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

CANNT JOURNAL
JOURNAL ACITN

Volume 30, Issue 2 April–June 2020

CONTENTS

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APRIL–JUNE 2020 • VOLUME THIRTY • ISSUE TWO

CANNT JOURNAL
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CONTENTS

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Letter from the Editors

It is not often that messages from the editorial team, president and president-elect run along the same theme in any issue of the *CANNT Journal*, but we are indeed conveying a common message of solidarity with the nephrology community (and beyond), as we cope with the challenges wrought by COVID-19. These are unprecedented times we are living in, with the pandemic and the unearthing of the crisis in the long-term care sector in Canada, rise of populist sentiments in certain parts of the globe, and the unvarnished protest against systemic racism in the wake of George Floyd's death in the U.S.—all converging into one perfect storm. COVID-19 is proving to be fertile ground for the research community. Findings from research studies are greatly anticipated, as these will inform future medical treatments, social behaviours and interactions, and policy actions at all relevant levels. In our own inimitable way, the nephrology community (patients and care providers alike) has adapted to the different measures mitigating the effects of COVID-19, such as physical distancing while continuing to ensure excellent patient care.

In this issue, yet again, we offer two distinct articles for your reading pleasure. In *Peritoneal dialysis for heart failure patients is associated with improved healthcare outcomes*, Leyser et al. discuss the use of peritoneal dialysis (PD) for patients with chronic kidney disease (CKD) who suffer from advanced heart failure refractory to conventional therapy (i.e., diuretics). This close collaboration between nephrology and cardiology can lead to significant benefits, such as reduced length of stay and hospitalization. In *The effects of priming (pre-orientation) on patients' transition to hemodialysis*, Wai et al. address the challenges and changes associated with the transition to hemodialysis. They offer an alternative to help improve the patient experience during this transition. Both articles speak to the concepts of adaptation and community, both of which have been in full display in every nephrology clinical and non-clinical setting across the country.

Editing is such a rewarding experience for us. We are given the opportunity to work with talented novice and experienced writers who need to give a voice to or platform for issues they are passionate about. For budding authors, in line with adaptation and community, we encourage you to step out of your comfort zone and submit a manuscript about practice and/or professional issues that require different or out-of-the-box approaches in order to effect the desired change(s). Our editorial community will support you along the way. For seasoned authors, we challenge you to continue writing about divergent issues and topics within nephrology nursing and technological practice. Our doors are always open for you.

Stay safe and healthy this summer. We will connect anew in the fall.

Sincerely,

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

Rosa Marticorena, BScN, RN, CNeph(C), DCE, PhD

Co-editors, *CANNT Journal*

Message des rédactrices en chef

Ce n'est pas souvent que les messages de l'équipe de rédaction, de la présidente et de la présidente élue portent sur le même thème dans un même numéro de CANNT Journal, mais nous voulons vous transmettre un message commun de solidarité avec la communauté de la néphrologie (et au-delà), tandis que nous devons relever les défis suscités par la COVID-19. Nous vivons une période sans précédent, avec une pandémie et l'émergence d'une crise dans le secteur des soins de longue durée au Canada, une hausse des sentiments populistes dans certaines régions du monde et des protestations directes contre le racisme systémique à la suite de la mort de George Floyd aux États-Unis – tous ces éléments créent un contexte des plus explosifs. Par ailleurs, la COVID-19 se révèle un terreau fertile pour les chercheurs. Les conclusions des études sont attendues avec impatience, car elles permettront de découvrir de nouveaux traitements médicaux, de prévoir les interactions et les comportements sociaux, ainsi que les actions en matière de politiques à tous les échelons pertinents. À sa façon inimitable, la communauté de la néphrologie (patients et fournisseurs de soins) s'est adaptée aux différentes mesures d'atténuation des effets de la COVID-19, comme l'éloignement physique, afin de continuer à soutenir l'excellence des soins.

Dans ce numéro, une fois de plus, nous vous présentons deux articles que vous aurez plaisir à lire. Dans Peritoneal dialysis for heart failure patients is associated with improved healthcare outcomes, Leyser et ses collègues discutent du recours à la dialyse péritonéale chez les patients atteints de néphropathie chronique et présentant une insuffisance cardiaque avancée réfractaire au traitement classique (diurétiques). Cette collaboration étroite entre la néphrologie et la cardiologie peut mener à des bienfaits importants, comme une durée moins longue d'hospitalisation. Dans The effects of priming (pre-orientation) on patients' transition to hemodialysis, Wai et ses collaborateurs se penchent sur les enjeux associés à la transition vers l'hémodialyse et les changements qui devraient être apportés. Ils offrent une solution de rechange pour aider à améliorer l'expérience du patient pendant cette transition. Les deux articles reprennent les notions d'adaptation et de communauté, qui ont été toutes deux à l›avant-plan dans tous les milieux de la néphrologie, cliniques ou non, partout au pays.

Être à la barre de la rédaction est une expérience très enrichissante pour nous. Elle nous offre la possibilité de travailler avec des auteurs talentueux – débutants ou chevronnés – qui souhaitent faire connaître les enjeux qui les passionnent. Dans une démarche visant l'adaptation et la communauté, nous encourageons les auteurs en herbe à sortir de leur zone de confort et à soumettre un article sur des questions liées à la pratique ou de nature professionnelle qui nécessitent une approche différente ou inédite pour produire les changements souhaités. Nos rédacteurs vous soutiendront pendant tout le processus. Nous encourageons les auteurs d'expérience à continuer d'écrire sur des enjeux et des sujets divergents relatifs aux soins infirmiers et aux technologies en néphrologie. Notre porte est toujours ouverte : n'hésitez pas à communiquer avec nous!

Restez en bonne santé et en sécurité cet été. Nous communiquerons à nouveau avec vous à l'automne.

Cordialement,

Jovina Bachynski, M. Sc. inf., inf. aut. (catégorie avancée), CNéph(C), aspirante au doctorat

Rosa Marticorena, B. Sc. inf., inf. aut., CNéph(C), D.E.S. Épidémiologie clinique, Ph. D.

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

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1-877-720-2819
Site Web : www.cannt.ca

Le *Journal ACITN* accepte des articles (manuscrits) de façon continue.

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JANICE MACKAY

Message from the President

Dear friends and colleagues,

I am writing my quarterly President's Message during the first week of June—exactly 84 days since the World Health Organization declared the global outbreak of COVID-19 a pandemic. I want to offer my appreciation and thanks to all of our renal professionals across Canada for the incredible commitment you are demonstrating in the face of COVID-19. You may be working at a leadership level on the pandemic response or at the front line providing care to your patients. Your compassion and expertise that you provide every day deserves to be acknowledged in every role within renal healthcare. The Canadian Nurses Association has launched its "Thank a Nurse" Campaign. I invite everyone to recognize nurses for all their hard work in responding to COVID-19. Please visit this link: https://www.cna-aiic.ca/en/coronavirus-disease/thank-a-nurse

As I reflect on the past three months, I am compelled to write about physical touch. I am a person who hugs readily, encourages a warm handshake or gives that congratulatory pat on the back. I can tell you that the impact of social distancing has had a profound effect on our lives and the language of compassion, support, thanks, and comfort that is communicated through physical touch. I believe that touch is fundamental to human communication, bonding, and health. I am very fortunate to have my husband by my side through this pandemic and contemplate what others may be feeling during this time. Patients, friends, and family members who are alone in their homes and lack physical touch must surely be affected by this. Human touch signals safety and trust—it calms us, reduces stress, and provides many other benefits. It is important for us to be mindful of others, knowing that there are many people who are touch deprived during this time. Although it is unclear what exactly the long-term effects will be from this pandemic, it is clear to me that the world and our profession will not be the same once the pandemic passes. Please visit our CANNT website for COVID-19 information that we have collated for our members.

It is unfortunate that our CANNT 2020 annual conference will not proceed as planned in the face of this pandemic. Please visit our website to learn more about upcoming opportunities to attend virtual educational and informational sessions. *We are at a crossroad of sustainability at CANNT. Membership is critically low*. If you are reading this message, I need each of you to use your voice to recruit your peers to become members. Together we can strengthen our association and continue to advance our profession, advocate for the interests of our membership, and provide value to our community of renal professionals.

I wish you all the best during this difficult time…and don't forget to count to 20 as you wash your hands.

