 9–10, 2023**. BC Kidney Days, Vancouver, BC, **http://www.bcrenal.ca/learning-events/bc-kidney-days**
- **September 26–29, 2024**. International Society for Peritoneal Dialysis (ISPD) Congress (ISPD 40th Anniversary). Dubai World Trade Center, Dubai, UAE. **www.ispd.org/dubai2024**

CANADIAN NURSES ASSOCIATION

Nephrology Certification Registration Status Report 2023

Initial and Renewal by Exam to Renew in 2023	Renewal by Continuous Learning (CL) Hours	Total of Initials and Renewals	Due to Renew in 2023
38	12	50	166

Hemodialysis patient perspectives on cessation of intradialytic exercise during the COVID-19 Pandemic

By Christina Ingram, Kathryn Wytsma-Fisher, Kristen Parker, Shauna Raugust, Stefan Mustata

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ABSTRACT

As a result of the COVID-19 pandemic, the intradialytic exercise (IDE) program in Calgary, AB, was suspended for two months. Patients who regularly participated in the program subsequently attributed their functional decline to the cessation of IDE. This study retrospectively examined the IDE program in Calgary, Alberta, from January to July 2020. Patients were divided into two distinct groups based on IDE adherence, and objective patient health parameters were monitored over three separate timeframes: IDE (pre-shutdown), shutdown, and re-start periods. A quality initiative (QI) survey was administered to analyze patient perceptions of the suspension of IDE. Most respondents (n = 50/68) observed a decrease in physical health without IDE and felt that their emotional well-being was either positively affected by IDE (n = 27/68) or remained unchanged (n = 26/68). Target weight, hospitalization days, falls, intradialytic symptoms, or hypotensive incidents were unchanged. However, Kt/V was highest during the IDE period and was decreased when patients were not partaking in IDE during the shutdown period. Patients who participate in IDE found their involvement had both physical and emotional benefits.

AUTHOR NOTES

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BACKGROUND

Over the past 20 years, the prevalence of chronic kidney disease (CKD) in Canada has more than doubled, with more than 41,000 Canadians currently undergoing hemodialysis (HD) treatments (Canadian Institute for Health Information, 2020). Patients receiving HD have comorbidities including cardiovascular disease, diabetes, hypertension, and dyslipidemia, which lead to functional decline of patients (Painter, 2005; Wilund et al., 2010). Functional decline often causes the loss of independence, and increased risk of falls, hospitalizations, and overall mortality (Himmelfarb, 2008; Kosmadakis et al., 2010; Painter, 2005; Stack et al., 2005; Wilund et al., 2010). Exercise has been proposed as an intervention for HD-associated comorbidities, where cardiovascular disease risk, insulin resistance, and inflammatory markers have been shown to decrease in response to exercise stimuli (Kouidi et al., 2009; Mohseni et al., 2013; Parker, 2016; Sheng et al., 2014; Thompson et al., 2003). Additionally, improved dialysis efficacy, physical strength, better mobility, reduced depression, and enhanced health-related quality of life (QoL) have been reported (Kouidi et al., 2009; Mohseni et al., 2013; Thompson et al., 2003).

In HD populations where so much of the patients' time is accounted for by disease treatment, intradialytic exercise or exercise done during HD treatments, is a safe and time-efficient way to gain exercise-induced benefits (Parker, 2016). In Alberta HD clinics, the most common form of IDE is cycling on stationary foot pedal bikes. This program has been ongoing since its inception in 2005 and no serious adverse effects have been reported as a result of a single bout of exercise (Parker, 2016). Despite these known benefits of exercise on both physical and mental health, the IDE program was halted during the early days of the worldwide COVID-19 lockdown in March 2020. Little was known at that time about the pandemic and its implications for patients in the HD clinics, so the IDE program was postponed and only essential frontline nursing staff were present to provide HD treatments. All other multidisciplinary staff, including kinesiologists who operated the IDE program, were advised to work remotely at that time.

This postponement of IDE lasted for approximately two months. Previous studies querying detraining in those with chronic disease found substantial declines in functional capacity and QOL within a few weeks of discontinuing

activity (Gravina et al., 2020; Reutter-Bernays & Rentsch, 1993; Wadell et al., 2005). Therefore, it was expected that most health benefits gained from previous IDE would be lost in the two months without IDE, particularly in those who did not participate in exercise outside of their HD treatments.

This interruption of the IDE program in several Calgary clinics presented a unique opportunity to examine the effects of stopping exercise in a population it clearly benefitted. Therefore, we sought to observe how a two-month suspension of IDE affected the physical, mental, and emotional health of the HD population. This study had two primary outcome measures. The first outcome was to gain insight into patient perceptions of how temporary cessation of IDE affected their physical and mental health using a quality initiative (QI) survey. Physical markers included self-reported changes in muscle strength, pain levels, energy, and mobility. Mental health parameters studied were perceived changes in depression levels, anxiety, and stress. The second outcome was the retrospective identification of changes to patient health parameters and HD treatments including self-reported falls, hypotensive symptoms, HD symptoms, Kt/V, and target weight changes.

METHODS

Design, Subjects, and Samples

This study was a retrospective analysis of the IDE programs in Calgary, Alberta, Canada from January to July 2020. To be included in this study, participants had to be adults (greater than 18 years) on conventional HD (two to three times a week) and participate in the IDE program at one of the six HD clinics in the city of Calgary. To be included in the analysis, patients had to complete IDE during more than 30% of their HD treatments prior to the lockdown (between January 1 and March 15, 2020). All IDE participants were approached by a clinical kinesiologist, and they provided verbal consent prior to data collection. This project received approval by the University of Calgary Conjoint Health Research Ethics Board and complied with the latest version of the Declaration of Helsinki (REB20-2007).

Three types of data were collected for this study: patient baseline demographics, subjective measures via a QI survey, and a retrospective chart review of objective patient health parameters.

Baseline Demographics: Patient demographics were collected to examine trends between patients. Demographic data included age, dialysis site, dialysis vintage, adherence to IDE between January 1 and March 15, 2020, total amount of bike time during that time, height, target weight (as of Jan. 1, 2020), cause of renal failure, and comorbidities.

QI Survey: A patient survey was created that consisted of nine questions that included a five-point Likert scale questions (n = 4), Yes/No questions (n = 3), and open-ended questions (n = 2) (Appendix A). This survey examined patient views on changes in physical or mental health due to lack of activity provided by IDE and overall thoughts on the IDE program. If patients found ways to replace the suspended IDE program during the lockdown period, then details of any exercise routines were identified. The survey was developed by kinesiologists and management of Alberta Kidney Care South (AKC-S), and was consequently reviewed and revised by patient advisors prior to administration. The patient advisors, who were patients from the HD units, provided feedback on the readability of the surveys, as well as the appropriateness of the questions. These surveys were not anonymous, and each survey was marked with "A" for adherent (> 60% IDE sessions completed between January 1 and March 15, 2020) or "N" for non-adherent (30–60% IDE sessions completed between January 1 and March 15, 2020). These QI surveys were analyzed by research staff for themes, trends, and patient feedback regarding the suspension of the IDE program due to the COVID-19 pandemic.

Patient Health Parameters: A chart review was conducted to examine the difference in objective patient health parameters between three distinct phases: the IDE period (January 1 to the week of March 15), the shutdown period (March 15 until May 25, 2020), and the two months after the bike program was re-started. Health parameters included average Kt/V, self-reported falls, target weight, the number of symptomatic hypotensive episodes (systolic blood pressure reduction of greater than 20 mmHg with reports of dizziness, lightheaded), and intradialytic symptoms reported (cramping, dizziness, restless legs syndrome) during the three distinct phases (IDE, shutdown, and re-start). The chart reviews were conducted in patient electronic medical records (EMR).

Statistical Analysis

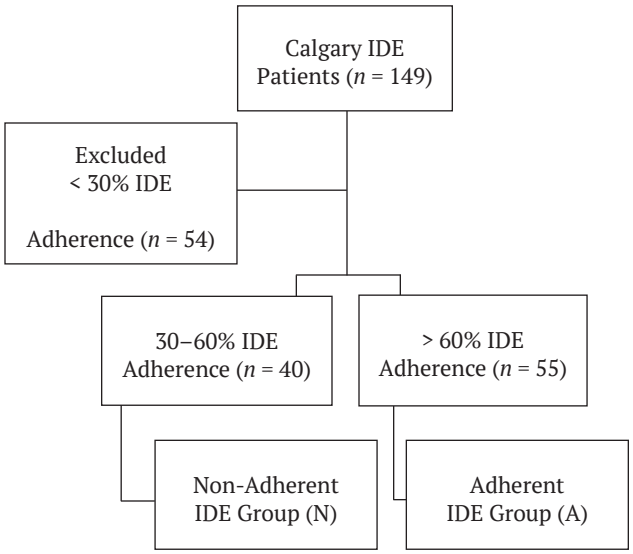
Qualitative data from QI surveys were analyzed for themes and quotes from patients. Participant demographics and study outcomes were summarized using descriptive statistics. For continuous variables, data were presented as mean ± standard deviation. For categorical variables, frequencies and percentages were presented. A repeated measured ANOVA was used to determine if differences in outcome measures occurred. Changes in target weight, Kt/V, falls, hypotension symptoms, or intradialytic symptoms during the IDE phase, IDE shut down phase, and the two-month post-restarting IDE phase were analyzed. Statistical significance was set at α value of less than 0.05 and effect was calculated using Cohen's d method.

RESULTS

Of 149 patients in Calgary enrolled in the IDE program, 95 patients were included in this study (A [adherent] group: 55; N [non-adherent] group: 40; Figure 1). The remaining 54 patients did not meet the inclusion criteria (completed IDE during more than 30% of HD over the duration of the IDE phase) and therefore, their objective data were not analyzed.

Figure 1

Breakdown of IDE Groups Based on Patient Adherence



Patient Demographics

Baseline patient demographic characteristics, etiology of kidney failure, comorbidities, and laboratory values are displayed in Table 1. The patient sample contained more males (*n* = 96/149, 64%) than females (*n* = 53/149, 35%). The most prominent ethnicity in the patient sample were Caucasians (40.1%) followed by Asians (12.8%). Hypertension (HTN) and diabetes mellitus (DM) were the most reported etiologies of kidney failure (38.3% and 26.9%, respectively), and comorbidities present in patients (32.4% and 8.6%, respectively). Mean laboratory hemoglobin (Hgb) levels (107.5 ± 12.4 g/L) were approximately 19% lower than regular population, whereas mean albumin levels (33.7±3.4 g/L) were less than 1% lower than the start of the recommended range (33g/L or higher for kidney patients).

QI Survey

Of 149 patients, 68 patients (male *n* = 46, 67.6%; female *n* = 22, 32.4%) returned their surveys (Figure 2). The majority of respondents (73.5%) indicated a detrimental change to their physical health during the time the IDE program was suspended. The most common change identified by patients was decreased leg strength (*n* = 26, 38.2%) and weight gain (*n* = 4, 5.9%). Participants who were active outside of HD prior to the pandemic reported being consistently active during the pandemic shutdown. These patients were part of both the adherent and non-adherent groups. In the data set, the groups were not blinded so we were able to determine which person was in each group. On average, these patients completed more extradialytic exercise during the IDE phase compared to the shutdown phase, where exercise sessions per week (4.60 ± 2.03 and 4.15 ± 2.42, respectively) and session length (51.56 ± 39.85 minutes and 42.92 ± 46.10 minutes, respectively; Table 2) decreased. Activities in which patients participated throughout the pandemic included walking, resistance training, stationary cycling, and dancing. Patients also conducted instrumental

Table 1

Demographic Profile of IDE Patients

Variable	Mean (± SD)
Age, yrs	66.8 (13.9)
Male (%)	96 (64.4)
Female (%)	53 (35.6)
HD vintage, months	64.9 (42.1)
Pre-COVID IDE adherence, %	59.2 (0.28)
Pre-COVID IDE dose, hrs	20.8 (20.4)
Ethnicity (%)	
Caucasian	61 (40.1)
Asian	19 (12.8)
Indigenous	10 (6.7)
African	7 (4.7)
East Indian	4 (2.7)
Middle Eastern	3 (2.0)
Caribbean	1 (0.67)
Unspecified	44 (29.5)
Etiology of kidney failure (%)	
Hypertension	87 (38.3)
Diabetes mellitus	61 (26.9)
Autoimmune or Glomerulonephritis	26 (11.5)
Ischemic nephropathy	11 (4.8)
Polycysic kidney disease	8 (3.5)
Drugs	4 (1.8)
Cancer	3 (1.3)
Other	27 (11.9)
Comorbidities (%)	
Hypertension	131 (32.4)
Diabetes mellitus	75 (18.6)
Coronary artery disease	51 (12.6)
Myocardial infarction	34 (8.4)
Cancer	33 (8.2)
Respiratory	23 (5.7)
Congestive heart failure	19 (4.7)
Angina	18 (4.5)
Cerebrovascular accident/ Transient ischemic attack	18 (4.5)
Other	2 (0.5)
Baseline Laboratory Values	
Hemoglobin, g/L	107.5 (12.4)
Albumin, g/L	33.7 (3.4)

Note. Values are reported as mean (± SD).

activities of daily living including gardening, yard work, and snow shoveling. A subset of patients (n = 15/68) reported no other activity besides IDE biking and only three of these patients started activity outside of HD once IDE was suspended. This indicated that some patients (n = 12/68) had no form of activity when IDE was unavailable. We do not have a definitive explanation as to why this is but surmise that it is because these patients had no other exercise options available to them at home or were not motivated to do other forms of exercise. Most respondents felt that their emotional well-being was either positively affected by the IDE program (n = 27/68, 39.7%) or neutral (n = 26/68, 38.2%) (Figure 2). Interestingly, all patients (n = 68/68, 100%) felt that the IDE program should be continued if another pandemic closure was implemented.

Target Weight, Hospitalization Days, Falls, Intradialytic Symptoms, and Hypotensive Symptoms

There were no significant differences observed in target weight, hospitalization days, falls, intradialytic symptoms, or hypotensive systems between all three phases for either the A or N groups ($p > 0.05$).

Kt/V

There was a difference observed in Kt/V between the IDE and shutdown phase ($p < 0.05$), and between the IDE and IDE re-start phases ($p < 0.05$; Figure 3) in the A group. Mean Kt/V achieved during the IDE phase (1.26 ± 0.24) was approximately 4% higher than that observed in the shutdown phase (1.21 ± 0.25) in the A group. In addition, mean Kt/V achieved during the IDE phase (1.26 ± 0.24) was approximately 3% higher than that observed in the IDE re-start phase (1.22 ± 0.26). There was no difference observed in the A group between shutdown and IDE re-start ($p > 0.05$). Additionally, no differences were observed between any phases in the N group.