Respectfully,
Janice MacKay
CANNT President
2018-2021

JANICE MACKAY

Le mot de la présidente

Chers amis et collègues,

J'écris mon message trimestriel pendant la première semaine de juin, exactement 84 jours après que l'Organisation mondiale de la Santé a déclaré que l'éclosion de COVID-19 était une pandémie. Je voudrais remercier tous nos professionnels de la néphrologie au Canada pour leur mobilisation remarquable face à cette maladie. Vous occupez peut-être un poste de gestion dans le cadre de la pandémie ou encore vous vous trouvez sur la ligne de front pour donner des soins à vos patients. La compassion et l'expertise auxquelles vous faites appel tous les jours méritent d'être soulignées pour chacun d'entre vous qui jouez un rôle dans le secteur des soins néphrologiques. L'Association des infirmières et infirmiers du Canada a lancé sa campagne Remerciez une infirmière ou un infirmier. Pour ma part, j'invite tout le monde à remercier le personnel infirmier pour le travail effectué dans le cadre de la COVID-19. Suivez ce lien : cna-aiic.ca/fr/maladie-a-coronavirus/remerciez-une-infirmiere-ou-un-infirmier

Je repense aux trois mois qui viennent de s'écouler et j'ai envie de parler des contacts physiques. Je suis quelqu'un qui aime faire des câlins, donner des poignées de main chaleureuses ou faire une tape dans le dos à l'occasion. Je peux vous dire que l'éloignement physique a eu des conséquences profondes sur notre vie et sur le langage de la compassion, du soutien, des remerciements et du réconfort que procurent les contacts physiques. Je crois qu'ils sont essentiels aux communications humaines et à la santé et qu'ils aident à créer des liens. J'ai la grande chance d'avoir mon mari à mes côtés pendant la pandémie et j'imagine ce que les autres peuvent ressentir durant cette période. Nos patients, nos amis et nos proches qui vivent seuls sont sans doute affectés par le manque de contacts physiques, qui procurent un sentiment de sécurité et de confiance, qui calment, diminuent le stress et offrent bien d'autres bienfaits. Il est important de se soucier des autres et de garder à l'esprit que de nombreuses personnes sont privées de ces contacts actuellement. Bien qu'on ne sache pas quels seront les effets à long terme de cette situation, il m'apparaît clairement que le monde et notre profession ne seront plus les mêmes après la pandémie. Consultez le site Web de l'ACITN pour voir les renseignements sur la COVID-19 que nous avons recueillis pour nos membres.

C'est dommage que le congrès 2020 de l'ACITN ne puisse pas avoir lieu en raison de la pandémie, mais ne manquez pas de visiter notre site Web pour connaître les possibilités de participer prochainement à des séances éducatives et informationnelles de façon virtuelle. Par ailleurs, nous sommes à la croisée des chemins pour ce qui est de la pérennité de l'ACITN, car le nombre de nos membres est extrêmement bas. Je demande à chacun d'entre vous, si vous lisez ce message, de faire l'effort de recruter de nouveaux membres parmi vos collègues. Ensemble, nous pouvons renforcer notre association et continuer de faire progresser notre profession, de défendre les intérêts de nos membres et d'ajouter de la valeur à notre communauté de professionnels de la santé en néphrologie.

Je vous souhaite d'aller le mieux possible pendant cette période difficile… et n'oubliez pas de compter jusqu'à 20 quand vous vous lavez les mains.

Respectueusement,
Janice MacKay
Présidente de l'ACITN (2018-2021)

Your Board in Action

As I write this, most provinces are experiencing what we hope is the end of the first wave of the COVID-19 pandemic and preparing for the second wave, which is expected to begin in the fall. We are all adapting to a new normal in nephrology nursing with physical distancing and PPE protocols. Many provinces have also begun the slow and careful process of loosening the previous tight restrictions, and we are now able to expand our bubble to see our loved ones again. Needless to say, we have all experienced anxiety through our efforts to protect ourselves and our loved ones, and sadness through the hardships we have witnessed our patients endure. CANNT commends you on the exemplary care you continue to provide and extends a heartfelt thank-you for your dedication.

The Canadian Nurses Association (CNA) National Nurses Week theme this year is "Nurses: A Voice to Lead – Nursing the World to Health." The theme was developed by the International Council of Nurses (ICN) to showcase how nurses are central to addressing a wide range of health challenges. Its goal is to help raise the profile of our profession to attract new members and, thereby, address the worldwide shortages. The World Health Organization (WHO) has designated 2020 as the "Year of the Nurse and Midwife" in honour of the 200th anniversary of Florence Nightingale's birth. See more at: https://cna-aiic.ca/en/news-room/events/national-nursing-week#sthash.jacJwAc3.dpuf

MEMBERSHIP

We have a membership of 324 renal professionals as of June 2020. The Board of Directors (BOD) continually evolves to provide enduring benefits to all our members. We currently invite you to participate in a new strategy to increase membership entitled "Member-Get-a-Member" Campaign, which will continue until September 30, 2020. This innovative initiative encourages members to recruit friends and colleagues and rewards the top recruiter with a free CANNT membership for one year.

Membership is vital to CANNT, as it is an association run by membership. There are many advantages to becoming a member of CANNT:

- Online access to the peer-reviewed quarterly *CANNT Journal* for all members
- Online access to the *Vascular Access Guidelines*, Stan*dards of Nursing Practice*, and *Standards of Technical Practice*
- Discount of the annual conference registration fee
- Educational opportunities at a reduced cost or free to members
- Connections to the latest information and resources related to nephrology, technology, or nursing
- Networking opportunities with colleagues practicing in your nephrology specialty on a national level
- Opportunities for collaborative networking and problem solving through participation in a refined clinical practice group
- CANNT awards, bursaries, and research grants offered to individuals in recognition of their excellence in the workplace and/or to further their studies in nephrology

CANNT represents its membership as affiliates of various organizations and acts as your link to those organizations to help keep you connected and informed. We are seeking input from our valued membership, and I want to hear from you on ways to increase our association membership. Please share your thoughts with us by contacting your CANNT office team at https://cannt-acitn.ca/

JOURNAL

Guidelines for journal article submission can be found under the "CANNT Journal" section of the CANNT website. We prefer manuscripts that present new clinical information or address issues of special interest to nephrology nurses and technologists. E-mail your manuscript to one of our co-editors Jovina Bachynski or Rosa Marticorena at CANNT.journal1@gmail.com.

Include a covering letter with contact information for the primary author and a one-sentence biographical sketch (credentials, current job title and location) for each author. The *CANNT Journal* is published four times per year in electronic versions. The journal is a refereed publication and accepts only original, peer-reviewed articles. Advertising opportunities and corporate sponsored education opportunities are available.

COMMUNICATIONS

This has certainly been a trying time, and CANNT has not only provided vital information regarding the pandemic, but has also given you a voice to tell your stories related to these unprecedented circumstances. We will continue to support you in the future with information regarding current evidence-based practices communicated through all our social media platforms. Please visit our website and stay connected through our tweeter feeds and *CANNT Connection* releases. If you have a question, idea, or event to promote, please speak to our Director of Communications, Ethan Holtzer.

LinkedIn has been included, as we continue to develop new strategies for engaging our members, and communicate timely and relevant information to our membership. Please visit the following link: https://ca.linkedin.com/company/canadian-association-of-nephrology-nurses-and-technologists?trk=public_profile_experience-item_result-card_subtitle-click

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CANNT website (**www.CANNT.ca**)

Facebook: **https://www.facebook.com/Canadian-Association-of-Nephrology-Nurses-and-Technologists-160999717295820/**

LinkedIn: **https://www.linkedin.com/in/cannt-cannt-06910261/**

Twitter: **CANNT (@CANNT1)**

ANNUAL CONFERENCE

Unfortunately, we have cancelled our CANNT 2020 conference, scheduled to be held in Hamilton, Ontario, due to COVID-19 and apologize for any inconvenience this may cause. We look forward to rescheduling this conference in Hamilton in the near future. In its place, we are scheduling a series of mini webinars to highlight the very informative presentations previously planned for the Hamilton CANNT conference. We look forward to offering you these virtual opportunities in the near future.

FINANCES

As a "Not for Profit" professional association, our objective is to provide value to our members that aligns with our mission and vision. We continue to explore development, collaborative and lucrative opportunities to assist in maintaining the viability of the association. Transparency improves the coherence and cohesion of our association, and provides our association membership with the 2019 Annual Report on the CANNT website is https://cannt-acitn.ca/

Sincerely,
Cathy Cake
CANNT President-Elect/
Treasurer 2020-2021

NOTICE BOARD

Canadian Nurses Association (CNA) Exam Timeline.
https://www.nurseone.ca/certification/renewing-your-certification#sthash.IDBqg5i7.dpuf

	Spring 2020	Fall 2020
Initial exam or renewal by exam application window	**Jan. 9–March 2, 2020**	**June 1–Sept. 10, 2020**
Certification exam window	**May 1–15, 2020 CANCELLED**	**Oct. 15–Nov. 15, 2020**
Renewal by continuous learning application window	**Jan. 20–Nov. 1, 2020**	

*N.B. CNA will provide 20% discount for initial exam writers, renewal exam writers, and renewals by continuous learning in 2020 to active members of CANNT. Contact **cannt@cannt.ca** for the voucher code in 2020.*

- **August 29–31, 2020.** ANNA National Conference. Link to virtual conference: **https://www.annanurse.org/events/2020-national-symposium**
- **September 12–15, 2020.** 49th Annual European Dialysis and Transplant Nurses Association/European Renal Care Association (EDTNA/ERCA) International Conference: *Knowledge, skills and commitment – core elements to manage care*, Cankar Centre, Ljubljana, Slovenia. **www.edtnaerca.org** **(Postponed until September 4-7, 2021)**
- **September 16, 2020.** Nephrology Health Care Professionals' Day (celebrated every third Wednesday of September annually)
- **October 20–25, 2020.** The American Society of Nephrology (ASN) 2020 Kidney Week, Colorado Convention Center, Denver, CO. Link to virtual conference: **https://www.asn-online.org/education/kidneyweek/**
- **October 24–26, 2020.** Canadian Association Nephrology Nurses and Technologists (CANNT) 52nd Annual Conference 2020: *Guiding our way to the future*, Hamilton Convention Centre, Hamilton, ON. **www.cannt.ca** *(Hamilton venue postponed until CANNT 54th Annual Conference 2022 [October 27-29, 2022] – Virtual Webinar Series will take place in lieu of the CANNT 2020 Conference in Hamilton.)*
- **November 2020.** 55th Australian and New Zealand Society of Nephrology (ANZSN) Online Annual Scientific Meeting. Link to virtual conference: **http://www.anzsnasm.com/**

CANADIAN NURSES ASSOCIATION

Nephrology Certification Registration Status Report 2020

Initial and Renewal by Exam to Renew in 2020	Renewal by Continuous Learning (CL) Hours	Total of Initials and Renewals	Due
38	31	69	251

Votre conseil en action

Au moment où j'écris ces lignes, la plupart des provinces vivent ce que nous espérons être la fin de la première vague de la pandémie de COVID-19 et se préparent à la deuxième vague, qui devrait commencer à l'automne. Nous nous adaptons tous à une nouvelle normalité en matière de soins infirmiers en néphrologie, avec l'éloignement physique et les protocoles relatifs aux ÉPI. Un grand nombre de provinces ont également entrepris le processus long et prudent qui consiste à assouplir les rigoureuses restrictions mises en place, et nous sommes maintenant en mesure d'élargir notre « bulle » pour revoir nos êtres chers. Bien entendu, nous avons tous éprouvé une certaine anxiété pendant que nous faisions les efforts nécessaires pour nous protéger, nous et nos proches, de même que de la tristesse devant les épreuves que nos patients ont endurées. L'ACITN vous félicite pour les soins exemplaires que vous continuez à offrir et vous remercie sincèrement de votre dévouement.

Cette année, le thème de la Semaine nationale des soins infirmiers de l'Association des infirmières et infirmiers du Canada (AIIC) est : « La profession infirmière, une voix faite pour diriger – La santé pour tous." » Ce thème a été choisi par le Conseil international des infirmières (CII) dans le but de montrer à quel point le personnel infirmier est essentiel pour relever de nombreux défis liés à la santé. Il a pour objectif d'élever le profil de notre profession afin d'attirer de nouveaux membres et de répondre ainsi à la pénurie mondiale dans notre domaine. L'Organisation mondiale de la Santé (OMS) a désigné 2020 comme l'Année internationale des sages-femmes et du personnel infirmier en l'honneur du 200e anniversaire de la naissance de Florence Nightingale. Pour en savoir plus, allez à https://cna-aiic.ca/fr/salle-des-nouvelles/activites-speciales/semaine-nationale-des-soins-infirmiers.

ADHÉSION

Notre association compte 324 professionnels de la néphrologie en juin 2020. Le conseil d'administration évolue continuellement pour offrir des avantages durables à tous nos membres. Nous vous invitons à appliquer une nouvelle stratégie visant à accroître le nombre de nos membres, soit la campagne « Member-Get-a-Member », qui se poursuivra jusqu'au 30 septembre 2020. Cette initiative novatrice encourage les membres à recruter des amis et des collègues et récompensera le meilleur recruteur en lui offrant l'adhésion gratuite à l'ACITN pendant un an.

Les membres sont la force vive de l'ACITN, puisque ce sont eux qui administrent l'Association. Il y a une foule d'avantages à devenir membre de l'ACITN :

- Accès en ligne à la revue trimestrielle évaluée par les pairs, CANNT Journal
- Accès aux publications Vascular Access Guidelines, Standards of Nursing Practice et Standards of Technical Practice
- Réduction des frais d'inscription au congrès annuel
- Possibilités de formations à prix réduit ou gratuites
- Liens vers l'information et les ressources les plus récentes en matière de néphrologie, de technologies et de soins infirmiers
- Occasions de réseauter à l'échelle nationale avec des collègues évoluant dans votre spécialité néphrologique
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L'ACITN représente ses membres dans les diverses organisations auxquelles elle est affiliée et avec lesquelles elle agit comme intermédiaire pour vous tenir au courant et vous informer. Je suis à l'écoute de nos membres, que je tiens en haute estime, et j'aimerais avoir votre opinion sur la manière d'augmenter le nombre de nos adhérents. Veuillez nous faire part de vos idées en communiquant avec l'équipe administrative de l'ACITN à https://cannt-acitn.ca/

REVUE

Vous trouverez la marche à suivre vous permettant de soumettre un article pour publication dans notre revue sous la section réservée au *CANNT Journal* du site Web de l'Association. Nous privilégions les articles qui portent sur de nouvelles données cliniques ou qui traitent de sujets présentant un intérêt particulier pour les infirmières et infirmiers et les technologues en néphrologie. Envoyez votre article par courriel à l'une des corédactrices en chef, Jovina Bachynski ou Rosa Marticorena, à l'adresse CANNT.journal1@gmail.com

Veuillez y joindre une lettre d'accompagnement comportant les coordonnées du principal auteur et une notice biographique d'une seule phrase (titre, emploi actuel et lieu de travail) pour chaque auteur. La revue est publiée quatre fois par an sous forme électronique. Elle est soumise à l'examen d'un comité de lecture et seuls les articles originaux, révisés par les pairs, sont acceptés. Des possibilités d'annonces publicitaires et de formation parrainées par des entreprises sont offertes.

COMMUNICATIONS

Nous avons tous vécu des moments difficiles, et l'ACITN vous a non seulement fourni des renseignements essentiels au sujet de la pandémie, mais vous a aussi permis de raconter vos histoires liées à ces circonstances sans précédent. Nous allons continuer à vous soutenir dans l'avenir en vous donnant de l'information au sujet des pratiques fondées sur les données probantes, qui vous sera communiquée sur

toutes nos plateformes de médias sociaux. Visitez notre site Web et restez connectés par l'entremise de nos messages Twitter et des bulletins CANNT Connection. Si vous avez une question, une idée ou un événement à promouvoir, écrivez à Ethan Holtzer, notre directeur des communications.

Nous avons inclus LinkedIn dans nos médias sociaux tandis que nous continuons à élaborer de nouvelles stratégies pour mobiliser nos membres et leur transmettre des renseignements pertinents en temps opportun. Suivez ce lien : https://ca.linkedin.com/company/canadian-association-of-nephrology-nurses-and-technologists?trk=public_profile_experience-item_result-card_subtitle-click

Association canadienne des infirmières et infirmiers et des technologues de néphrologie (ACITN) | LinkedIn

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CONGRÈS ANNUEL

En raison de la COVID-19, nous avons malheureusement dû annuler notre congrès 2020 de l'ACITN, qui devait avoir lieu à Hamilton, et nous nous excusons des inconvénients que cela a pu vous causer. Nous reprogrammerons prochainement le congrès dans la même ville. En attendant, nous prévoyons une série de miniwebinaires où nous vous présenterons les exposés très informatifs qui étaient prévus pour le congrès. Nous avons hâte de vous offrir ces présentations virtuelles dans un proche avenir.