Figure 2

Q1 Results From 68 Respondents on Patient Perceptions of Lack of IDE During Shutdown

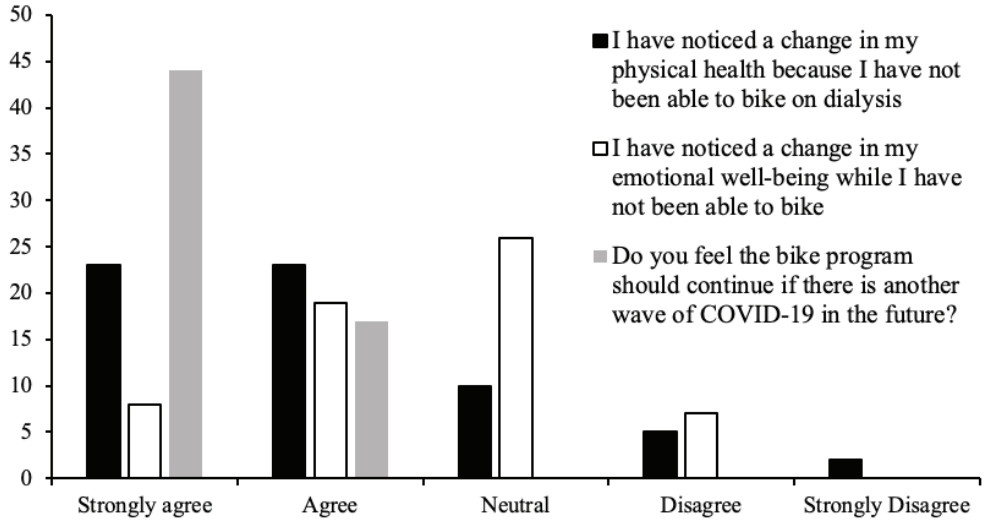
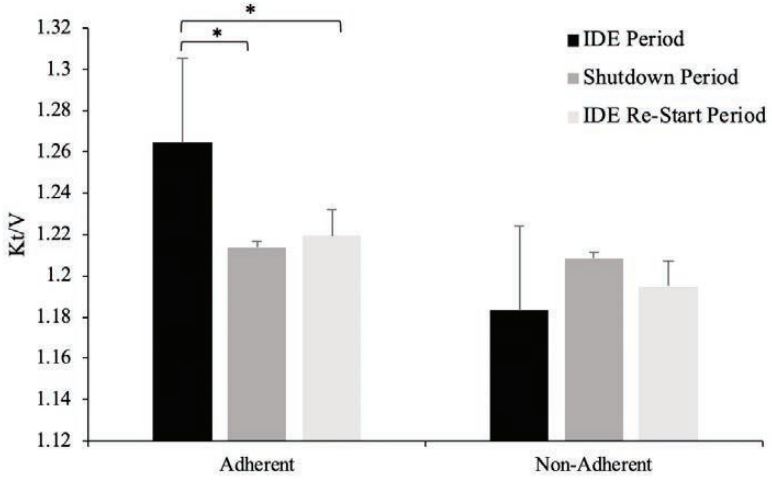


Figure 3

Kt/V Values During the Three Experiment Phases



Note. * Represents statistical significance $p < 0.05$.

DISCUSSION

One primary outcome of this study was to measure patient perceptions on the IDE program and its effect on their physical and mental health when IDE was temporarily suspended. The secondary outcome was to identify any changes to patient health parameters and HD treatments, including falls, hypotensive symptoms, HD symptoms, Kt/V, and weight changes. Furthermore, we sought to identify any themes in self-reported activity levels between the IDE phase and shutdown phase. Based on our results, the main findings were as follows: 1) Patients reported perceived changes to their physical and mental well-being when IDE was temporarily suspended; 2) self-reported extradialytic activity diminished during the shutdown period; and 3) Kt/V was significantly higher in the IDE period when compared to the shutdown and IDE re-start phases.

During the shutdown phase when IDE was unavailable, 73% percent of patients noticed that their physical health diminished (Figure 2). The most common complaints reported were decreased leg strength and weight gain, which is interesting as 60 percent of respondents reported exercise outside of HD during the shutdown phase (Table 2). This extradialytic exercise, in theory, should have assisted in combating diminished leg strength and weight gain. However, insufficient exercise dose or intensity to maintain exercise induced health benefits may be the reason for the observed differences. Marcos-Pardo et al. (2022) studied the effect of the COVID-19 shut-down on older women. Decreased muscle strength was one of the outcomes found by the authors, which supported the findings among IDE patients. Stockwell et al. (2021) reported a decrease in the amount of activity during the COVID-19 pandemic. Additionally, Zeigler (2021) reported weight gain risk factors with the quarantine requirements of the pandemic as well. Since the activity level of a substantial number of patients changed from participating in IDE regularly to having little-to-no exercise during the shutdown phase, it is reasonable to assume that decreased leg strength and weight gain were due to the temporary suspension of IDE. Storer et al. (2005) reported increases in muscle strength and power resulting from nine weeks of moderate intensity (i.e., approximately 50% peak power) for 20-40 minutes three times weekly, which mirrors a typical IDE program. Therefore, maintenance of IDE induced health benefits, such as leg strength, requires a similar stimulus that most patients perceived they were not getting without the IDE program. Costa Rosa et al. (2020) also described how detraining significantly affects functional capacity in hemodialysis patients. By suspending IDE during the COVID-19 pandemic, the IDE patients underwent a simulated detraining program.

In addition to physical changes attributed to IDE shutdown, respondents felt that their emotional well-being was either positively or neutrally affected by the bike program. IDE can positively affect mood and health related quality of life (Abe et al., 2020; Lin et al., 2021), supporting the mood changes experienced by the IDE patients in this study. All respondents felt that the IDE program should be continued if another pandemic closure was implemented. This shows how patients perceive the IDE program to be an important contributor to their overall physical and mental well-being.

No changes in hospitalization days, falls, target weight, intradialytic symptoms, or hypotensive systems were observed between all three phases irrespective of intensity group. HD patients are at high risk for hospitalizations associated with vascular access complications, heart failure, and diabetes (Parker et al., 2015). Additionally, HD patients are often quite frail (McAdams-DeMarco et al., 2015). As a result, this functional decline can increase the risk of falls, which can lead to increased hospitalizations and loss of independence. Therefore, extradialytic exercise and health benefits from previous IDE may have protected patients from falls and hospitalizations during the shutdown phase. It was not within the scope of this study to examine changes in functional status based on age and dialysis vintage. Although a small portion (5.9%) patients noted a weight gain and approximately 20% of patients reported that they did not participate in exercise during the shutdown phase in the QI survey, no changes were observed in mean target weight between phases (Table 2). In part, this could be due to many respondents (60.1%) who were still partaking in physical activity and, therefore, maintaining a constant weight even when IDE was unavailable. No changes were observed in hypotensive or intradialytic symptoms during all three phases, suggesting that IDE does not induce adverse events in this population (Parker, 2016).

The mean Kt/V achieved during the IDE phase in the A group was approximately 4% higher than the shutdown phase and 3% higher than the IDE re-start phase (Figure 3). However, there were no differences observed between the shutdown and IDE re-start or between IDE and IDE re-start in the A group nor between any phases in the N group. The decrease in Kt/V between the IDE and shutdown phase was expected in the A group as no exercise-induced urea clearance via elimination of urea trapped in muscle was achieved without IDE (Murtagh et al., 2007; Parsons et al., 2006; Parsons et al., 2009). However, Kt/V values not returning to IDE phase values once IDE was restarted again was unexpected. The beneficial effects of exercise on urea clearance are immediate, and therefore, Kt/V should have increased back to IDE phase values (Murtagh et al., 2007; Parsons et al., 2006; Parsons et al., 2009). This unexpected result may be explained by changes in A group adherence once IDE was

Table 2

Comparison of Self-Reported Physical Activity Before and During the COVID-19 Pandemic

Parameters	IDE Phase	Shutdown Phase
IDE sessions per week	1.6 (n = 68)	N/A
Length of IDE session (mins)	90 (n = 68)	N/A
Non-HD exercise sessions per week	4.60 ± 2.03 (n = 48)	4.15 ± 2.42 (n = 41)
Length of non-HD exercise session (mins)	51.56 ± 39.85 (n = 48)	42.92 ± 46.10 (n = 41)

Note. Data presented as a mean ± SD.

available again in the re-start phase. Notably, kinesiologists encouraged patients to ease back into exercise to avoid any adverse effects (i.e., low oxygen saturation or shortness of breath) as patients were required to wear a surgical mask throughout their HD treatment (Parker et al., 2022). Patients were also expected to have the detraining effects during the shutdown phase. This is a rational assumption as with reduced adherence and exercise dose, no changes in Kt/V were seen (i.e., N group), indicating that a certain amount of exercise needs to be done per week for measurable improvements to occur.

CONCLUSIONS

This is the first study, to our knowledge, exploring the effects of the COVID-19 pandemic on a current community IDE program. Physical activity provides both physical and mental benefits to patients who are on HD. Despite their participation in activities outside of the IDE program, there was some degree of a detraining effect in this population. This was likely due to insufficient exercise stimulus without regular IDE participation during the shutdown period. This was supported by Kt/V changes and patient-reported perceptions on physical and mental parameters without IDE. This indicates exercise stimuli created by IDE is unmatched by extradialytic exercise. Therefore, IDE is needed to achieve and or maintain certain exercise-induced health benefits such as improved muscle strength and quality of life. Additionally, when IDE is not provided as an option for this population, there is a subset of individuals who will get no activity as a result. The implications of this will be that patients become more deconditioned and increase their sedentary time. Decreased physical functioning and increased sedentary time can lead to increases in frailty and risk of falls in these patients. Should there be another pandemic or required shut-down of services in the healthcare system, this study provides support that the IDE program should continue for patients if at all possible. IDE is essential for HD patients as it improves with their physical functioning, QOL, and improves the efficacy of their HD treatments.

The limitations for this study were that the surveys and data collection were not anonymized. We would have a better understanding of the adherent and non-adherent groups and the impact of IDE if the data was anonymous. Additionally, only patients who had been previously part of the IDE program were approached to participate. A more widespread audience would help us better understand the impact of exercise during dialysis. The next steps for this study would be to measure improved physical functioning through duration of time on the bike in patients who participate in IDE. As well, it would be great to look at the motivating factors for patients to engage in PA outside of the dialysis units. This would help our kinesiologists provide support to patients to encourage them to engage in other forms of PA while not on the unit. Encouraging our patients to be physically active throughout their day is important for maintaining their health and function.

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APPENDIX A

Biking Program PAUSE for COVID-19 Survey

The kidney exercise team wants your feedback about the biking program being stopped during the COVID-19 pandemic. Your feedback will help us improve our program. Please answer each question below and add as many comments as you would like.

How much do you agree or disagree with the following statements:

1. I have noticed a change in my physical health **because I have not been able to bike on dialysis** (an increase or decrease in pain levels, energy levels, leg strength, mobility, balance, restlessness).

Strongly Agree Agree Neutral Disagree Strongly Disagree

What changes have you noticed? _____
_____

2. **Before** the COVID-19 pandemic, I did physical activity besides the bike program (bike, treadmill, strength training, physiotherapy, walking, balance, flexibility, DIY/gardening, classes, other). YES/NO

If Yes, what were you doing?

Type of activity: _____

How often (number of times per week): _____

How long (min/sessions): _____

Intensity (circle): Hard Moderate Easy

3. I was able to keep doing my **pre-COVID physical activity** outside of my dialysis (during the COVID-19 shutdown). YES/NO/NOT APPLICABLE

4. **During the COVID-19 pandemic**, I found other ways to do physical activity (bike, treadmill, strength training, physiotherapy, walking, balance, flexibility, DIY/gardening, classes, other). YES/NO

If Yes, please complete the following:

Type of activity: _____

How often (number of times per week): _____

How long (min/sessions): _____

Intensity (circle): Hard Moderate Easy

5. I feel that regularly participating in the bike program affects my emotional well-being (an increase or decrease in mood, stress levels, anxiety, depression, quality/quantity of sleep).

Positively Somewhat positively No effect Somewhat Negatively Negatively

6. I have noticed a change in my emotional well-being **while I have not been able to bike**.

Strongly Agree Agree Neutral Disagree Strongly Disagree

What changes have you noticed? _____
_____

7. Did you use the ideas and tips from the COVID-19 "Cabin Fever" exercise handout that was given to you before/during the shutdown? YES/NO/NOT APPLICABLE

8. Do you feel you were educated and encouraged by your dialysis team to be as active as you could be during this pandemic? YES/NO

9. Do you feel the bike program should continue if there is another wave of COVID-19 in the future?

Strongly Agree Agree Neutral Disagree Strongly Disagree

Please feel to add any other thoughts or comments about the dialysis exercise program. Thanks for your time! _____
_____
_____
_____
_____

CONTACT HOUR: 2.0 HRS

A review of the expanding applications of SGLT2 inhibitors in chronic kidney disease and heart disease

By Yuki Meng and Marisa Battistella

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LEARNING OBJECTIVES

1. To discuss the cardiac and kidney outcomes associated with sodium glucose cotransporter 2 inhibitors (SGLT2i) in patients with chronic kidney disease (CKD)
2. To describe the cardio-renoprotective effects of SGLT2i
3. To summarize the adverse effects associated with SGLT2i

BACKGROUND

Sodium glucose cotransporter 2 (SGLT2) is a key protein that reabsorbs about 90% of glucose in the proximal convoluted tubule of the kidneys (Kalra, 2014). By inhibiting SGLT2, blood glucose levels can be reduced independent of insulin. SGLT2 inhibitors (SGLT2i) belong to a drug class that lowers blood glucose by facilitating excretion of glucose in the urine, thus preventing its reabsorption in the kidneys back into circulation (Kalra, 2014). Since the approval of the first SGLT2i, canagliflozin, by the United States (US) Food and Administration (FDA) in 2013 and subsequently by Health Canada in 2014, SGLT2i have transformed the clinical management of type 2 diabetes mellitus (T2DM). Additional advantages of SGLT2i, irrespective of T2DM, have continued to surface with demonstrated cardiovascular and kidney benefits in people with heart failure (HF), chronic kidney disease (CKD), and atherosclerotic cardiovascular disease (ASCVD).