FINANCES

En tant qu'association professionnelle « sans but lucratif », notre objectif est de créer pour nos membres de la valeur qui corresponde à notre mission et à notre vision. Nous recherchons constamment des occasions de croissance, de partenariat et de possibilités lucratives pour maintenir la viabilité de l'Association. Comme la transparence améliore la cohérence et la cohésion de notre association, nos membres peuvent consulter le rapport annuel 2019 de l'Association sur le site Web de l'ACITN : https://cannt-acitn.ca/

Cordialement,
Cathy Cake
Présidente élue et trésorière de l'ACITN 2020–2021

Peritoneal dialysis for heart failure patients is associated with improved healthcare outcomes

By Maureen Leyser, Sangyang Jia, and Louise Vitou

ABSTRACT

Heart failure (HF) is a complex, chronic, and progressive syndrome that results in fluctuations in patients' medical stability. Success in HF therapy is improving patients' quality of life (QOL) by controlling their symptoms, and avoiding hospitalizations. Our study aims to determine if peritoneal dialysis (PD) is a therapeutic option for patients with refractory congestive HF. A retrospective chart review was conducted at a Canadian regional cardiac centre. Patients with advanced HF undergoing PD for volume management between May 2007 and July 2014 were assessed. The association of PD with clinical outcomes such as hospitalization and mortality were reviewed. A benefit-to-cost ratio of PD treatment versus traditional HF therapy was performed to determine the potential reduction in annual healthcare costs. In the 18 months prior to receiving PD in comparison to the 18 months after the start of PD, these 14 patients had a statistically significant difference in healthcare resource utilization with reduced frequency of hospitalizations (Δ 1.71 admissions per patient, $p < 0.007$) and reduced length of stay (Δ 16.93 days per patient, $p < 0.008$).

BACKGROUND AND SIGNIFICANCE

Heart failure (HF) is a serious global health issue with considerable economic burden affecting an estimated 26 million people worldwide. It is a complex, chronic, and progressive syndrome that results in fluctuations in patients' medical stability. This instability leads to unpredictable acute HF exacerbations that result in hospitalization and death (Goodlin, 2009; Ziaeian & Fonarow, 2016). Despite advances in healthcare, HF prognosis is often poor, with resultant deterioration in the patient's health.

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In Canada, more than 600,000 people are living with HF and 50,000 are newly diagnosed each year with no cure (Heart and Stroke Foundation, 2016). According to a study of the Canadian Institute of Health Information database, HF patients have prolonged length of stay (LOS) of eight days with frequent HF hospital readmissions (Tran et al., 2016). Despite global medical and technical advances, HF hospital readmission rates continue to be a problem, specifically at 30 days post hospital discharge, which accounts for 24% to 30% of all HF admissions (Ambrosy et al., 2014). Challenges related to effective HF treatment and management, specifically patients' failure to self-manage HF, contribute heavily to high readmission rates (Ambrosy et al., 2014). Therefore, success with HF can be defined by improvement in HF patients' quality of life by controlling their symptoms and reducing hospitalizations.

Peritoneal dialysis (PD) has been proposed as a therapeutic alternative for patients with refractory congestive heart failure due to its more physiological, continuous, and slow removal of fluids compared to hemodialysis (Lu et al., 2015). Additional benefits of PD include the ability to decrease renal venous and intra-abdominal hydrostatic pressures to improve glomerular filtration rate and diuresis (Mullens & Nijst, 2016). Compared to hemodialysis, PD represents a more physiologic approach.

We aim to investigate the benefits of PD for HF patients with chronic kidney disease ([CKD]defined as decreased kidney function or damage for at least three months), a population especially vulnerable to hemodynamic disturbances (Levey et al., 2005; Grossekettler et al., 2019). A multidisciplinary team involving both cardiology and nephrology professionals can optimize the efficient transition of patient care from hospital to home (Ronco, 2011). This can result in effective HF management, which may lead to a reduction in hospital readmissions with reduced LOS and annual healthcare costs.

PURPOSE STATEMENT

Our study aims to determine if PD is a therapeutic option for patients with refractory congestive HF with CKD. This will be determined by assessing the association of PD with clinical outcomes such as hospitalization and mortality. An examination of the cost-benefit ratio of PD treatment in comparison to traditional HF therapy will also be performed to determine the potential reduction in annual healthcare costs.

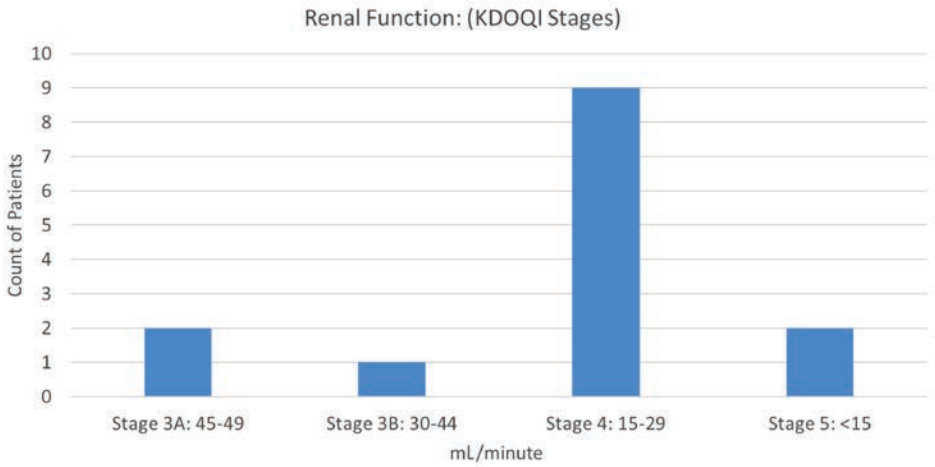

Figure 1. Renal Function According to KDOQI Stages for Patients Receiving Peritoneal Dialysis (N=14)

STATEMENT OF RESEARCH PROBLEM/QUESTION

The research question that will be investigated is: "In advanced heart failure patients, what is the effect of PD in optimizing HF management?" More specifically, the study hypothesis will be: "In advanced HF patients, PD will reduce 30-day HF hospital admissions and length of stay, emergency room (ER) visits, clinic visits, and overall mortality."

METHODS

A retrospective chart review was conducted at a regional cardiac centre. Patients with advanced HF undergoing PD between May 2007 and July 2014 were examined. The first three years (2007–2009) was a proof of concept phase (feasibility and acceptability study) of using PD to assist with resistant HF management (n = 4/14 [28.6%]), whereas the majority of the patients (n = 10/14 [71.4%]) were from 2010–2014.

This sample size is comparable to similar studies. Sotirakopoulos et al. (2011) conducted a study over a period of six-and-a-half years that enrolled 19 patients, all of whom suffered from severe HF and were in various stages of CKD. Núñez et al. (2012) evaluated the impact of continuous ambulatory peritoneal dialysis (CAPD) therapy in 25 patients with advanced HF and with chronic cardiorenal syndrome. The mean age of these patients was 75 years, and all patients had severe symptomatic HF, i.e., NYHA class III and IV symptoms such as marked limitation of physical activity or discomfort at rest.

The sample patient population in this study experienced NYHA class III/IV symptoms that were unresponsive to conventional HF therapy, including diuretics, inotropes, ACE-inhibitors, beta-blockers, and dietary (sodium) and fluid restrictions. However, the patients were able to self-care in terms of adhering to medical treatments and clinical visits. All patients had a minimum of two ER visits or hospitalizations for HF within a year prior to the initiation of PD. Patients were in various stages of renal dysfunction defined according to the KDOQI guidelines as having a glomerular filtration rate (GFR) less than 60 mL/min/1.73 m^2 (Inker et al., 2014). The participants in this study had an average GFR of 25 mL/min/1.73 m^2 with a range of 10.6 mL to 54.3 mL/min (See Figure 1).

A comparison of this patient population using a specific time frame of 18 months prior to PD and 18 months post PD was necessary to have enough time to determine if PD was an effective approach for the improvement of HF management. Therefore, clinical outcomes and hospital resource utilization in HF patients such as mortality and morbidity rates, hospital readmissions, and healthcare costs were examined. Statistical analysis included the Kaplan–Meier survival analysis and the paired sample t-test. Statistical significance was set at $\alpha = 0.05$. Statistical analysis was performed using SPSS (version 25).

RESULTS

The advanced HF patients (N=14) had NYHA Class III-IV symptoms with renal dysfunction (stages 3 to 5). All patients had at least two ER visits or hospitalizations for HF within a year prior to the initiation of PD. The majority of patients were male, had at least three co-morbidities, and an etiology of non-ischemic HF. The mean age was 75.5 years, and more than half of the patients required

Table 1. Baseline Demographic and Clinical Characteristics

Patient Characteristics	N (%)	Range	Mean
Male	12 (86)		
Age (years)		64–82	75.5
Non-ischemic	12 (86)		
ICD and /or CRT	8 (57)		
Comorbidities (≥3)	12 (86)		
NYHA class 3-4	14 (100)		
GFR (mL/min/1.73 m^2)		10.6–53.3	25
2+ ER visits	14 (100)		

cardiac device therapy that included implantable cardioverter defibrillator (ICD) and/or cardiac resynchronization therapy device (CRT). The study cohort's demographics are described in Table 1.

An analysis of the cardiac function measured by transthoracic echocardiogram was performed by calculating the systolic left ventricular function by ejection fraction (LVEF). The participants' overall cardiac function pre-PD compared to post-PD is displayed in Table 2. Our cohort of patients did not demonstrate a significant change in echocardiographic systolic LVEF, which was evaluated at 18 months after the initiation of PD (n = 12, 33.46 ± 8.26 pre-PD versus 37.5 ± 11.18 post-PD, p = 0.3124). This could likely represent the absence of uremic cardiomyopathy and be dependent on when the scheduled echocardiogram was performed and the results of non-significant changes in the LV function. This finding may have demonstrated the natural progression of HF disease. However, our results for cardiac function were not consistent with those of other studies. Sotirakopoulos et al. (2011) observed an improvement in LVEF in all patients in their cohort of 19 (28.6 ± 8.6 vs 20 ± 6%, p = 0.0001). Courivaud et al. (2014) observed an improvement in LVEF of 30 ± 10 versus 36.8 ± 12.5% (p = 0.0001) in patients with an LVEF of 30% or less, but no significant change in function at LVEF less than 45%. These results may indicate that LV function may only improve with patients with severe reduced cardiac function, particularly for those with acute HF exacerbation.

With respect to hospital resource utilization 18 months prior to receiving PD, these 14 patients had 98 urgent cardiac care clinic visits, 27 ER visits, 14 hospitalizations (with LOS of 278 days), 200 clinic telephone calls, and 20 renal clinic visits. In the 18 months after the start of PD, these 14 patients had one ER visit, one hospitalization (LOS of 14 days), four clinic telephone calls, 21 routine cardiac clinic visits, and 48 routine PD clinic visits. There was a statistically significant difference in pre-PD versus post-PD in LOS (Δ 16.93 days per patient, p < 0.008) and hospitalizations (Δ 1.71 admissions per patient, p < 0.007) representing the positive effect of PD on fluid management and improving congestion in advanced HF patients. There were no documented cases of peritonitis (see Table 3). A benefit-to-cost ratio of 2.32 demonstrated a doubling of the cost if conventional treatment (diuretics and medical therapy) only was utilized. To calculate this ratio, a cost analysis that reflects resource use for 14 patients over an 18-month period following the beginning of therapy was performed. This calculation included the total operating cost per activity, which is the total operating expenses per nephrology and cardiology departments as of the 2013/2014 fiscal year (see Table 4). A capital cost

Table 2. Measurement of LV Function

	% LVEF Pre-PD	% LVEF Post-PD	Mean Difference
1	40	50	0
2	40	50	10
3	30	30	0
4	40	60	20
5	40	40	0
6	30	20	-10
7	25	30	5
8	35	35	0
9	30	30	0
10	30	35	5
11	25	30	5
12	50	50	0
13	NA	NA	
14	20	NA	

p = 0.3124
Pre: n = 12, 33.46 (±8.26) versus Post: n = 13, 37.5 (±11.18)
NA = not available

Table 3. Healthcare Resource Utilization Pre- and Post-Peritoneal Dialysis (N=14)

	Pre-PD (Total)	Post-PD (Total)	Mean Pre-PD (SD)	Mean Difference Pre vs. Post	Confidence Interval	p-value
Urgent cardiac clinic visits	98	21				
ER visits	27	1				
Number of hospitalizations	14	1	1.79 (±2.2)	1.71 (±5.39)	0.55, 2.88	<0.007
Length of stay	278 days	14 days	17.93 (±20.8)	16.93 (±5.39)	5.29, 28.57	<0.008
Clinic telephone calls	200	4				
Renal clinic visits	20	48				
Cases of peritonitis	NA	0				

analysis was also calculated based on the average cost of continuous ambulatory peritoneal dialysis equipment, which demonstrated a benefit-to-cost ratio of 1.7 representing more than one-and-a-half times savings over conventional medical therapy.

The overall mortality, according to the Kaplan-Meier survival analysis, demonstrated 86%, 68%, and 39% survival after 12, 18, and 24 months, respectively (Figure 2). These mortality statistics are congruent with those of Sotirakopoulos et al. (2011), i.e., range of patient survival from six to 86 months (mean ± SD = 24.6 ± 20.8). The survival rate was 68% at one year and 42% at two years with only two observed episodes of peritonitis. The authors concluded that PD is a good method for the treatment of HF because it increases the QOL and life expectancy of patients with poor prognoses. Therefore, literature supports our finding that PD is a viable alternative in the treatment of HF.

DISCUSSION

Pulmonary congestion refractory to diuretic therapy is associated with renal impairment in CHF patients (Shah et al., 2017). Diuretic resistance may also be caused by adherence issues, high dietary sodium intake, drug-drug interactions, and reflex increases via autoregulatory mechanisms in fluid reabsorption in the nephron sites that are not directly targeted by the diuretic (Hoorn & Ellison,

Table 4. Cost Analysis of Resource Utilization

	Pre-PD Therapy	Post-PD Therapy
Emergency visits	$4,395	$163
Inpatient days	$147,376	$7,422
Routine cardiac clinic visits	$8,035	$1,722
Heart function – telephone calls	$16,398	$328
Training costs		$33,750
Catheter insertions		$9,750
Total variable expenses	$176,204	$53,135
Cost savings over baseline (variable)		$123,069
Benefit cost ratio		2.32
Capital costs (average of CCPD/CAPD equipment)		$33,000
Cost savings over baseline (total)		$90,069 ($123,069–$33,000)
Benefit cost ratio		1.7

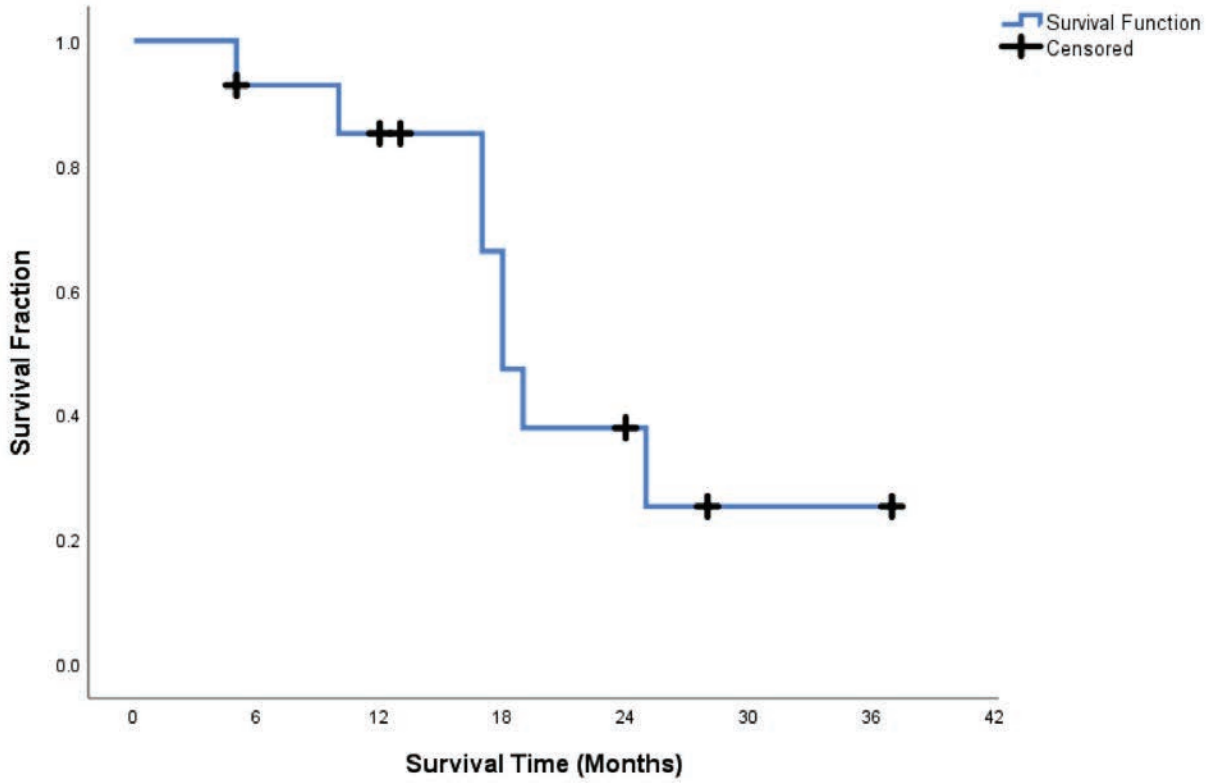

Figure 2. Kaplan-Meier Survival Rate Post-Initiation of PD for Refractory CHF Patients