AUTHOR NOTES

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At present, there are three SGLT2i available in Canada: canagliflozin, dapagliflozin, and empagliflozin. The labeled indications and doses are listed in Table 1. In this review, we summarize the latest evidence of the cardiovascular and kidney protective benefits of SGLT2i with a focus on CKD with or without T2DM. We offer an overview of cardiorenal efficacy outcomes from key landmark SGLT2i trials in CKD and HF, implications for practice, and safety considerations of SGLT2i.

CARDIORENAL PROTECTIVE MECHANISM OF SGLT2 INHIBITORS

SGLT2i have pleiotropic properties – that is, they exert their cardiorenal protective effects through several different mechanisms. The key kidney mechanism offered by SGLT2 inhibition is believed to be mediated by the restoration of the tubulo-glomerular feedback. Reducing reabsorption of sodium and glucose at the proximal tubules via SGLT2 inhibition leads to increased sodium delivery to the macula densa cells in the distal kidney tubules. Increased sodium concentration sensed by these specialized cells leads to activation of the tubulo-glomerular feedback, which causes vasoconstriction of the afferent arterioles. As a result, intraglomerular pressure and kidney hyperfiltration are reduced, which manifests as decreased albuminuria, a marker of kidney disease progression (Dharia et al., 2023). Other potential mechanisms include reducing pro-inflammatory and oxidative pathways that can cause cardiac and kidney tissue injury (Dharia et al., 2023). The central cardiovascular action of SGLT2i is less understood, although there are several proposed mechanisms as well. Some theories include the influence SGLT2i on cardiac energy metabolism and cardiac muscle cell contractility (Braunwald, 2022). Glucose lowering and blood pressure lowering properties of SGLT2i typically require a period of time to observe clinical benefits. It is believed that the cardio-protection offered by SGLT2i is beyond these known benefits as reduction in HF hospitalization is seen relatively early in clinical trials and in a heterogeneous population of varying degrees in kidney function, heart function (i.e., ejection fraction), and diabetes status (Kansara et al., 2022).

Table 1

Approved Dosing of SGLT2 Inhibitors Based on Kidney Function and Indication

	Canagliflozin (Invokana®)[1]	Dapagliflozin (Forxiga®)[2]	Empagliflozin (Jardiance®)[3]
Approved indications based on current Canadian product monographs	• T2DM • Diabetic nephropathy with urine ACR > 33.9 mg/mmol)	• T2DM • HFrEF • CKD	• T2DM • HF
Usual dose or eGFR 60	100–300 mg daily	T2DM: 5–10 mg once daily HFrEF: 10 mg daily CKD: 10 mg daily	T2DM: 10–25 mg daily HF: 10 mg daily
eGFR 46 to 59	100 mg once daily	CKD and HFrEF: no dose adjustment necessary	No dose adjustment necessary
eGFR 30 to 45		T2DM: not recommended for use	
eGFR 20 to 29*	Not recommended for use†	CKD and HFrEF: no dose adjustment necessary	T2DM: not recommended for use† HF: no dose adjustment necessary
eGFR 20*	Not recommended for use	CKD and HFrEF (eGFR < 25): not recommended for use†	T2DM: contraindicated HF: not recommend for use

CKD=chronic kidney disease; HF=heart failure; HFrEF=heart failure, reserved ejection fraction; T2DM=type 2 diabetes mellitus
[1]Janssen Inc. (2023); [2]AstraZeneca Inc., 2021; [3]Boehringer Ingelheim Ltd., 2023
*Do not initiate but can continue to use down to dialysis or kidney transplantation.
†KDIGO guideline recommends the use of SGLT2i among all patients with T2DM and CKD (based on albuminuria or low eGFR without albuminuria) with an eGFR of at least 20 mL/min/1.73 m^2 (Grade 1A) (Navaneethan et al., 2022).

OUTCOME TRIALS

Several large-scale clinical trials have provided compelling insights into the effects of SGLT2i on both CKD and HF. In trials with the CKD population, important kidney outcomes include cardiovascular or kidney death and kidney disease progression (i.e., eGFR decline, increased serum creatinine, development of end-stage kidney disease (ESKD) at which point dialysis or kidney transplantation is required). In HF trials, key efficacy outcomes include cardiovascular death and hospitalization due to HF.

SGLT2i and Kidney Outcomes

Given the high prevalence of CKD, affecting 1 in 10 individuals in Canada, and nearly 40% of the cases being associated with T2DM (Kidney Foundation, 2023), the CREDENCE (Canagliflozin and Renal Outcomes in Type 2 Diabetes and Nephropathy) trial was a well-received landmark study aimed at expanding our knowledge of SGLT2i in the setting of CKD. Of note, approximately 60% of individuals with CKD do not have T2DM as the primary etiology; instead, their kidney dysfunction may be attributed to other causes or risk factor such as hypertension, autoimmune diseases, obstructive uropathy, and more (Kidney Foundation, 2023; Chen et al., 2019). Published in 2019, CREDENCE was the first large-scale study to examine the kidney outcomes of SGLT2i specifically in diabetic CKD (Perkovic et al., 2019). People with diabetic CKD with significant albuminuria (estimated glomerular filtration rate [eGFR] greater than or equal to 30 mL/min/1.73 m^2 and urine ACR greater than or equal to 30 mg/mmol) were randomized to canagliflozin 100 mg daily or placebo. At a median follow-up of 2.6 years, the primary outcome, which was a combined risk of CKD progression or death from a cardiovascular or kidney cause, was significantly reduced by canagliflozin treatment versus placebo.

Following the CREDENCE trial, the DAPA-CKD (Dapagliflozin in Patients with Chronic Kidney Disease) trial, published in 2020, sought to examine the efficacy and safety of SGLT2i in a broader range of people with CKD, including those without T2DM (Heerspink et al., 2020). Notably, 60% of the participants in the DAPA-CKD trial did not have T2DM, and the primary causes of CKD comprised hypertension and glomerular disease, among other factors. Similarly, dapagliflozin 10 mg daily was associated with a significant advantage in reducing CKD progression, as well as cardiovascular or kidney mortality, compared to placebo. The positive outcome was largely driven by slowing CKD progression, which was defined as decline of eGFR greater than or equal to 50%. Most recently published at the end of 2022, the EMPA-KIDNEY (Empagliflozin in Patients with Chronic Kidney Disease) trial further strengthened the preceding evidence of SGLT2i in slowing kidney disease progression. EMPA-KIDNEY had 6,609 participants and was the largest trial to include people with CKD without diabetes and eGFR as low as 20 mL/min/1.73 m^2 or had moderate albuminuria with urine ACR of at least 20 mg/mmoL (The EMPA-KIDNEY Collaborative Group, 2023). Compared to placebo, empagliflozin 10 mg daily significantly reduced the risk of CKD progression and cardiovascular mortality. The benefits of empagliflozin were generally consistent among patients with or without diabetes and regardless of the initial eGFR. The cardiorenal benefits were less pronounced in patients with low to moderate albuminuria (i.e., urine ACR less than 30 mg/mmol). Nevertheless, the accumulating evidence clearly indicates substantial kidney protection and preservation of function through the utilization of SGLT2i in people with CKD.

Implications for Practice

Irrespective of diabetes status, people with CKD with eGFR as low as 20 mL/min/1.73 m^2 or severely increased albuminuria (urine ACR of at least 30 mg/mmol), SGLT2i is the recommended drug therapy to slow the advancement of kidney disease. By employing this treatment, the aim is to increase the duration between the onset of CKD and the development of ESKD where kidney replacement therapy (i.e., dialysis or kidney transplantation) may become necessary.

It is now recommended in the updated clinical practice guideline by Kidney Disease Improving Global Outcomes (KDIGO) on T2DM management in CKD to initiate SGLT2i therapy, irrespective of blood glucose control status, in those with an eGFR of at least 20 mL/min/1.73 m^2 (Navaneethan et al., 2023). This recommendation emphasizes that the benefits of SGLT2i treatment can be obtained even in the absence of T2DM.

SGLT2i and Cardiovascular and Heart Failure Outcomes

Since the initial trials investigating the use of SGLT2i in T2DM, there has been a consistent demonstration of the advantageous effects on heart failure (HF) outcomes across different agents in this class. A majority of SGLT2i clinical trials have presented compelling evidence regarding their advantages with respect to cardiovascular outcomes. These trials encompass patients with known CVD and those with CVD risk factors. Although a consistent benefit has been observed in reducing HF hospitalization, there is variability when it comes to assessing the primary composite outcome, which includes cardiovascular mortality, myocardial infarction, or stroke (Kansara et al., 2022). For instance, only canagliflozin and empagliflozin have shown significant benefits in the primary outcome, and empagliflozin is the only agent to demonstrate significant benefit in cardiovascular and all-cause mortality.

However, it appears most of the cardiovascular benefit derived from SGLT2i are primarily attributed by reduction in HF hospitalization. Several dedicated HF trials, such as DAPA-HF (Dapagliflozin in Patients with Heart Failure with Reduced Ejection Fraction), DELIVER (Dapagliflozin in Heart Failure with Mildly Reduced or Preserved Ejection Fraction), EMPEROR-Reduced (Cardiovascular and Renal Outcomes with Empagliflozin in Heart Failure), and EMPEROR-Preserved (Empagliflozin in Heart Failure with a Preserved Ejection Fraction), have demonstrated this significant advantage with dapagliflozin and empagliflozin (McMurray et al., 2019; Packer et al., 2020; Anker et al., 2021; Solomon et al., 2021). Of note, the background standard therapy of renin-angiotensin-aldosterone system inhibitors, beta-blockers, mineralocorticoid receptor and diuretics were well optimized. Prominently, this advantage of reduced HF hospitalization holds true regardless of left ventricular ejection fraction percentage or the presence of T2DM.

Implications for Practice

SGLT2i is now considered first-line therapy in the management of HF with reduced ejection fraction (HFrEF), mid-range ejection fraction (HFmEF), and preserved ejection fraction (HFpEF) in addition to standard therapies. The Canadian Cardiovascular Society recently updated their guidelines to include SGLT2i as part of the guideline-directed medical therapies for HF (Mancini et al., 2022).

ADVERSE EFFECTS AND RISKS OF SGLT2 INHIBITORS

Overall, SGLT2i are well tolerated and have a low risk of severe adverse effects. More prevalent adverse effects include mycotic genital infection, transient rise in serum creatinine, and increased urinary volume and frequency. Less common or rare adverse effects are urinary tract infection (UTI), diabetic ketoacidosis (DKA), and lower limb amputation. Key monitoring and safety considerations are described below.

Genitourinary Infections

The most common adverse effect of SGLT2i is mycotic genital infection owing to their glucosuric action. This side effect may occur more commonly in T2DM and females (Kansara et al., 2022; Krishnan et al., 2023). Individuals initiating SGLT2i should be counselled on proper hygiene practices and monitoring for signs and symptoms of infection. Typically, the infection is managed with a short course of topical or oral antifungal agents, and SGLT2i discontinuation is not necessary. UTIs are far less common and data from a meta-analysis of randomized controlled trials suggest no increased risk with SGLT2i use (Li et al., 2017). A handful of cases of serious UTIs have been reported in patients with obstructive urologic conditions (U.S. Food and Drug Administration, 2022).

Initial Rise in Serum Creatinine

There is an expected rise in serum creatinine (i.e., dip in eGFR) during the first few weeks of initiating therapy, which is due to the drug class's underlying mechanism of action of reducing intraglomerular pressure (Heerspink et al., 2021). The creatinine stabilizes and returns to closer to baseline values after two to four weeks. An eGFR decline of up to 30% may be acceptable with close monitoring. In both DAPA-CKD and EMPA-KIDNEY trials, dapagliflozin and empagliflozin groups had an initial acute eGFR decline but then had a slower rate of decline compared to placebo in the long-term compared to placebo (Heerspink et al., 2020; The EMPA-KIDNEY Collaborative Group, 2023).

Increased Urinary Frequency and Volume

SGLT2i can cause osmotic diuresis induced by glucosuria. This can lead to increased frequency and volume of urination. In T2DM, urinary frequency and voiding symptoms improve with better glycemic control.

Ketoacidosis and Acute Illness

SGLT2i have been associated with an increased risk of DKA, a serious complication of diabetes characterized by high circulating levels of ketones and glucose. However, the risk of ketoacidosis among patients without diabetes is extremely rare with only one event out of over 30,000 participants observed based on pooled data from a large meta-analysis of SGLT2i landmark trials (Nuffield Department of Population Health Renal Studies Group, 2022). Nevertheless, it is important to note that in certain situations such as acute illness (e.g., diarrhea, vomiting), fasting, surgery, excessive alcohol consumption, or a significant change in insulin dosage, the risk of ketoacidosis becomes significantly higher. In these cases, ketoacidosis may manifest even with mildly elevated or normal blood glucose levels, referred to as euglycemic DKA. This can lead to a delay in diagnosis and treatment since blood

glucose levels may appear to be under control (Kansara et al., 2022). An important patient counselling point is sick day management in which SGLT2i are temporarily held in the setting of an acute illness or volume depletion to lessen the risk of ketoacidosis and acute kidney injury (Morris, 2022).

Lower Limb Amputation

An increased risk of lower limb amputation (toe or metatarsal) was observed in the CANVAS (Canagliflozin and Cardiovascular and Renal Events in Type 2 Diabetes) trial (Neal et al., 2017). This was not a significant risk found in subsequent trials and the U.S. FDA removed the original boxed warning based on further evaluation (U.S. FDA, 2020). The small risk may be more relevant in T2DM, and frequent foot examinations are recommended.

ACTIVE AREAS OF RESEARCH

SGLT2i in Dialysis

Currently, SGLT2i use in dialysis is contraindicated given insufficient data and limited research. However, this remains an active area of research and there are ongoing randomized controlled trials such as DAPA-HD (SGLT2 Inhibition in Hemodialysis) and SDHF (The Safety of Dapagliflozin in Hemodialysis Patients with Heart Failure) (Paschen et al., 2022; Gu et al., 2022). In practice, if a patient has initiated SGLT2i treatment but the eGFR drops below 20 mL/min/1.73 m^2, the medication may still be continued and only stopped if the patient is preparing to go on dialysis or receive kidney transplantation.

SGLT2i in Transplant Recipients

There is insufficient data and limited research to support use at this moment. In a recent systematic review of 17 studies of kidney and heart transplant recipients, primarily retrospective and observational in design, the authors concluded that the current understanding of cardiovascular and kidney benefits of SGLT2i in the transplant population remains inconclusive (Lin et al., 2023). It is an active area of research with ongoing randomized, controlled trials such as INFINITI2019 (Efficacy, Mechanisms and Safety of SGLT2 Inhibitors in Kidney Transplant Recipients) and CREST-KT (Cardiorenal Effects of SGLT2 Inhibition in Kidney Transplant Recipients) (Singh et al., 2021; Wolf, 2022). It remains to be seen whether SGLT2i are safe and effective in kidney transplant recipient (Kansara et al., 2022; Lin et al., 2023).