2016). Although the mechanisms of cardiorenal syndrome suggest ultrafiltration (UF) by hemodialysis may be an effective therapeutic option, there is currently no evidence showing a benefit over treatments such as diuretics (Bart et al., 2012; Rogers et al., 2008). Trials such as AVOID-HF (Aquapheresis versus Intravenous Diuretics and Hospitalization for HF) and CARESS-HF (Cardiorenal Rescue Study in Acute Decompensated HF) trials do not conclusively demonstrate a consistently improved benefit to adverse events ratio for refractory HF patients using hemodialysis (Costanzo et al., 2007; Costanzo et al., 2015). Peritoneal dialysis, as a gentler option for the treatment of refractory HF, may be associated with improved clinical outcomes due to increased hemodynamic stability and the ability to manage ascites (Lu et al., 2015).

Similar clinical outcome benefits were demonstrated by Sotirakopoulos et al. (2011) who found that daily PD led to the removal of 500 to 3,000 mL of volume and significantly decreased body weight (74.7kg ± 13 vs. 69.7kg ± 10.2, $p = 0.02$) with improved dyspnea and orthopnea in all patients. This volume management allowed a reduction in the dose of diuretics and led to a decrease in HF hospitalizations compared to non-dialysis therapy before initiation of PD. Prior to PD, patients were hospitalized for five to 20 days per month with pulmonary edema or over-hydration, whereas there were no hospitalizations for these clinical conditions with PD ($p = 0.0001$). These results were comparable to the study by Núñez et al., (2012) who demonstrated a marked reduction in the number of days hospitalized for acute HF (six months post-CAPD versus six months pre-CAPD: 84%, $p < 0.001$).

Despite a small sample size, our study demonstrates that PD may be an effective approach to reduce hospital readmissions, improve patient management, and reduce annual healthcare costs for advanced HF patients. Peritoneal dialysis may help hospitals achieve these financial gains, as readmission rates and ER visits are reduced. Indirect opportunity costs such as avoidance of readmissions may generate revenue and avoid penalties under specific provincial Health Funding Reforms, e.g., reducing unplanned HF admissions in Ontario through the Health Links initiative program (interdisciplinary care of multiple-comorbid patients). Quality-of-life changes have not been considered in this analysis, but should be considered as part of a more complete health outcomes and economic analysis. Further research should also focus on improving the identification of patients who would benefit from a palliative PD approach to care.

IMPLICATIONS FOR NURSING CLINICAL PRACTICE

Despite advances in HF treatment options, morbidity, mortality, and frequent hospital readmissions continue to increase. For this reason, healthcare practitioners should expand their awareness of evidence-based modalities for treatment of HF to improve the care of advanced stage patients and bridge the gap between practice guidelines and clinical outcomes. A collaborative approach between nephrologists and cardiologists with a nurse-directed HF clinic model has promise to be essential to the coordination of multidisciplinary team activities aimed at optimizing seamless advanced HF care away from hospital to a community setting. As a result, nurses have an important role to enhance knowledge transfer within their discipline and strengthen nursing leadership skills. These leadership skills will involve nurses to advocate and support patients to engage in the self-care activity of PD as an alternative HF treatment modality for the treatment of advanced HF refractory to conventional therapy and treatment.

CONCLUSION

Prior to this study, HF management did not typically include PD as an alternative therapy option for managing congestion in symptomatic HF patients refractory to standard care involving diuretic medications. Our study results have shown that PD for advanced HF patients with CKD refractory to conventional therapy can be associated with significant improvement in patient outcomes such as reduction in LOS and hospitalizations while reducing resource utilization. A collaborative alliance between nephrology and cardiology team members can be associated with efficient patient care from hospital to home while, at the same time, contributing to cost savings for the healthcare system and hospital organization.

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The effects of priming (pre-orientation) on patients' transition to hemodialysis

By Valerie Wai, Leila Chinybayeva, Sunny Chou, Rick Luscombe, and Michele Trask

ABSTRACT

Psychosocial factors related to initiating hemodialysis (HD) can inhibit a patient's ability to absorb important information, which may have far-reaching impact on patients' health and wellbeing. Anecdotally, the authors noticed an enhanced ability for patients to respond to the transition to HD if they had previously visited the unit prior to their first treatment, which warranted further investigation. Hence, a qualitative design research project was developed to ascertain if a priming interview, which comprised screening questionnaires and content analysis of patient interviews prior to and four weeks after the start of HD, would improve the experience for patients who are new to HD. Ultimately, a new patient orientation including a priming process in this study was found to be beneficial for both patients and healthcare professionals. Following this research, our hospital formalized a priming process for all chronic patients with planned starts onto HD.

BACKGROUND

Initiation of hemodialysis (HD) therapy is a life-changing event that requires significant adaptations in lifestyle to sustain well-being for many patients. In order to closely monitor patients' physical conditions and delay the need for renal replacement therapy (RRT), it is optimal to have teams of health professionals working together to offer an individualized and interprofessional approach to care (Kim et al., 2013). In the current practice context of our large urban teaching centre for renal care, patients are referred to the Kidney Care Clinic (KCC) by their nephrologists once they require intensive interprofessional support. Patients in the KCC are closely monitored by an interprofessional healthcare team comprised of nephrologists, nurses, social workers, dietitians, and pharmacists. Often the transition to HD is stressful, as the strong rapport, relationship, and support with the KCC team are no longer in place. Prior to transition, the KCC team provides coaching and education on RRTs to better prepare patients for the initiation of dialysis (Marrón et al., 2006) and/or to facilitate a smooth transition to home-based modalities such as peritoneal dialysis (PD) or home hemodialysis. When in-centre HD is identified as the only or chosen option, the goal is to ensure that a functioning fistula or graft is in situ for the planned HD (Kim, et al., 2013).

Despite receiving education and support, initiation of HD can be challenging for many patients, who often struggle with coping with loss and uncertainty (Kaplan et al., 1989). A number of compounding factors can contribute to feelings of anxiety: severance of a therapeutic relationship with the team; fear of the unknown; navigation of a new system; the dialysis treatment itself; and/or physiological and psychological symptoms. To mitigate these negative effects and, thus, improve the transition, the Hemodialysis Short Stay (HDSS) unit was established within the HD unit. The HDSS unit provides HD for new patients during which the assigned nurse will give HD support and orientation on a one-to-one basis, which is individualized for each patient's specific needs. In 2014, 52 patients received orientation in the HDSS unit: 33 patients were referred from the KCC and started in the HDSS and 19 patients were referred after failed PD and/or failed transplant.

Common behavioural patterns for patients new to HD have been noted in the literature. These include: failure to engage, high levels of tension and anxiety, and challenges with comprehension and information retention. The high levels of stress and anxiety experienced by patients who are new to HD can present a barrier, preventing them from learning new information pertinent to their care on HD (Yeh & Chou, 2007; Niazi & Niazi, 2011). There were some exceptions among the new patients in the HDSS unit. It was noticed that some patients were more relaxed, cheerful, and engaged in the conversation during the orientation sessions. It was noted that patients in this group were already known to the staff and the environment due to previous visits to the HDSS unit for procedures and treatments, such as vascular access assessment and care, research visits, and team follow-up. It seemed that when patients presented for dialysis in the unit again, their familiarity with the staff and the environment made them feel safe and emotionally secure.

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Anecdotal observation regarding the differences experienced by patients who had undergone a previous visit triggered further exploration. A qualitative project was developed to ascertain if a priming interview before initiation of HD would help to break these barriers, and improve adjustment and the experience for patients who are new to HD (Pullen & Mathias, 2010). *Priming* means to make (something) ready for use or action. A priming interview involves preparing a patient psychologically before a transition, and facilitating learning and adaptation in the later days during the process of change. The priming interview with potential HD patients is an informal contact, which consists of a face-to-face conversation between the patient and the nurse. During this conversation, nurses try to explore the patient's background, emotions, problems, and support systems. It also provides an opportunity for the patient to get acquainted with their nurses and to start building a trustful therapeutic relationship. For the purpose of this paper, the term *priming* refers to the process of intentionally pre-acquainting a patient with the HD team and providing a targeted orientation to prepare them for transition. It does not refer to the process of priming or preparing the tubing for the dialysis machine.

LITERATURE SEARCH

A literature search was conducted in September 2017 using the Cumulative Index to Nursing and Allied Health Literature (CINAHL) database. The keywords and their combinations utilized for the literature search included: "patient experience during transition to hemodialysis", "new patient experience during hemodialysis", and "new hemodialysis patient orientation program". Inclusion criteria included: publication in English and in peer-reviewed journals. The year of publication in the search was extended to the time period between 1995 and 2015 because of the paucity of articles published in the previous 10 years. A total of 308 articles were identified in the search. Following a review of the articles for relevance to the research topic and descriptive study design, 12 articles that met the abovementioned criteria were selected for further analysis. These articles consisted of one literature review (Gerogianni & Babatsikou, 2013) and 11 qualitative studies comprising one hermeneutic-phenomenological study (Guerra-Guerrerro, et al., 2014; Mitchell et al., 2013; Horigan et al., 2013; Harwood et al, 2005; Al-Arabi, 2006; Lee et al., 2007; Jadhav & Lee, 2014; da Silva et al, 2015; Sanatombi Dev et al., 2014; Li et al., 2014; Yeh & Chou, 2007). These studies explored life experiences, health problems, the most frequently reported stressors and responses, self-management issues, and quality of life for patients transitioning to or maintaining HD.

The objectives of patient education are to increase knowledge and skills in order to increase effectiveness of the therapy, and improve self-efficacy and self-management to ultimately enhance quality of life. Highlighted in the literature review, people learn best under low or moderate stress; if stress is too high, it becomes a barrier to learning. The review of the literature has shown that other than physical barriers due to medical conditions, age, education background, there are psychological barriers, such as lack of confidence, absence of information about opportunities to learn, and deficient motivation hindering the learning process. Researchers found that emotional connection to the learner is perhaps the most elusive barrier to overcome between teacher and learner. By opening a dialogue with the learner prior to the education session, progress to building a trustful therapeutic relationship leading to increased confidence may help the patient along the continuum toward making positive changes.

The following main themes were identified in the literature search: physical stressors, including fatigue (Horigan et al., 2013; Lee et al., 2007; Harwood et al., 2005; Jadhav & Lee, 2014; Al-Arabi, 2006); psychological stressors associated with initiating and maintaining HD (Jadhav & Lee, 2014; Harwood et al., 2005); embracing and accepting the disease (Guerra-Guerrerro et al., 2014; Harwood et al., 2005; Al-Arabi, 2006); preparing for HD (Harwood et al., 2005; Mitchell et al., 2013); resilience and prevention of complications (Guerra-Guerrerro, et al., 2014; Al-Arabi, 2006) and importance of social support (Mitchell et al., 2013; Al-Arabi, 2006; Jadhav & Lee, 2014).

DESIGN AND METHODS

Our project hypothesis was that a pre-orientation priming interview before the initiation of HD would help the patients to overcome stressors associated with the start of HD, and improve adjustment and overall experience of new patients to HD. A qualitative study approach inspired by grounded theory was used to explore the experience of patients new to HD during their transition from KCC. A medical screening questionnaire for patients with chronic kidney disease in the KCC was utilized (see Appendix A). The qualitative research project included content analysis of patient interviews before orientation to and four weeks after the start of HD. Ten study participants were sampled from one HD unit from May 2016 to January 2017, and included mostly the patient population above 60 years and individuals who were fluent in English and/or Chinese languages.

Trial interview sessions were conducted to standardize the interview process. All orientation interviews were conducted by the same nurse, whereas all post-orientation interviews were conducted by two different nurses. This approach was intended to avoid bias in the evaluation of the participants' responses about the pre-orientation priming interviews. The questions evaluating the pre-orientation priming interviews were included in the post-orientation interview (see Appendix B). The priming interview was conducted at the start of the orientation to HD and included an informal conversation between the patient and nurse to explore the patient's most troubling concerns about initiating HD, as well as to collect information as part of the clinical assessment process.

Nurses have noticed that anxiety and fear are among the most common barriers in new HD patients preventing them from adjusting, adapting, and learning. Nurses

communicate with patients using various techniques in order to listen to their current concerns and work with them to identify the predominant feelings and any internal conflicts they may have. However, nurses may also help the patient to identify existing coping strategies or work with them to explore new methods of dealing with distress. The BATHE technique was utilized to guide the priming interviews (McCulloch et al., 1998) (see Appendix C). The BATHE technique is a method used to map out the patient's psychological state easily by asking the patient about the following: **b**ackground issues (*what is going on in your life?*), **a**ffect (*how do you feel about it?)*, and most **t**roubling problem (*what troubles you most about the situation?*). The interview then shifts to how the patient is **h**andling the problem (*what helps you handle the situation?*) and a demonstration of **e**mpathy by the interviewer (interviewer expresses understanding of the situation and support). The BATHE technique not only explores the patient's inner feelings, it also makes them feel heard and gives a sense of control (Lieberman et al., 1999).

The interviews were intended to identify themes experienced by patients during the transition. As identified in the review of the literature, these included barriers, misconceptions, worries, support systems, and strengths and weaknesses in learning. A corollary goal was to build partnerships with patients new to HD by allowing them an opportunity to express their resistance and concerns, while the nurse would simultaneously express empathy and support the patient's self-efficacy.

Inspired by the grounded theory tradition, the data collection was stopped when themes were saturated and interview transcripts were reviewed line by line. This was followed by a coding process conducted out in three stages: immersion, re-examination and creating codes (Corbin & Strauss, 2015). The textual information was analysed by the frequency of keyword usage. The basic concepts were identified during the open coding stage when similarities and differences were explored by constant comparative analysis, followed by data clustering, and eventually the development of themes (Corbin & Strauss, 2015).

RESULTS

Table 1 summarizes the demographic characteristics of the study participants. There were 10 patients enrolled in the study (seven males and three females) with diverse ethno-cultural backgrounds. Seventy percent of the patients were in the age group 60 to 81 years, 50% were retired, 30% were unemployed, 70% lived with their families, and 50% graduated from high school.

Only 10% of the study participants rated their health as *very good*, with 50% of the patients evaluating their health as *good*, 20% as *fair* and 20% as *poor*. Comparing their health status with the previous year, 40% reported their health to be *somewhat worse* and 20% as *much worse* (Table 2).