SUMMARY

From its initial beginnings as anti-hyperglycemic agents in the management of T2DM, the clinical application of SGLT2i has rapidly expanded within a decade in establishing its place as standard therapy in HF to increasing uptake of its use in CKD irrespective of diabetes. Evidence from clinical trials demonstrates the superiority of SGLT2i in reducing risks of kidney disease progression, including reducing albuminuria, slowing eGFR decline and serum creatinine rise, and prolonging the time to ESKD requiring kidney replacement therapy. Initiating an SGLT2i may now be considered with eGFR as low as 20 mL/min/1.73 m^2 or severe albuminuria with urine ACR of 30 mg/mmol or greater. In addition to the kidney benefits, SGLT2i have been shown to reduce the risk of HF hospitalization in patients with HF irrespective of ejection fraction or diabetes status. In addition to glucosuria, SGLT2i can improve glomerular hemodynamics, counteract inflammatory and oxidative pathways, and improve energy metabolism. These cardiorenal mechanisms appear to modify the pathogenesis of cardiovascular and kidney diseases. To minimize the chances of complications like DKA and acute kidney injury, it is advisable to temporarily hold SGLT2i treatment if a patient is facing an acute illness or is at risk of fluid loss. Educating patients on sick day management is pertinent. The clinical utilization of SGLT2i is projected to further expand in the context of increasing indications and a broader spectrum of application in cardiovascular and kidney diseases.

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CONTINUING EDUCATION STUDY QUESTIONS **CONTACT HOUR: 2.0 HRS**

A review of the expanding applications of SGLT2 inhibitors in chronic kidney disease and heart disease

By Yuki Meng, PharmD, Marisa Battistella, PharmD, ACPR

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1. In Canada, approximately what proportion of people living with CKD do not have T2DM?
   a) 30%
   b) 40%
   c) 50%
   d) 60%

2. Based on the evidence of SGLT2i treatment in CKD, which scenario would be expected to derive the LEAST benefit from slowing kidney disease progression?
   a) T2DM, eGFR 56 mL/min/1.73 m^2, uACR 92 mg/mmol
   b) Hypertension, eGFR 43 mL/min/1.73 m^2, uACR 96 mg/mmol
   c) Coronary artery disease, eGFR 32 mL/min/1.73 m^2, uACR 41 mg/mmol
   d) HFpEF, eGFR 65 mL/min/1.73 m^2, uACR 10 mg/mmol

3. In the SGLT2i trials that investigated heart failure outcomes, which outcome had the most consistent, compelling evidence?
   a) Reduce risk of heart failure hospitalization
   b) Reduce risk of cardiovascular mortality
   c) Reduce combined risk of myocardial infarction, stroke, and heart failure exacerbation
   d) Reduce risk of all-cause mortality

4. Which of the following SGLT2i had a landmark study that demonstrated kidney benefits (e.g. slowed progression to ESKD and cardiovascular death) and safety in a CKD population with an eGFR as low as 20 mL/min/1.73 m^2 and absence of diabetes?
   a) Canagliflozin
   b) Dapagliflozin
   c) Empagliflozin
   d) All the above

5. What is a potential effect of SGLT2i beyond glucose-lowering that is thought to protect the heart and kidneys?
   a) Reduce inflammation to the heart and kidney tissues
   b) Increase diuresis which leads to increased blood pressure
   c) Increase oxidative stress to the cardiac muscle cells
   d) Decrease natriuresis which leads to increased albuminuria

6. By restoring tubulo-glomerular feedback, how do SGLT2i reduce intraglomerular pressure?
   a) Vasodilation of the efferent arterioles
   b) Vasodilation of the afferent arterioles
   c) Vasoconstriction of the efferent arterioles
   d) Vasoconstriction of the afferent arterioles

7. What is the most common side effect associated with SGLT2 inhibitors?
   a) Urinary tract infections
   b) Acute kidney injury
   c) Mycotic genital infections
   d) Hypoglycemia

8. What is a risk factor that increases the risk of diabetic ketoacidosis associated with SGLT2i?
   a) Urinary tract infections
   b) Acute illness (i.e., vomiting and diarrhea)
   c) Hypoglycemia
   d) High blood pressure

9. Upon initiation of an SGLT2i, the serum creatinine is expected to risk which will cause a decline in eGFR. Up to what percentage decline of eGFR is acceptable with close monitoring?
   a) 10%
   b) 20%
   c) 30%
   d) 40%

10. Which of the following scenario would an SGLT2i not be recommended given insufficient data available to support its use at present?
    a) Patient with CKD secondary to hypertension with an eGFR 25 mL/min/1.73 m^2 and uACR 3 mg/mmol
    b) Patient who started empagliflozin for HFpEF and CKD with an eGFR 25 mL/min/1.73 m^2 three years ago and their current eGFR is 18 mL/min/1.73 m^2 not on dialysis
    c) Patient with T2DM (HgbA1c 9.5%) and ESKD on peritoneal dialysis
    d) Patient with HFpEF, eGFR 87 mL/min/1.73 m^2, and uACR < 1 mg/mmol

CONTINUING EDUCATION STUDY ANSWER FORM

CE: 2.0 HRS CONTINUING EDUCATION

A review of the expanding applications of SGLT2 inhibitors in chronic kidney disease and heart disease

By Yuki Meng, PharmD, Marisa Battistella, PharmD, ACPR

Volume 33, Number 3

Post-test instructions:

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6.	a	b	c	d
7.	a	b	c	d
8.	a	b	c	d
9.	a	b	c	d
10.	a	b	c	d
11.	a	b	c	d
12.	a	b	c	d

EVALUATION

	Strongly disagree				Strongly agree
1. The offering met the stated objectives.	1	2	3	4	5
2. The content was related to the objectives.	1	2	3	4	5
3. This study format was effective for the content.	1	2	3	4	5
4. Minutes required to read and complete:	50	75	100	125	150

Comments: _____

_____

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This year's conference will be from October 26–28, hosted in Prince Edward Island, and promises the opportunity to reconnect, learn, share ideas, and socialize together. Get ready to experience all that CANNT 2023 has to offer:

- Participate in the plenary sessions set to motivate the audience and ignite peak performance while incorporating leading-edge science – each talk will be a memorable experience!
- Attend concurrent sessions and workshops suited to all interests. Topics range from kidney transplant, kidney care in Indigenous communities, and innovations in practice, technology, research, and much, much more.
- Engage with our corporate partners, as they showcase their latest products and services. Come prepared with questions and issues—our exhibitors want to hear from you!
- Congratulate your peers on their research and achievements by attending the CANNT Award Ceremony.

Immerse yourself in this year's conference theme, "CANNT Stop, Won't Stop – Finding Creative Ways to Bridge the Gap," recognizing the untapped capabilities of both you and your patients. We are excited to welcome nephrology professionals to Charlottetown, PEI! More information is available at **https://cannt-acitn.ca/2023-program/**

Abstracts

Some of the key strategic goals of CANNT are to disseminate educational materials to CANNT members, profile scientific research, and provide opportunities for nephrology colleagues to network. CANNT's national conference provides an excellent venue for accomplishing these goals of CANNT. However, only a portion of CANNT members is able to attend the national conference annually. Cognizant of this, CANNT is pleased to be printing the abstracts to be presented at this year's annual conference in this issue of the *CANNT Journal*. The following abstracts celebrate the diversity of nephrology topics being investigated and discussed across Canada. We hope you will carefully review these abstracts.

Please contact **cannt@cannt.ca** to receive information on how to connect the authors about their work.

Oral Presentations

1. The Beginning of the End: A Case Scenario of a Failng Graft

G. Kevin Barlow, RN, MN, CNeph(C), Clinical Nurse Educator
Elizabeth Poisson, RN, Vascular Access Coordinator

Unity Health - St. Michael's Hospital, Toronto, Ontario

Background: Arteriovenous grafts (AVG) are constructed by interposing graft material between an artery and a vein for hemodialysis. Their usage is dependent on vascular anatomy and can be preferred over central venous catheters (CVC) in many cases. Intimal hyperplasia is the most common complication followed by thrombosis. Infection, however, can have detrimental effects on the continued usage of the AVG. Staff assessments and reporting have not always reflected the level of urgency with potential vascular access emergencies. Earlier intervention of the patient's AVG infection may not have changed the outcome. However, the drastic extent of complications may have been limited. A vascular access clinical assessment tool was developed and made available for nursing staff to document and communicate with the health care team.

This format will ensure pertinent and high-risk findings are reported such as the risk of bleeding, dysfunction, or infection. Clinical staff will also receive education on vascular access complications and the use of the tool. This process was evaluated by the frequency of its use with the number of vascular access consults requested and analysis of high-risk reports.

Evaluation/Outcome: Staff struggled with using the tool consistently but appreciated the systematic approach to reporting a potential problem. Regardless of utilization, staff had better awareness of vascular access health and communicated in a more proactive approach.

Implications for nephrology practice: Consistent and timely nursing observation and intervention are key to managing the health of a hemodialysis vascular access.

2. Nephrology Mythology 2.0

Sylvia D. Zuidema,[a] MSc, NP
Sandeep K. Chahal,[b] BScPharm, ACPR

[a]Alberta Kidney Care – North, University of Alberta Hospital, Edmonton, AB
[b]Department of Pharmacy, Royal Alexandra Hospital, Edmonton, Alberta

Background: As healthcare providers, it is important to engage in continuous education and re-evaluate our understanding of existing medical procedures and practices. Practice in medicine can be continued because of history, previous experience, or simply because celebrities endorse a claim on social media. If evidence cannot support the medicine, the practice may be a medical myth!

Purpose: The purpose of this oral presentation will be to critically examine several nephrology myths and to encourage the questioning of widely accepted practices and beliefs.

Description: We will discuss several nephrology-related concepts including indications for utilizing albumin, mechanisms of action for metolazone and furosemide, eating on hemodialysis, and drinking water as a renal protective strategy.

Evaluation/Outcome: Participants will be able to understand the evidence, or lack thereof, behind commonly identified nephrology practices.

Implications for nephrology practice: It is our hope that participants will reflect upon controversial topics, understand the available literature, and facilitate discussion in their respective fields to potentially promote practice change.

4. Insights into current practices and unmet needs relating to chronic kidney disease-associated pruritus: Results from a Canadian nephrologist survey

Daniel Schwartz,[a] MD
Gerald Miciak,[b] MSc, BSc Pharm
Arthur Magnaye,[b] MSc

[a]The University of British Columbia Faculty of Medicine, Vancouver, BC, Canada
[b]Otsuka Canada Pharmaceutical Inc., Saint-Laurent, Quebec, Canada

Background: Chronic kidney disease-associated pruritus (CKD-aP) is a common but under-recognized condition in patients with CKD undergoing hemodialysis (HD).

Purpose: In this real-world study, Canadian nephrologists were surveyed to gain insight into current practices and unmet needs related to the treatment of CKD-aP.

Description: Quantitative data regarding the perception of current treatment practices for CKD-aP were collected in December 2021 by a 20-minute survey completed by 62 nephrologists across Canada. Respondents' level of agreement was assessed using a seven-point scale, from 1 (*do* not agree at all) to 7 (*strongly agree*).

Results: In current practice, the mean perceived prevalence of CKD-aP in HD patients was 30.5%. Of these, 33.6% and 18.3% experience moderate or severe CKD-aP, respectively. CKD-aP was most frequently identified (75.8% of cases) through patients complaining of itch to the multidisciplinary healthcare team. The first conversation about CKD-aP was most often with a nephrologist (55%) or renal nurse (34%). In clinical practice, 63% of respondents currently do not use a formal scale to diagnose and assess CKD-aP. Nephrologists used topical moisturizers / emollients (85%), oral antihistamines (14%), and gabapentinoids (2%) as first-line treatments. Nephrologists reported 42% of patients with severe CKD-aP and 41% with moderate CKD-aP do not respond to treatment. Most nephrologists (94%) agreed there is a need for new treatments specifically designed to address CKD-aP and 69% agreed there is a need for guidelines for the treatment of CKD-aP.

Conclusion: This Canadian study showed that systematic identification processes are not in place to identify CKD-aP, and the majority of patients are only diagnosed after the patients complain about itch to a member of the multidisciplinary team. There is an urgent unmet need for better identification, more effective treatments, and for guidelines to aid in the identification and selection of therapy to manage CKD-aP.

5. Supporting hemodialysis patients through nursing-technologist collaborative education

Melissa G. Triemstra, RN
Luke P. Adamcewicz, CNT

Hemodialysis Program, St. Joseph's Healthcare Hamilton, Hamilton, Ontario

Background: At St. Joseph's Healthcare Hamilton (SJHH), specific hemodialysis (HD) patients have been assigned to a collaborative model of care. This patient care area is staffed by a registered nurse (RN) and a clinical nephrology technologist (CNT). Staff have witnessed HD patients experiencing anxiety in response to foreign equipment, changes in physical symptoms, and lack of general knowledge of their HD treatment. A great deal of these concerns, especially with patients who are new to HD, can be supported through effective patient education.

Purpose: The purpose of this project is to explore the positive influence of combining clinical and technical knowledge within an interprofessional team to support patient education.

Description: Staff have noticed patients who are more knowledgeable and engaged with their HD treatment seem to display better self-care. This can be further supported by the patient having exposure to both clinical and technical resources during each HD session. In addition to patients learning about their own health and kidney disease management from the RN, patients can become capable of learning about the dialysis machine and the basic technical attributes of their treatments from the CNT. A portion of our analysis on this education model will include a patient feedback survey to determine the effect on the outcomes listed below.

Evaluation/Outcomes: Using this specialized educational approach, we hope patients become empowered, leading to increased comfort and assurance around their HD treatments, treatment efficiency, and confidence to potentially transition into our home program.

Implications for nephrology practice: Although the RN-CNT collaborative model is unique to SJHH, there is an opportunity for other HD programs to utilize all staff to support their HD patients. In addition to this specialized educational approach better serving our patients, this model can also assist with the current nursing shortage.

6. A nurse practitioner-led initiative implementing point of care ultrasonography to assess fluid status in the in-centre hemodialysis units

Julia Petrakis, BScN, NP
Lyndsay Beker, BScN, NP

Renal Care, London Health Science Centre, London, Ontario

Background: Fluid assessment and establishment of dry target weight have been topics of discussion in a Canada-wide nurse practitioner (NP) platform. Fluid assessment is an important part of the NP role when caring for patients in the dialysis units across Canada. Conventional point-of-care ultrasonography (POCUS) may enhance the reliable assessment of fluid status when used in adjunct with a physical examination.

Purpose: The purpose of this project is to determine: (1) if the NPs in an in-centre hemodialysis unit have an interest in learning how to perform a POCUS and fluid assessments; (2) if it is a practical skill to utilize in our clinical role; and (3) if the NPs felt the use of POCUS had an impact on patient clinical outcomes regarding fluid assessments and dry weight. A survey revealed there were seven NPs interested in learning POCUS. A description of this process includes providing an educational curriculum developed in collaboration with key physician partners that included one educational video and two hands-on learning opportunities to practice, followed by implementing POCUS into practice.

Evaluation/Outcomes: Qualitative feedback on the learning process will be sought from each NP. By gathering this data, we will determine if the NPs felt that utilizing POCUS was useful in determining fluid status and dry target weight in the in-centre hemodialysis unit. We will also assess if the NPs were able to integrate the new skill into their practice, and finally, assess if the NPs felt the practice change of implementing POCUS had an impact on patient care with regards to fluid assessments.

Implications for nephrology practice: Nurse practitioners across Canada have expressed interest in utilizing POCUS to enhance fluid assessment on hemodialysis patients. We are hopeful that this project will help establish strategies for education and implementation of POCUS and determine the impact on patient care as perceived by the NP.

7. Staying connected: Helping you manage multiple patients with a few clicks!

Alba Marin, MD
Isabelle Darrach, RN, CNeph(C)

Baxter Healthcare, Mississauga, Ontario

Background: Remote patient management (RPM) is now available for patients on automated peritoneal dialysis (APD). RPM technology allows nurses to utilize therapy data to identify adherence patterns, potential catheter issues, and inadequate dialysis. The ability to manage patients remotely also helps healthcare professionals (HCPs) to be more proactive with patient care utilizing therapy information and to act quickly to mitigate any potential challenges. Evidence also suggests that RPM may also decrease hospitalization rates of patient on APD by 39%. Utilization of technologies such as remote patient management (RPM) may further support access to patient therapy information and allow for patients to minimize clinic visits. RPM can be an integral part of pandemic planning supporting HCP and patient comfort with patient self-care at home.

Purpose: This presentation provides a brief navigation of treatment data that is available to HCPs that may assist in proactive case management of patients. Case scenarios will also be presented that highlight data analysis and troubleshooting.

Evaluation/Outcomes: We identified four themes: (1) gaining knowledge and triggering actions (tracking and responding to change, prompting timely and accessible care, supporting self-management and shared decision-making); (2) reassurance and security (safety in being alone, peace of mind); (3) concern about additional burden (reluctance to learn something new, lack of trust in technology, avoiding additional out-of-pocket costs), and (4) jeopardizing interpersonal connections (fear of being lost in data, losing face to face contact).

Implications for nephrology practice: Remote patient management (RPM) has the potential to help clinicians detect early issues, allowing intervention prior to development of more significant problems.

8. Patient-centred hemodialysis nursing care

Billie Hilborn, RN

York University, Toronto, Ontario

Background: Patient-centred care originated in the 1950s, gained popularity in the 1990s, and is expected to be provided by all nurses in Canada. The term is used liberally on the Health Canada website, and in 2011 the Canadian Institutes of Health Research launched the Strategy for Patient-Oriented Research, and the Canadian Nurses Association (CNA) and Canadian Medical Association (CMA) jointly identified patient-centred care as the first principle to guide healthcare transformation. In 2018, patient-centred care was adopted by Accreditation Canada through the addition of patient surveyors. Patient-centred nursing care could benefit people with end-stage kidney disease (ESKD), however the philosophical ideals of the approach may not consistently align with the everyday reality of hemodialysis nursing.

Purpose of study: To describe the experiences and perspectives of hemodialysis nurses in their provision of patient-centred care.

Methods: A qualitative interpretive description design was used, with purposive sampling of hemodialysis nurses from hospital and satellite hemodialysis units in urban and rural areas registered with the College of Nurses of Ontario and currently employed full- or part-time for more than three months. Semi-structured interviews were held, and transcripts were analyzed.

Results: Ten registered nurses (RNs) participated, and five themes were constructed through interpretation of their comments during interviews: (1) Knowing, (2) Applying, (3) Sustaining, (4) Promoters, and (5) Detours of Patient-Centred Hemodialysis Nursing Care.

Conclusions: Patient-centred hemodialysis nursing care is occurring in a complex, multi-layered, dynamic matrix with multiple promoters such as therapeutic relationships, reflective nursing practice, collaboration, the satellite unit context, and effective communication. Nurses needed to navigate detours that interfered with the provision of patient-centred care, such as a lack of support and respect for nurses, heavy workload, and managerial and organizational processes.

Implications for nephrology practice: Patient-centred hemodialysis nursing care should be prioritized in the education, practice, and policy domains.

9. Significance of choosing the right solution for peritoneal dialysis

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University Health Network, Toronto, Ontario

Background: Sufficient knowledge of peritoneal dialysis (PD) therapy and the appropriate care required have a high potential for improving patient outcomes. However, when an inappropriate PD solution is chosen, it can lead to dehydration or fluid overload. The PD unit should continuously assess the quality of PD patients receive and evaluate the patient's treatment outcomes.

Purpose: My project was to improve PD therapy by enabling nurses to identify the ideal solution for patients' symptoms. This quality improvement project aimed to improve and standardize PD practice and provide nurses with a PD update via curriculum development, policy reviews, and flow sheet redesign.

Project description: Furthermore, nurses empowered with evidence-based knowledge about choosing the right solution for PD therapy would allow nurses to work with the medical team to influence solution selection, ensuring patients receive the appropriate treatment. The curriculum is evidence-based, context-relevant, and unified, and encompasses educating staff nurses on identifying the right solution to improve the patient's condition and documenting 24-hour ultrafiltration on the flowsheet. Nurses received a pocket card about identifying the right solution for PD according to patients' condition. Flow sheet redesign allowed documenting 24-hour ultrafiltration, which identified the effectiveness of the recommended PD therapy. The curriculum also taught nurses how to teach PD patients about the care and management of PD catheters, choosing the correct PD solution, and complications related to PD. This reduced PD complications such as peritonitis, fluid overload, and dehydration and, most importantly, reduced hospital readmission.

Implications for nephrology practice: Knowledge about incorporating evidence-informed practice when clarifying the orders will contribute to effective treatment, ultimately improving patient care. Moreover, the performance, in turn, gives nurses job satisfaction.

11. Halton Best Start Unit – A new approach to transition

Aman Sandhu, RN
Olga Zhdanova, RN
Maria Doyle, RN
Gail Burns, Director

Oakville Trafalgar Memorial Hospital, Oakville, Ontario

Background: Our nephrology program has grown tremendously over the years. However, the rate of home dialysis patients remained low. There was a lack of communication, education, and continuity of care, which created a barrier for patients to fully understand the options they had.

In 2019, The Best Start Unit (BSU) initiative was created to help patients be more independent in their lives and incorporate dialysis into their life instead of working around dialysis.

Purpose: The purpose of the initiative is to empower our patients and help them choose the right modality that best suits their lifestyle. In the BSU, we have patients coming from all walks of life including patients with prior education or who were considered "acute starts." The BSU helps to inform those patients, answer questions, and give them the modality education they lacked.

Description: All patients new to dialysis would come through the BSU. Here they would stay for three weeks, which would allow for patient education or navigation to take place. The allied healthcare team would visit and build a therapeutic relationship with the patients. Once the patient has chosen a modality, the nurse will help them navigate through the program. They are also educated about transplant. A TAP (Transplant Ambassador Program) ambassador is available for family or patient education.

Evaluation/Outcomes: Since the opening of the BSU, patients have stated they feel better about their health, are aware of the progression of disease, and know the "nephrology language." They feel like they are more in control of their situation.

Implications for nephrology practice: Since the program, we have seen an increase in the number of home dialysis patients and kidney transplants, decreased stress on the in-centre hemodialysis unit, and patients feel more supported with their choices and health concerns. We are now one of the top five programs in the provision of home dialysis care provincially.

12. Secrets of communicating in serious illness

Dawn Frizzell, BSW, RSW, Nephrology Social Worker

PEI Renal Program, Charlottetown, Prince Edward Island

Background: Knowing how to engage in end-of-life (EOL) conversations is a crucial skill when caring for our chronic kidney disease (CKD) patient population. A recent Canadian audit showed only 30% agreement between patient preferences and prescribed goals of care. This presentation aims to allow opportunity to engage in conversation about how we can improve our communication skills, thereby bridging that gap.

Purpose: The purpose of this presentation is to provide information to renal staff regarding the importance of conducting difficult conversations, and how they can positively impact end-of-life care in our patient population.

Description: This presentation outlines the importance of having difficult conversations in EOL care. Tips and tricks to help facilitate these conversations and improve the quality of life for your patient and their family will be provided. It is crucial that we learn how to help bridge the gap between patient/family preferences and the care they are receiving. Tools utilized in Health PEI such as "The serious illness conversation guide," have been helpful in facilitating these conversations and will be outlined in this presentation.

Evaluation/Outcomes: By the end of the presentation, attendees will have gained an understanding of what patients want when it comes to EOL communication and why this is so important, and increased knowledge of the critical elements that are part of a "serious illness conversation." Attendees will be more familiar with tools that may be helpful in their own workplace.

Implications for nephrology practice: By increasing knowledge and comfort level on having EOL conversations, patients and families will have better EOL conversations with their nephrology team, improved quality of life, care that is more closely aligned with their values, and better outcomes in terms of the dying process.

13. The association between food insecurity and hypertension: Reviewing the literature

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Introduction: Hypertension (HTN) and dietary choices are closely related. HTN is a leading cause of chronic kidney disease (CKD), and a poor diet contributes to about 80% of HTN. Food insecurity (FI) is defined as the lack of secure access to sufficient amounts of safe and nutritious food for normal growth and development of an active and healthy life, and it is prevalent and determines dietary choices. The prevalence of FI for adults has increased by 84% in the last 20 years and the mortality rate from CKD has also increased by over 40% in the same timeframe, making this a relevant issue to address. We wanted to explore the relationship between the modifiable risk factors of FI and HTN in the context of CKD.

Method: A narrative review was performed using a systematic search in PubMed. Search terms included: food insecurity, chronic disease, hypertension, and social determinants of health. The search was limited to 2004-2023. A PubMed search yielded 147 peer-reviewed articles, and findings were narrowed down to exclude other literature or systematic reviews. Data synthesis was conducted according to a thematic synthesis approach.

Results: Out of a total of 147 articles, 26 studies were included in the final review. The thematic synthesis enabled the construction of four themes: (1) low income negatively affects diet and is associated with food insecurity and HTN; (2) education and health literacy affect diet and the correlation between food insecurity and HTN; (3) access to healthy food feeds into the association between food insecurity and HTN; and (4) poor diet aggravates other adverse health conditions and is correlated to food insecurity and HTN.

Conclusion: FI is correlated to poor nutrition and HTN. Both FI and HTN together are an increasing global public health concern. The literature indicated how diet and health behaviour are modifiable by addressing low income, limited access to healthy food, and poor education, thereby making it relevant to mitigate the negative dietary consequences of food insecurity on HTN and cardiovascular disease at the local and global scales. This is a threat also for the development of CKD.

Implications for nephrology practice: Globally, HTN is a leading non-communicable risk factor for cardiovascular morbidity and mortality. Hypertension is one of the leading causes of CKD. FI is associated with HTN, and these global health threats beg for urgent attention to improve health outcomes on a worldwide scale.

14. The secret ingredient to preserving an arteriovenous graft: Honey

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Usha Dinesh, BScN, RN

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Background: A peritoneal dialysis (PD) pediatric patient with rapidly deteriorating function, needed urgent hemodialysis (HD). The patient had an extensive history of poor access on PD and HD. Exploratory surgery indicated that a central venous catheter, or lower and upper arm fistula or graft would not be possible due to prior clots and stenosis. A leg arteriovenous loop graft was created. One year after use, an emergency scab formed and required a graft revision. After the sutures were removed, the wound became infected. Several weeks of antibiotics were administered and the wound care team became involved. The wound increased in size and there were concerns that the infection would seed onto the graft. The patient was switched to single needle dialysis to avoid the tissue around the site. It was becoming more painful to needle, which led to inadequate dialysis.

Purpose: An opportunity presented itself to try medical grade manuka honey dressings to heal the wound over the graft site.

Description: Pure manuka honey has natural anti-bacterial properties. Based on the stage of the wound, different applications of the product were used. After nine weeks of failed treatments, the manuka honey products contributed to rapid improvement of the wound. No irritation to surrounding tissue was noted.

Evaluation/Outcomes: The wound healing progress has been documented, and surgical revision of the wound and graft has been avoided. With limited HD access, the honey-based product was the last option before surgery. Rapid wound healing and improved skin condition have enabled the dialysis team to continue to use of the graft while it heals. Double needling of the graft below and above the wound allows for adequate dialysis.

Implications for nephrology practice/education: Natural honey-based products have facilitated wound healing and preservation of the graft.

15. Collaborating with an adult program to establish a pediatric hemodialysis vascular access program

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Frank Shih, RN, BHSc[2]
Gary Manzanilla, RN[2]

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Background: Kidney Disease Outcomes Quality Initiative (KDOQI) have recommended that arteriovenous fistulas (AVFs) should be the preferred vascular access choice for children on hemodialysis. In order to establish and maintain such a program, the following are required: (a) specialized surgeons to place and revise AVFs and arteriovenous grafts (AVGs); (2) an interventional radiology or vascular surgery department to mitigate complications; and (3) nephrologist, trainees, and a strong nursing team to access, and identify trends and complications.

Purpose: For many years in a large pediatric hospital, patients with simple AVF, placed externally, came to the unit and experienced limited complications. No guidelines were established for complications. Unexpectedly, there was an urgent need to place an AVG for a pediatric patient with limited access options. Surgical expertise was offered by the adult vascular team to create the AVG. The pediatric nursing team had limited knowledge, skill, and judgement in caring for the newly created AVG.

Description: Collaborating with the adult vascular access team provided the support needed to help the staff understand the principles and gain comfort in accessing and using the AVG.

Evaluation/Outcomes: From here, an ongoing partnership developed between the adult and pediatric sites to help develop pediatric-focused policies and practices, guides to troubleshooting complications, pathways to navigate complications, and appropriate teams to intervene.

Implications for nephrology practice/education: Collaborating with the adult vascular access team enabled the pediatric dialysis program to develop their own program with support and guidance. From this experience, other pediatric patients have benefited from the development of the AVF and AVG program in a safe and methodical manner.

16. Goals of care for the renal patient – Accepted?

Steve Gobran, RN(EC)
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Grand River Hospital, Kitchener, Ontario

Background: Healthcare continues to move in a direction that values patient-centred decision making. Goals of care conversations are an important tool for determining care plans, and these conversations start with an understanding of illness and disease outcomes. These conversations can assist the patient and their family to understand their renal failure and identify important priorities for their care.

Purpose: This presentation will spotlight how our organization implemented goals of care conversations throughout the renal program. Together, we will explore how to prepare ourselves and our patients for these conversations, how to navigate the discussions, and how to apply the patient's goals to their kidney care. We will also share the successes and barriers that were encountered as we implemented this practice across the program.

17. Chest pain on hemodialysis: What are the causes? A review of the literature, cases, and treatment

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Background: In the hemodialysis unit nurses frequently come to assess patients with chest pain. This review of the literature will provide an overview of the various causes of chest pain on dialysis and how to manage and treat the patient.

Purpose: The purpose of the project is to provide nursing education to the hemodialysis nurses in order to better manage patients with chest pain on dialysis.

Description: The author conducted a literature review using the terms "hemodialysis" and "chest pain" in humans and limiting to English articles. In total, 148 articles were found and then narrowed down to 37 articles of interest. The articles described various reasons for chest pain. Common causes were cardiac-related, such as myocardial infarction, pericarditis, and Takotsubo syndrome. Other common causes were related to dialysis access and included steal syndrome, broken central venous catheters or lacerations, as well as catheter-related emboli. Chest pain could also be secondary to dialyzer or membrane reactions, intravenous iron infusions, or air emboli. One of the most common causes of chest pain was hypovolemia.

Evaluation/Outcomes: The author then plans to provide nurses education in May of 2023 to review the different causes of chest pain on dialysis and then conduct an evaluation from the nurses to receive feedback on their learning.

Implications for nephrology practice: It is important to provide nephrology nursing education to bedside nurses, especially on practical topics. This presentation will help nurses to better understand chest pain on dialysis and improve the overall care for hemodialysis patients.

18. Analyzing the impact of a nurse practitioner-based collaborative care model within hemodialysis settings

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Background: The integration of nurse practitioners (NP) has significantly improved the management of chronic diseases and enhanced timely access to care. NPs are autonomous healthcare providers who incorporate the nursing lens, as well as, medical knowledge to prevent disease and manage illness. Today, a number of outpatient hemodialysis (HD) centres utilize an NP collaborative care model (CCM) with the nephrologist to address the complex care needs of HD patients.

Description: In February 2020, the outpatient HD program at St Joseph's Healthcare Hamilton integrated five NPs across three sites to oversee the care of HD patients. The incorporation of NPs across the sites has contributed to timely follow-up in addressing HD-related complications, prompt intervention for foot ulcers, admission avoidance to hospital, and increased continuity of care.

Purpose: The purpose of this presentation is to discuss the quality improvement project on analyzing the effect of the NP-CCM on addressing the ongoing care needs within the HD setting.

Evaluation/Outcomes: Anecdotal evidence in the form of a voluntary questionnaire will be captured from 50 patients, dialysis staff and nephrologists across all sites. Preliminary consultation with colleagues and patients suggests that the addition of NPs has resulted in positive patient care outcomes, improved access to timely care and greater interprofessional collaboration. Common themes will be extrapolated and explored in more detail.

Implications for nephrology practice: The implications of this project are three-fold. First, it will raise awareness on the NP scope of practice and their contributions on HD units. Second, it will identify areas in which NPs can better respond to patient care needs. Finally, it will highlight ways that NPs can continue to collaborate within the interprofessional team to improve quality of care.

19. Bridging the gap: Implementing the transitional care approach for new hemodialysis patients

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Background: Education plays a key role in helping patients adjust to chronic kidney disease and adhere to treatment, especially in the high-risk period while patients are transitioning to dialysis. Patient education and psychosocial support can lead to the achievement of long-lasting changes in behaviour through the provision of knowledge and skills to empower patients to make informed decisions about their care and take ownership of their health.

Description: New hemodialysis (HD) patients receive comprehensive care from the interdisciplinary care team, but feel overwhelmed during their transition. In a previous study, we investigated the learning needs of new HD patients by exploring patient and nurse clinician perspectives on strategies to address these needs. We adapted the four-week Transitional Care Program (TCP) in collaboration with nurses, patient partners, departmental leadership, and other members of the renal interdisciplinary team including staff in other renal replacement modality areas for a six-month pilot implementation. We mapped workflows, identified gaps, and designed strategies to build capacity of existing infrastructure to streamline the care of new patients with five key TCP components: (1) peer support; (2) an online patient-oriented resource hub; (3) staff education; (4) a communication tool to coordinate care and a dedicated space for patients to create safety and predictability.

Evaluation/Outcomes: Preliminary results from our mixed-methods evaluation indicate improvements in patient self-management. Patients report positive relationships with their care team and peer support. Staff report that TCP patients are receptive to information, experience less anxiety and are more open to being approached by team members. Despite communication and staffing challenges, the TCP has provided the framework necessary to track new patients and better address their needs.

Implications for nephrology practice: The TCP demonstrates that investing time to educate staff and providing them with the necessary tools to support their work significantly impacts dialysis care, preventing patients from falling through the cracks.

20. Assessing risk factors of non-adherence and post-transplant outcomes in kidney transplant recipients

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Kateryna Maksyutynskya, BHSc
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Background: Kidney transplant recipients' (KTR) adherence to prescribed regimens is vital for optimal recovery and long-term graft function.

Purpose: The objective of this study was to identify risk factors of KTR non-adherence and their impact on post-transplant outcomes.

Description: A retrospective single-centre cohort study was conducted among KTR transplanted between January 1, 2003-December 31, 2017. Non-adherence was defined as one or more of the following in the first year post transplant: (1) at least one missed clinic visit; (2) > 30% missed laboratory visits; and/or (3) > 40% coefficient of variation of calcineurin inhibitor levels. Univariable and multivariable logistic and Cox proportional hazards models were fitted to identify adherence risk factors and outcomes, respectively. From a total of 2,714 patients, 1,803 (66.4%) were included in the analysis. The mean recipient age was 51.7 (± 13.4) years, and 60.7% were male. Overall non-adherence was identified in 34.9% patients; 11.2% patients were non-adherent to clinic visits, 5.4% to laboratory tests, and 25.2% to medication. Recipient history of psychiatric disorders (OR 1.57 [95% CI: 1.22, 2.02]) or non-adherence (OR 1.82 [95% CI: 1.31, 2.54]) were independent risk factors for non-adherence. Private (vs. public) drug coverage reduced the risk for non-adherence (OR 0.62 [95% CI: 0.48, 0.80]). Any episode of non-adherence over the first-year after transplant was associated with total graft failure (HR 1.52 [95% CI: 1.20, 1.91]), death with graft function (HR 1.51 [95% CI: 1.11, 2.05]), and biopsy-proven acute rejection (HR 2.35 [95% CI: 1.38, 3.99]). A trend toward an increased risk of death-censored graft failure was observed (HR 1.39 [95% CI: 0.96, 2.01]).

Implications for practice: KTR adherence is influenced by both psychosocial and socioeconomic determinants, which impact post-transplant outcomes. Our results emphasize the need for multifaceted interventions to improve patient adherence and further investigation to determine if our results are generalizable to younger patient populations.

21. Critical incident during dialysis treatment: Protocols followed by technologists in AKC-S

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Shripal Parikh, cdt, AScT, Dialysis Tech 2, AKC-S

Clinical Engineering, Alberta Health Services

Hemodialysis treatment is generally considered safe and effective option for managing ESRD. However, critical incidents can happen resulting in adverse reaction or, in very rare cases, even death of a patient. It is very important to follow certain protocols post incident to manage risks and to investigate and get to the root of the problem. These protocols also help in protecting patient rights to know and manage risks for the organization. An incident can happen in the dialysis facility or home dialysis setting. In both cases, technologists are involved from the onset, as they are responsible for safe and accurate operation of dialysis equipment. The presentation will include an in-depth discussion of protocols followed by technologists at Alberta Kidney Care–South in managing such critical incidents. It will conclude with the importance of documentation and following recommended manufacturers' guidelines for the repair and maintenance of hemodialysis and related equipment, as well as following strict protocols post critical incidents to manage risks.

22. Utilizing artificial intelligence to predict admission risk among in-center hemodialysis patients

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Background: Patients with end-stage kidney disease (ESKD) requiring hemodialysis (HD) have multiple comorbidities and a higher risk of mortality than their age-matched general population. At St. Michael's Hospital, 280 patients receive HD, and 25% of these patients are admitted to hospital or visit the Emergency Department (ED) in an average month. Many hospitalizations and ED visits may be preventable, but are often difficult to anticipate. Early identification of acute medical issues in HD patients is imperative. Collaborating with the Li-Ka Shing Center for Health Care Analytics and Research & Training (LKS-CHART), a prediction tool is being created using artificial intelligence to stratify HD patients' risk level of hospital admission or ED visit in the subsequent seven days. A standardized clinical pathway will then be implemented prompting closer surveillance and further investigations and interventions for those identified at the highest risk. Hospitalization may be inevitable in some cases, however, this prediction tool could assist us to avoid hospitalization or, if inevitable, bypass ED by directing admission through the inpatient ward. In conclusion, by utilizing artificial intelligence, we aim to address one of the most vexing challenges in the care of maintenance HD recipients. By enabling HD unit clinicians to target the highest risk patients, we hypothesize that the application of this prediction tool will enhance care delivery to HD patients, increase the efficiency with which resources are utilized and, ultimately, help reduce the burden of ED visits and inpatient stays.

23. The effect of taurolidine-based lock solutions as prophylaxis and antithrombotic in central venous access device: An integrative review

Kay Sunshine Acar, Nephrology Nurse

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Background: To achieve adequate dialysis, suitable vascular access is needed. For elderly patients who have a high prevalence of comorbid conditions, a central line catheter may be a

viable option. Central line-associated bloodstream infection (CLABSI) is the most serious and potentially fatal problem. Locking solutions are currently used in practice. Taurolidine is a novel non-toxic substance with no adverse effects or microbial resistance. It reduces catheter-related infections (CRIs) and dysfunction in all hemodialysis patients, including children.

Objectives: To assess the effectiveness of taurolidine-based and combined locking solutions in preventing thrombus formation and infections associated with catheters in adult hemodialysis patients.

Methods: Using Whittemore and Knafl's (2005) framework for integrative review, an electronic search was conducted using Google Scholar, Springer, Elsevier, Science Direct, Crossref, Cochrane Library, and PubMed databases to find articles from 2012 to 2022. Qualified articles randomized clinical trials that compared the efficacy of taurolidine-based lock (TBL) versus control for prophylaxis and antithrombotic purposes. Nine studies were considered eligible.

Results: The selected studies demonstrated the efficiency of TBL solutions in removing biofilm, thereby, significantly reducing CLABSI and CRIs. The use of taurolidine-urokinase once weekly over a weekend in conjunction with the taurolidine-citrate-heparin solution twice weekly (known as the 2+1 protocol) maximizes this result. TBL is a remarkably cost-efficient in reducing catheter dysfunction and as equally effective as antibiotic prophylaxis. This may be a viable antibiotic alternative. Moreover, the use of high-concentrate citrate over low-dose citrate solutions provides no additional benefits as upheld by the current guidelines. Taurolidine has also been demonstrated to have antineoplastic properties that induce apoptosis. Its use in cancer treatment is plausible in the future.

Conclusions: The use of TBL as a prophylactic and antithrombotic agent is promising, but the studies included have poor quality designs that likely introduce bias.

Implications for nephrology practice: Nurses play a critical part in decreasing the likelihood of infection. TBL as a cost-effective locking solution targets catheter-related infections and dysfunction, which improves the quality of care. Further research should be conducted with large double-blind trials to validate these findings. Hence, the results should be interpreted with prudence.

Poster Presentations

1. Home hemodialysis with online priming

Sudarshan Meenakshi Sundharam, cdt, Renal Engineering Technologist

University Health Network, Toronto General Hospital, Toronto, ON

Background: The University Health Network (UHN) nephrology program team focuses both on preventing kidney disease and on providing novel forms of kidney replacement therapy. Overseeing about 150-plus living and deceased donor kidney transplants every year, the program follows between 1,700 and 2,000 patients who have received transplants at UHN. The UHN nephrology team has more experience with home nocturnal dialysis than any other program in the world and is a global leader in home peritoneal dialysis.

Purpose of project: In this poster, the author will present a home dialysis patient with compromised physical ability to carry out routine preparation of the dialysis machine. We will discuss how the home hemodialysis (HD) unit and technical team at UHN planned a strategy to explore online priming as an option for the patient to meet the patient's needs with an at-home set up.

Description: The author will review how the patient's quality of life has been impacted by the introduction of online priming options and routine infection control surveillance and monitoring by the renal engineering technologist(s).

Evaluation/Outcomes: Providing online priming to home dialysis patients creates a challenging environment but represents a safe treatment option to our clients. The online production of sterile substitution fluid and ultrapure HD fluid relies on the implementation of fully equipped Diasafe ultrafilters, which helps to reduce bacteria formation.

Implications for nephrology practice/education: Reliability and safety through adherence to standard disinfection protocols and frequent microbiology samplings are critical in the delivery of a quality home dialysis treatment, thus contributing to an improvement in the patient's quality of life.

2. Navigating technical challenges at UHN during pandemic times

Adrian Ungureanu, C.E.T.

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Background: The COVID-19 pandemic severely affected hemodialysis (HD) operations at University Health Network (UHN). HD emerged as a vital part of the complex treatment of severe COVID-19 complications, leading to a surge in requests for off-unit HD support. As a result, the HD technical department at UHN had to overcome new challenges to maintain continuity of the HD operations.

Purpose: In this poster, we review the pandemic challenges the UHN renal engineering department faced and explore how the technical team responded to each challenge.

Description: During the pandemic, the combination of supply chain failures, increased HD support demand, situational volatility, and personnel shortage, disrupted the regular HD technical operations. Equipment, component, and supply

shortages caused a direct increase in treatment hours, equipment breakdown, overflow of equipment storage and maintenance, and home HD technical support. The UHN technical team adopted a practical approach and developed pre-emptive solutions to these problems. The solutions included avoiding equipment batch-failure by increasing equipment reliability and gradual release-to-service, strict equipment monitoring of usage and maintenance, equipment dynamic reassignment, alternative suppliers, substitute parts and chemicals, emergency back-up equipment and adaptive policies and forms.

Evaluation/Outcomes: More than 300 equipment pieces were maintained and more than 10,000 off-unit treatments were performed without any delay during the pandemic at UHN, regardless of the difficulties the technical team faced.

Implications for nephrology practice/education: The problem assessment, solution finding, developed strategies, deployed tactics, and the outcomes evaluation could be invaluable tools for future pandemic-related HD technical emergency management. The added technical knowledge and the pandemic-tailored solutions will be part of the collective expertise for future generations of dialysis technologists.

3. Collaborative nurse-tech model of care for the win!

Natasha Keizer, Technologist

St. Joseph's Healthcare Hamilton, Hamilton, Ontario

Background: Are patients fully satisfied with the level of care they receive in the collaborative nurse-tech model of care during their treatments? The nurse-tech model of care is a unique collaborative approach in which the nurse and clinical technologist work side by side to ensure the patient receives the best possible treatment and outcome.

Purpose: This study assessed whether patients felt safe, understood, comfortable and satisfied with their quality of care.

Description: As such, 100 dialysis patients of all ages from three nurse-tech pods across two different sites within St Joseph's Healthcare Hamilton were sampled using a questionnaire. The data collected provided insight from the patient's perspective about the overall efficiency, consistency and delivery of care they received. The questions focused primarily on the role of the clinical technologist and the tasks they perform from initiation of treatment, monitoring, and discontinuation of treatment.

Evaluation/Outcomes: The results collected demonstrate that the patients were overall highly satisfied. Our findings support that the quality of care received by patients in a collaborative model is neither diminished or compromised, rather it is enhanced and complemented from the knowledge that a technologist brings to the experience. The collaborative pod offers the patient an opportunity to discuss any curiosities they have with the machine and promotes a greater sense of inclusion due to the rapport built between the patient and tech over time.

Implications for nephrology practice: Our unique model has provided a blueprint of collaborative care between nurses and t echnologists that other dialysis programs could use to enhance and enrich patient level of care and gratification.

4. Organ trafficking, organ commercialism, and transplant tourism – the moral obligation of healthcare providers to educate those with CKD and ESRD on the dangers of these practices

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Background: Renal transplantation is the treatment of choice for those with ESRD as it provides an increased life expectancy, greater quality of life, fewer side effects and reduced costs to the healthcare system in comparison to other renal replacement therapies. However, as the rate of ESRD climbs, kidneys available for transplantation do not, causing a global supply and demand mismatch and, therefore, a rise in organ trafficking, organ commercialism, and transplant tourism. These practices are driven by exploitation of vulnerable populations and condemned by the Canadian Society of Transplantation, Canadian Society of Nephrology, and the World Health Organization. Organ trafficking, organ commercialism and transplant tourism are unethical, illegal and carry significantly higher rates of post-operative health risks for donors and recipients. These transplant recipients have significantly higher rates of delayed graft function, acute rejection, and post-transplant infections. Organ trafficking and commercialism are well established as illegal within Canada. As of December 2022, under Bill S-223, it is illegal for Canadians to partake in transplant tourism. As such, it is imperative that those with CKD and ESRD be informed of the true picture of organ trafficking, transplant tourism and organ commercialism.

Purpose: This poster is intended to educate healthcare providers on organ trafficking, organ commercialism, and transplant tourism. The goal is to then have that information disseminated to those with chronic kidney disease (CKD) and end-stage renal disease (ESRD), ultimately to deter them from seeking these treatment modalities.

Implications for practice: Healthcare providers are morally obligated to disseminate this information to those with CKD and ESRD and deter them from these unethical, illegal, and dangerous transplant practices. At present, CANNT is establishing a working group to develop an organ trafficking patient pamphlet as an educational resource to be utilized by Canadian healthcare providers within the nephrology patient population.

5. Don't stop believing – The journey to peritoneal dialysis

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Richard Orlicki, M.Eng.Design, Registered Nephrology Technologist

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Patients receiving peritoneal dialysis (PD) are more satisfied with their care, and identify that PD has less impact on their lives than patients receiving in-centre hemodialysis (ICHD) (Juergensen et al., 2006). Yet the number of patients within our program choosing PD as a home modality has been declining since 2017. A coinciding increase in the number of patients receiving ICHD prompted the peritoneal dialysis team to examine what factors have contributed to the low uptake of PD, begin to address these factors, and lead current ICHD patients on their journey to PD. To align with the Ontario Renal Network's goals and strategic objectives regarding the provision of person-centred care, enhancement of the quality of communication, and promotion of home dialysis (Ontario Renal Network, 2023), we sought to increase the uptake of PD, focusing specifically on patients already receiving ICHD. Patients on ICHD were approached at all four of the program's sites. Patients were asked a series of questions about their pre-dialysis education, and why they ultimately chose ICHD. Patients were given flyers highlighting the benefits of PD.

As a result of in-centre visits and the PD flyer, the PD team fielded several calls from patients interested in PD. Lack of detailed PD education pre-dialysis emerged as the prevailing theme, as we investigated the decline in the number of PD patients in our program. This information has been used to inform educational practice changes, and the creation of a program-wide PD Pathway aimed at increasing the number of patients choosing PD first.

6. Heparin-free dialysis at home

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Elizabeth Anderson, RN
Nam-Mee Cho, RN
MaryBeth Adams, RN
Imelda Lo, RN,
Kevin Barlow, RN

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Background: Hemodialysis [HD] patients are at risk of bleeding due to the use of anticoagulation during dialysis. Long-term side effects with the use of unfractionated heparin [UFH] are also supported by literature. This prompted the clinical team to pilot hemodialfiltration [HDF] in the home hemodialysis [HHD] population at St. Michael's Hospital. The online priming set-up delivers heparin-free dialysis via the HDF function to minimize the use of anticoagulation. Further exploration was required to establish how additional training and the quality of dialysis would be received by the nurses and patient population.

Purpose: The home dialysis team will explore if heparin-free dialysis is feasible as a standard HD prescription using the online priming set-up and HDF function.

Description: New HHD patients were trained for the online priming set-up. Existing HHD patients were selected for heparin-free dialysis based on criteria including risk of bleeding, availability for re-training, dexterity, cognitive status, and patient preference. The HD prescription with HDF was optimized during training and a tight heparin dose was added, as required. Staff and patients were interviewed to better understand their perception of the dialysis treatment and the process adjustment to provide heparin-free dialysis.

Evaluation/Outcomes: The first 15 patients were successfully trained with eight patients completely eliminating heparin and seven patients reducing their use of intradialytic heparin.

Narratives from both the patients and training nurses were collected and analyzed to evaluate the outcome of HHD training for heparin-free dialysis. Patient reports included improved self-efficacy and fewer side effects associated with heparin. Nurse reports included benefits of HHD with little to no anticoagulation. In general, heparin-free dialysis, as a standard, was well received.

Implications for nephrology practice: Using heparin as an anticoagulant for HD does not need to be a standard process when initiating patients on HHD therapy. Patients and nurses can effectively learn, implement, evaluate their therapy, and add anticoagulants such as heparin only when required.

7. Enhancing the LPN-RN collaboration for optimal care in hemodialysis

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The integration of License Practical Nurses (LPNs) in hemodialysis settings has brought up various considerations, with a primary focus on building a strong partnership with registered nurses (RNs). Achieving this goal involves multiple aspects that require a thoughtful and systematic approach. To streamline the process, we initiated open forums that fostered transparent communication between staff and leadership. This allowed a safe space for the expression of thoughts, ideas, concerns, and any personal or group issues. To ensure the LPNs' readiness and proficiency, we provided them with cohort training alongside the RNs. In addition, we created a comprehensive patient acuity guide that defined each nurse's roles and responsibilities, promoting clear communication and mutual understanding. As a result, a genuine partnership has emerged between the nurses and the interdisciplinary team, leading to improved patient care and outcomes.

CANNT Journal Manuscript Submission Guidelines

DESCRIPTION

CANNT Journal is a quarterly publication that showcases excellence in nephrology nursing and technological writing through peer-reviewed articles that examine current issues and trends in nephrology nursing and technological practice, education, and research. *CANNT Journal* is the official journal of the Canadian Association of Nephrology Nurses and Technologists and supports the association's mission to serve its membership by advancing the development of nephrology nursing and technological knowledge. The journal is indexed in MEDLINE and CINAHL.

EDITORIAL POLICIES

CANNT Journal welcomes manuscripts related to nephrology nursing and technological education, practice, research, or health policy. The manuscript must be the sole intellectual property of the authors. Once accepted, manuscripts become the permanent property of *CANNT Journal*, and may not be reproduced elsewhere without written permission from the publisher.

We prefer manuscripts that present new clinical information or address issues of special interest to nephrology nurses and technologists. In particular, we are looking for:

- Original research reports
- Relevant clinical articles
- Innovative quality improvement reports
- Narratives that describe the nursing experience
- Interdisciplinary practice questions and answers
- Literature or systematic reviews

We also encourage letters to the editor as a way to promote dialogue and alternative perspectives to articles published in *CANNT Journal*. Choose "Letters to the Editor" from the Section dropdown on the submissions page.

SUBMISSION DECLARATION

Submission of the article implies that the work described has not been published elsewhere (except in the form of an abstract or a published lecture), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and responsible authorities where the research was carried out, and that, if accepted, it will not be published elsewhere in the same form without the written consent of the copyright holder. Upon acceptance of the submitted material, the author(s) must transfer copyright ownership to *CANNT Journal*. Statements and opinions contained within the work will remain the responsibility of the author(s).

PEER REVIEW

CANNT Journal operates on a double-blind peer review process. The names of the reviewers will not be disclosed to the author(s) submitting the manuscript, and the name(s) of the author(s) will not be disclosed to the reviewers.

All contributions will be initially assessed by the editors for suitability for the journal. Manuscripts deemed suitable are sent to two independent expert reviewers to assess the quality of the paper. A manuscript will only be sent for review if the editors determine that the paper meets the appropriate quality and relevance requirements in keeping with the particular aim and scope of *CANNT Journal*.

The editors are responsible for the final decision regarding acceptance or rejection of the manuscript. Editors are not involved in decisions about papers that they have written themselves or have been written by family members or colleagues, or which relate to products or services in which the editor has an interest. All manuscript submissions are subject to the journal's usual independent peer review process.

The criteria for acceptance for all manuscripts include the quality and originality of the research or intellectual material, its significance/appeal to journal readership, and the general writing style.

PREPARING THE SUBMISSION

The following components are required for all submissions. Manuscripts that do not meet these requirements will be returned to the corresponding author for technical revisions before undergoing peer review.

The manuscript should be submitted in separate files in the following order: title page; abstract with key words; main text including references; and figures/tables. A cover letter may be supplied at the authors' discretion.

Title page

Include:

- Title of the manuscript (concise and informative)
- Short running title of fewer than 40 characters
- Full names, highest academic degrees, and affiliations of all authors with email address and telephone/fax number of corresponding author
- Authors' institutional affiliations (department, institution, city, country) where research work was conducted
- Any acknowledgements (including disclosure of funding), credits, or disclaimers, conflict of interest statement for all authors

Abstract and keywords

Submit structured or summary abstract of up to 250 words. Word limit includes headers in a structured abstract (e.g., *background*, *purpose*, *method*, *findings*, and *discussion*).

The abstract should be a succinct summary of the major issue, problem, or topic being addressed, and the findings and/or conclusions in the manuscript. It should not duplicate material in the main text. It should not contain subheadings, abbreviations, or reference citations.

Provide up to eight keywords that describe the contents of the manuscript.

Main text (manuscript, reference list)

Main text:

- Maximum length 15–20 pages, double-spaced
- Use the *Publication Manual of the American Psychological Association* (APA) 7th edition (copyright 2020) for style and format guidelines.
- As manuscripts are double-blind peer reviewed, the main text should not include any information that might identify the authors. Therefore, do not include any identifying information (i.e., authors' names).
- Number all pages consecutively in the upper right-hand corner.
- Cite tables/figures consecutively.
- Be sure to approve or remove all tracking changes in your Word document before uploading.

References:

- Use only sources from credible and high-quality journals.
- Double-spaced at the end of the manuscript
- Citations and reference list is to be styled according to the APA 7th edition (copyright 2020).
- Provide URL for all references where available.
- Ensure that every reference cited in the text is also present in the reference list (and vice versa).

Tables/figures

- Submit each table or figure as a separate file, and as editable text and not as an image.
- Prepare tables/figures according to APA 7th edition (copyright 2020).
- Cite tables/figures consecutively in the text, and number them in that order. Do not embed tables/figures in the manuscript text file.
- Number table and figure consecutively in accordance with their appearance in the text and place the title of the table/figure and any table/figure notes below the table/figure body.
- Use tables sparingly and ensure that the data presented in them clarify and supplement, rather than duplicate, results described in the main text. Only tables that are 3 manuscript pages or shorter will be accepted to be published within the article.
- Authors using previously published tables and figures must include written permission from the original publisher. Such permission must be attached to the submitted manuscript.

MANUSCRIPT SUBMISSION

Once the submission materials have been prepared in accordance with instructions in "Preparing the Submission" above, manuscripts must be submitted online at: **https://cannt-acitn.ca/journal/ojs/index.php/canntj**

New users must click "Register" at the upper right of the page. Once logged in, select "Submissions" from the "About" dropdown.

AFTER SUBMISSION

There are three stages of manuscript review prior to the final decision about the article's status for publication.

Preliminary

Preliminary review by the editors to determine the suitability of the article for peer review. The editors assess all manuscript presentation requirements including style and format of the manuscript.

Editorial peer review

The peer review process determines scholarly merit of the article. All manuscripts are reviewed by two members of the Editorial Review Panel. The acceptance criteria for all papers lie in the quality and originality of the work and its significance to journal readership. Manuscripts are only sent to reviewers if the editors determine that the paper merits further review.

Determination of eligibility for publication

After the peer review, the editors make a decision regarding the eligibility of the article for selection based on the comments and recommendations of the reviewers. Based on the peer review evaluation, the editors make one of the following decisions:

- Accept without revisions
- Accept after completing minor revisions
- Re-submit after completing major revisions – re-review by original reviewers
- Reject

AFTER ACCEPTANCE

Corresponding authors will receive a PDF proof of the article. The page proof should be carefully proofread for any copyediting or typesetting errors. It is the authors' responsibility to ensure that there are no errors in the proofs. Authors should also make sure that any renumbered tables, figures, or references match text citations and that figure legends correspond with text citations and actual figures. Proofs must be returned within the deadline specified by the editors.

Alterations to the proof that are beyond those required to correct errors or to answer queries, or are a reworking of previously accepted material will **not** be allowed. The editors reserve the right to deny any changes that do not affect the accuracy of the content.

POST PUBLICATION

The corresponding author will receive a hard copy of the journal issue as well as a PDF copy of the article.

If accepted, your article must not be published elsewhere in similar form, in any language, without the consent of the publisher. You may not post the PDF file of your copyedited article, or your final published article in any repository or online social media site.

OPEN ACCESS OPTION

Authors of accepted peer-reviewed articles have the choice to pay a fee to allow perpetual unrestricted online access to their published article to readers globally, immediately upon publication. This option has no influence on the peer review process. All manuscripts are subject to *CANNT Journal*'s standard double-blinded peer-review process and will be accepted or rejected based on their own merit.

The article processing charge of $250.00 is charged on acceptance of the manuscript and should be paid within 5 days by the author(s). Payment must be processed for the article to be published open access.

CONFLICTS OF INTEREST AND SOURCE OF FUNDING

At the time of manuscript submission, authors should disclose any potential sources of conflict of interest, which includes any financial interest or relationship that might be perceived as influencing the authors' objectivity. The existence of a conflict of interest does not preclude publication. Authors must also declare if they have no conflict of interest to declare. Sources of funding should be included on the title page under the heading "Conflicts of Interest and Source of Funding." Each author must complete and submit the journal's copyright transfer agreement, which includes a section on the disclosure of potential conflicts of interest.

COPYRIGHT TRANSFER AGREEMENT

At the time of submission, the submitting author will be presented with the copyright transfer and conflict of interest form. Co-authors will receive an email with instructions to also complete the form in order to proceed with the review process.

EDITORIAL OFFICE CONTACT DETAILS

Jovina Bachynski and Rosa Marticorena, Editors
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Lignes directrices pour la soumission des manuscrits au *Journal ACITN*

DESCRIPTION

Le *Journal ACITN* est une revue publiée trimestriellement qui met en valeur l'excellence des écrits sur les soins infirmiers et les technologies en néphrologie par le biais d'articles évalués par des pairs qui examinent les questions et les tendances actuelles de la pratique, de la formation et de la recherche dans ce domaine. Le *Journal ACITN* est la revue officielle de l'Association canadienne des infirmières et infirmiers et des technologues de néphrologie et soutient la mission de l'association pour servir ses membres en perfectionnant le développement des connaissances en matière de soins infirmiers et de technologies en néphrologie. La revue est référencée dans les bases de données MEDLINE et CINAHL.

POLITIQUES RÉDACTIONNELLES

Le *Journal ACITN* accepte les manuscrits portant sur la formation, la pratique, la recherche sur les soins infirmiers et les technologies de néphrologie ou la politique en matière de santé. Le manuscrit doit être la propriété intellectuelle unique des auteurs. Une fois acceptés, les manuscrits deviennent la propriété permanente du *Journal ACITN* et ne peuvent être reproduits ailleurs sans l'autorisation écrite de l'éditeur.

Nous préférons les manuscrits qui présentent de l'information clinique nouvelle ou qui abordent des problématiques d'intérêt particulier pour les infirmières et infirmiers et les technologues en néphrologie. Plus précisément, nous recherchons :

- Rapports de recherche originaux;
- Articles cliniques pertinents;
- Rapports sur des approches innovatrices en matière d'amélioration de la qualité;
- Textes narratifs relatant une expérience de pratique infirmière ou technologique;
- Textes sous forme de questions et de réponses sur la pratique interdisciplinaire;
- Revues de littérature ou revues systématiques.

Nous encourageons également les tribunes libres sous forme de courrier des lecteurs comme moyen de promouvoir le dialogue et des perspectives de rechange aux articles publiés dans le *Journal ACITN*. Veuillez choisir « Courrier des lecteurs » dans le menu déroulant de la Section sur la page des soumissions.

DÉCLARATION RELATIVE À LA SOUMISSION

La soumission de l'article laisse entendre que l'œuvre décrite n'a pas été diffusée autre part (sauf sous la forme d'un résumé ou d'une présentation orale publiée), qu'elle n'est pas à l'étude pour publication ailleurs, que sa publication est approuvée par tous les auteurs et les autorités responsables où la recherche a été réalisée, et que, si elle est acceptée, elle ne sera pas publiée ailleurs sous la même forme sans le consentement écrit du titulaire du droit d'auteur. À l'acceptation du document soumis, le ou les auteurs devront transférer la propriété du droit d'auteur au *Journal ACITN*. Les déclarations et les opinions contenues dans l'œuvre demeurent la responsabilité de l'auteur ou des auteurs.

ÉVALUATION PAR LES PAIRS

Le *Journal ACITN* fonctionne selon un processus d'évaluation par les pairs à double insu. Les noms des évaluateurs ne seront pas divulgués à l'auteur ou aux auteurs qui auront soumis le manuscrit, de même que le ou les noms des auteurs ne seront pas divulgués aux évaluateurs.

Toutes les contributions seront initialement évaluées par les rédactrices en chef pour leur pertinence à la revue. Les manuscrits réputés acceptables sont envoyés à deux experts indépendants qui en évalueront la qualité. Un manuscrit ne sera envoyé pour évaluation que si les rédactrices en chef déterminent que le manuscrit répond aux exigences de qualité et de pertinence appropriées, conformément à l'objectif et au champ d'application particuliers du *Journal ACITN*.

Les rédactrices sont responsables de la décision définitive en ce qui a trait à l'acceptation ou au rejet du manuscrit. Les rédactrices en chef n'interviennent pas dans les décisions relatives aux articles qu'elles-mêmes ont rédigés ou que des proches ou des collègues ont écrits ou encore qui portent sur des produits ou services pour lesquels elles sont en conflit d'intérêts. Toutes les soumissions de manuscrit font l'objet du processus habituel d'évaluation par les pairs indépendants de la revue.

Les critères d'acceptation de tous les manuscrits comprennent la qualité et l'originalité de la recherche ou du matériel intellectuel, son importance ou son attrait pour le lectorat de la revue et le style d'écriture en général.

PRÉPARATION DE LA SOUMISSION

Les éléments suivants sont requis pour toutes les soumissions. Les manuscrits qui ne répondent pas à ces exigences seront renvoyés à l'auteur-ressource en vue de révisions techniques avant d'être soumis à l'évaluation par les pairs.

Le manuscrit doit être soumis en fichiers séparés dans cet ordre : page titre; résumé avec mots clés; corps du texte incluant les références; et les figures ou les tableaux. Une lettre de présentation peut être fournie à la discrétion des auteurs.

Page titre

Inclure :

- Titre du manuscrit (concis et descriptif)
- Titre court comptant moins de 40 caractères
- Nom complet, diplôme de plus haut grade et affiliations de tous les auteurs, adresse courriel et numéros de téléphone/télécopieur de l'auteur-ressource
- Affiliations institutionnelles des auteurs (département, établissement, ville, pays) où les travaux de recherche ont été réalisés
- Tous les remerciements (y compris la divulgation du financement), les crédits ou les avertissements, un énoncé de conflit d'intérêts pour tous les auteurs

Résumé avec mots clés

Soumettre un résumé structuré ou succinct de 250 mots au maximum. La limite de mots inclut les en-têtes dans un résumé structuré (p. ex., *contexte*, *objet*, *méthode*, *résultats* et *discussion*).

Le résumé doit être une description succincte de la question, du problème ou du sujet principal abordé dans le manuscrit, ainsi que les résultats ou conclusions présentés. Il ne doit pas reproduire le corps du texte. Il ne doit pas contenir de sous-titres, d'abréviations ou de citations de référence.

Fournir jusqu'à huit mots clés qui décrivent le contenu du manuscrit.

Corps du texte (manuscrit, liste de référence)

Corps du texte :

- Longueur maximum de 15 à 20 pages, à double interligne
- Se servir du guide de style *Publication Manual of the American Psychological Association* (APA), 7e édition (droit d'auteur 2020) pour les lignes directrices en matière de style et de format
- Comme les manuscrits font l'objet d'une évaluation par des pairs à double insu, le corps du texte ne doit inclure aucune information pouvant servir à identifier les auteurs. Par conséquent, il ne faut pas inclure de renseignements d'identification (p. ex., noms des auteurs)
- Paginer sans interruption dans le coin supérieur droit
- Citer les tableaux ou les figures à la suite
- S'assurer d'approuver ou d'éliminer toutes les modifications de suivi de votre document Word avant le téléversement

Références :

- N'utiliser que des sources publiées dignes de foi et de qualité
- À double interligne à la fin du manuscrit
- La liste de citations et de références doit être conforme au guide de style de l'APA, 7e édition (droit d'auteur 2020)
- Fournir les adresses URL pour toutes les références, le cas échéant
- S'assurer que toutes les références citées dans le texte figurent dans la liste de référence (et vice versa)

Tableaux ou figures

- Soumettre chaque tableau ou figure dans un fichier séparé, sous forme modifiable et non sous forme d'image
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- Citer les tableaux ou les figures à la suite dans le texte et les numéroter dans cet ordre. Ne pas incorporer les tableaux ou les figures dans le fichier texte du manuscrit
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- Utiliser les tableaux avec retenue et s'assurer que les données qui y sont présentées clarifient et complètent les résultats décrits dans le corps du texte, sans toutefois les reproduire. Seuls les tableaux sur 3 pages de manuscrit ou moins seront acceptés aux fins de publication dans l'article.
- Les auteurs qui utilisent des tableaux ou des figures précédemment publiés doivent inclure l'autorisation écrite de l'éditeur original. Cette autorisation doit être jointe au manuscrit soumis.

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Après avoir préparé le matériel de soumission conformément aux directives indiquées dans la rubrique « Préparation de la soumission » ci-dessus, les manuscrits doivent être soumis en ligne à cette adresse : **https://cannt-acitn.ca/journal/ojs/index.php/canntj**

Les nouveaux utilisateurs doivent cliquer sur « Register » (S'inscrire) dans le coin supérieur droit de la page. Une fois inscrit, sélectionner « Submissions » (Soumissions) du menu déroulant « About » (À propos de).

APRÈS LA SOUMISSION

L'examen du manuscrit se déroule en trois étapes avant que la décision ultime soit prise sur le statut de l'article aux fins de publication.

Examen préliminaire

Examen préliminaire par les rédactrices en chef afin de déterminer la pertinence de l'article aux fins d'évaluation par les pairs. Les rédactrices en chef examinent toutes les exigences de présentation de manuscrits, notamment le style et le format du manuscrit.

Évaluation rédactionnelle par les pairs

Le processus d'évaluation par les pairs détermine la valeur scientifique de l'article. Tous les manuscrits sont évalués par deux membres du comité d'évaluation rédactionnelle. Les critères d'acceptation pour tous les textes reposent sur la qualité et l'originalité de l'œuvre et sur son importance aux yeux du lectorat de la revue. Les manuscrits sont envoyés aux évaluateurs uniquement si les rédactrices en chef décident que le texte mérite un examen plus approfondi.

Détermination de l'admissibilité aux fins de publication

Après l'évaluation par les pairs, les rédactrices en chef prennent une décision concernant l'admissibilité de l'article à la sélection en se fondant sur les commentaires et les recommandations des évaluateurs. Selon l'évaluation par les pairs, les rédactrices en chef prennent l'une des décisions suivantes :

- Accepter le manuscrit sans modifications
- Accepter le manuscrit une fois les modifications mineures apportées
- Soumettre de nouveau le manuscrit une fois les modifications majeures apportées – réévaluation par les évaluateurs d'origine
- Rejeter le manuscrit

APRÈS L'ACCEPTATION

Les auteurs-ressources recevront une épreuve en format PDF de l'article. L'épreuve d'imposition doit être soigneusement relue afin de détecter toute erreur d'édition ou de composition. Il incombe aux auteurs de s'assurer que les épreuves sont exemptes d'erreurs. Les auteurs doivent également s'assurer que les tableaux, les figures ou les références renumérotés correspondent aux citations du texte et que les légendes des figures correspondent aux citations du texte et aux figures réelles. Les épreuves doivent être renvoyées dans le délai précisé par les rédactrices en chef.

Les modifications apportées à l'épreuve qui vont au-delà de ce qui est nécessaire pour corriger des erreurs ou pour répondre à des questions ou qui constituent un remaniement du matériel précédemment accepté **ne** seront **pas** permises. Les rédactrices en chef se réservent le droit de rejeter toute modification qui n'influe pas sur l'exactitude du contenu.

APRÈS LA PUBLICATION

L'auteur-ressource recevra une copie papier du numéro de la revue ainsi qu'une copie PDF de l'article.

S'il est accepté, votre article ne doit pas être publié nulle part ailleurs sous une forme similaire, en toute autre langue, sans le consentement de l'éditeur. Vous ne pouvez pas publier le fichier PDF de votre article révisé ou de votre article définitif publié dans un service d'archives ou sur un site de médias sociaux en ligne.

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Les auteurs d'articles acceptés dans le cadre d'une évaluation par les pairs peuvent choisir de payer une redevance pour permettre aux lecteurs du monde entier d'accéder en ligne à leur article publié, sans restriction et à perpétuité, dès sa publication. Cette option n'a aucune influence sur le processus d'évaluation par les pairs. Tous les manuscrits font l'objet d'un processus standard d'évaluation par les pairs à double insu et seront acceptés ou refusés en fonction de leur propre valeur.

Des frais de traitement de l'article de 250,00 $ sont facturés à l'acceptation du manuscrit et doivent être payés dans les cinq (5) jours par le ou les auteurs. Le paiement doit être traité pour que l'article soit publié en accès libre.

CONFLITS D'INTÉRÊTS ET SOURCE DE FINANCEMENT

Au moment de la soumission du manuscrit, les auteurs doivent divulguer toute source potentielle de conflit d'intérêts, ce qui inclut toute relation ou tout intérêt financier qui pourrait être perçu comme influençant leur objectivité. La présence d'un conflit d'intérêts n'empêche pas la publication. Les auteurs doivent également déclarer qu'ils n'ont aucun conflit d'intérêts à déclarer. Les sources de financement doivent figurer sur la page titre sous la rubrique « Conflits d'intérêts et source de financement ». Chaque auteur doit remplir et soumettre le formulaire d'entente de transfert du droit d'auteur de la revue, lequel comprend une section sur la déclaration de conflits d'intérêts potentiels.

ENTENTE DE TRANSFERT DU DROIT D'AUTEUR

Au moment de la soumission, l'auteur qui soumet un manuscrit recevra un formulaire d'entente de transfert du droit d'auteur et de déclaration de conflits d'intérêts. Les coauteurs recevront des directives par courriel pour aussi remplir le formulaire afin d'amorcer le processus d'évaluation.

COORDONNÉES DU BUREAU DE LA RÉDACTION

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