Study participants' self-reported activity level is summarized in Figure 1. There was a marked decline in activity levels since starting HD for many patients: 60% of the patients were unable to perform vigorous activities due to their health condition; 40% were unable to perform moderate activities; and 40% were unable to perform daily activities such as carrying groceries. Fifty percent could not climb several flights of stairs, 30% were unable to climb one flight of stairs, and 40% were unable to perform kneeling and stooping. Almost two-thirds of patients (60%) did not have difficulties with walking one block; however, 20% had a lot

Table 1. Patient Demographic Data

Characteristics	N (%)
Employment	
Employed	3 (30)
Retired	5 (50)
Unemployed	2 (20)
Education Level	
College	3 (30)
High School	5 (50)
University	2 (20)
Living Conditions	
Alone	2 (20)
With Family	8 (80)
Occupation	
Housewife	1 (10)
General Labour	4 (40)
Accounting	2 (20)
Mechanic	1 (10)
Clerk	2 (20)
Ethnicity	
East-Indian	1 (10)
Filipino	2 (20)
First Nations	1 (10)
Caucasian	3 (30)
Chinese	2 (20)
Gender	
Male	6 (60)
Female	4 (40)
Age	
20–40	2 (20)
41–60	2 (20)
61–80	6 (60)

Table 2. Study Participant Self-Reported Health Status

Self-Reported Health Status	N (%)
Current Health Status	
Very good	1 (10)
Good	5 (50)
Fair	2 (20)
Poor	2 (20)
Health status in comparison with the last year	
The same	4 (40)
Somewhat worse	4 (40)
Much worse	2 (20)

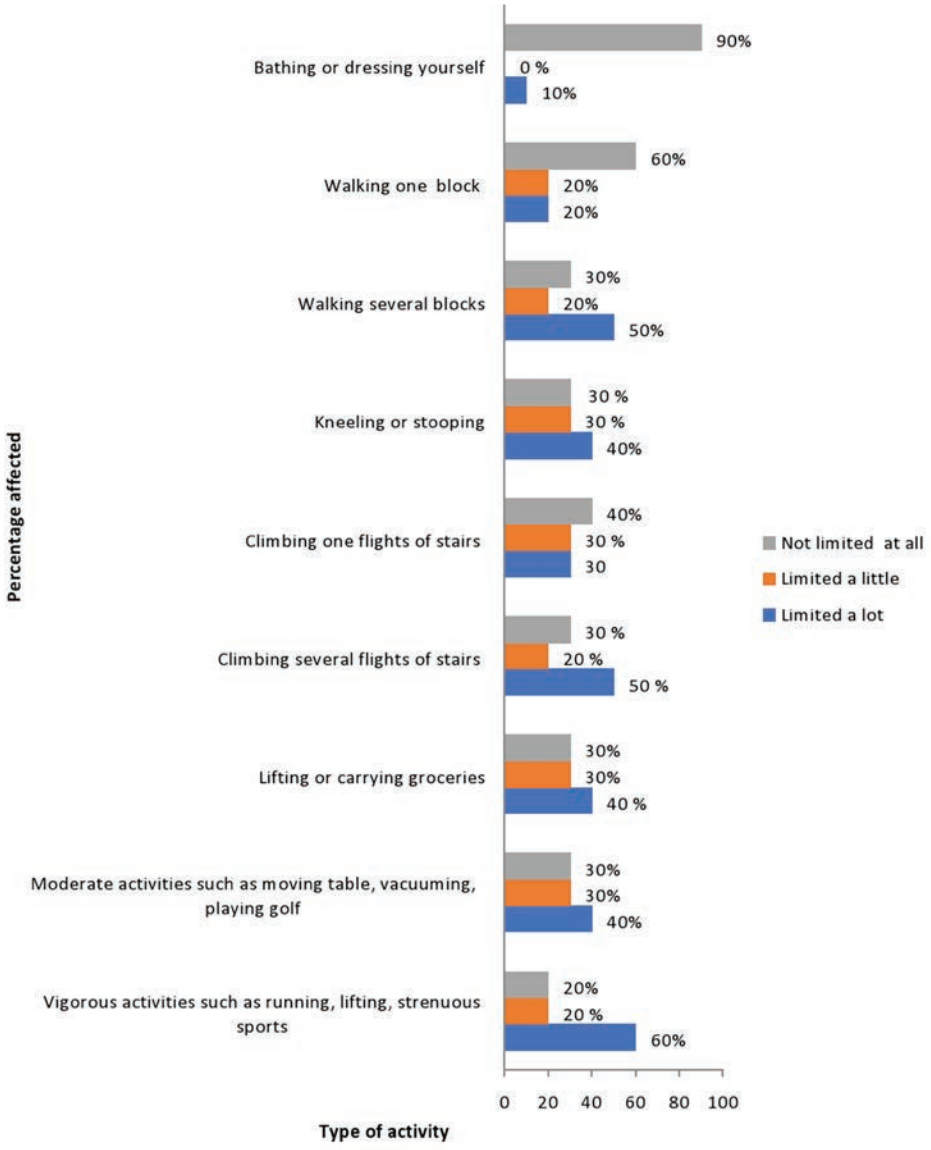

Figure 1. *Self-Reported Activity Level of Study Participants*

of difficulty. Although 40% had to cut down their activities, 50% accomplished less than they planned due to their illness. Twenty percent reported that they recently could not participate in their normal social activities with their family, friends, and social groups. The results of the health-related survey indicate that many study participants had been experiencing significant decline in their activity level and health condition at the time of transitioning to HD.

Table 3 summarizes the main comorbidities, length of chronic kidney disease (CKD), and main causes of kidney failure among study participants. The most common comorbidity among study participants was hypertension (80%), followed by type 2 diabetes (40%), dyslipidemia (30%), hypothyroidism (30%), and gout (30%). Thirty percent of participants had CKD for at least seven years, whereas 20% had CKD for at least 10 years before initiating HD. The most prevalent cause of kidney failure was diabetic nephropathy (40%).

Themes and Subthemes

Five themes emerged from the interviews: perceived threats related to (1) disease, (2) social support, (3) lifestyle and (4) body image; and (5) expectations of positive changes in health and social life after starting HD.

1. Perceived threats caused by disease. Due to increasing symptoms at the start of HD, many participants thought that their quality of life was being threatened by both disease progression and the HD treatment itself. The following related subthemes emerged:
   (a) Perceived physical and psychological disturbances caused by disease. Physical stressors and psychological disturbances were reported in at least 50 % of the study participants. One of the participants stated: "*I am upset as where my health is declining over long period of time. It's like I started off with diabetes, you know, then dialysis*." Another participant also stated: *"It's something which will change my life… Like I have to spend time with this and I do not like spending time."*

Table 3. Main Co-Morbidities, Length of Time with CKD and Causes of Renal Failure Among Study Participants

Characteristics	N (%)
Comorbidities	
Hypertension	80 (80)
Type 2 diabetes	4 (40)
Dyslipidemia	3 (30)
Hypothyroidism	3 (30)
Gout	3 (30)
Gastroesophageal reflux disease	3 (20)
Cancer	2 (20)
Osteoarthritis	2 (20)
Coronary artery disease	1 (10)
Dermatitis	1 (10)
Kidney stones	1 (10)
Bipolar disorder	1 (10)
Head trauma	1 (10)
Length of time with CKD before initiating HD	
< 1 year	1 (10)
1–3 years	2 (20)
4–6 years	2 (20)
7–10 years	4 (40)
> 10 years	1 (10)
Etiology of kidney failure	
Diabetic nephropathy	4 (40)
Lithium-induced	1 (10)
Nephrosclerosis	1 (10)
NSAID-induced nephropathy	1 (10)
Primary hypertension	1 (10)
Polyoma virus nephropathy	1 (10)
IgA nephropathy	1 (10)

(b) Threats caused by deficient nutrition and appetite. Half of the study participants reported poor appetite and weight loss as very stressful. One of the participants stated: "*Last time it took a long time for me to build that weight back up. I get really anxious about losing weight. I worry about losing weight and not having appetite*".

Another participant stated: *"I really want to have a better diet than I've got … At the end of the day I'd like to be able put on some weight."*

(c) Perceived fear of hemodialysis safety. The fear of dialysis safety was common among participants, and at least 50% were concerned about the dialysis procedure, and had a fear of needles and the cannulation process. One of the patients perceived hemodialysis as an unsafe procedure and stated: "*I worry about safety of hemodialysis. I am afraid if I can die while I am on hemodialysis*." Another patient expressed his fear of needles: "*I am very afraid of needles; I do not want to have any needles in my body.*"

(d) Depression and anxiety caused by initiation of HD. Anxiety and depression were among the most common concerns expressed by the study participants, which could be explained by the shock and need to start chronic HD treatment. One of the participants described his feeling of depression as follows: "*Once in a while it hits me… I rate it six or seven out of ten.*" Another participant stated: *"My mom died last year because of kidney failure too… It's like nothing could be done."*

(e) Deficient coping. Many participants had expressed significant issues with coping and were not ready to deal with emotional and physical aspects associated with end-stage kidney disease and the initiation of HD. One family member of a patient stated: "*Since her husband left, she basically gave up on her life and it was like me and my sister and my brothers all just taking care of her… She was always like coming up with an excuse why she forgot her pills and she just deteriorated on her own. She just gave up basically.*" Another participant stated: "*I am upset. I tried to push it aside and forget my emotions so that I can continue with my life.*"

2. Perceived threat to social support. All of the participants expressed fears in losing their normal social support due to the initiation of HD. For example, some of them had to be separated from their family and move from their hometown to start dialysis treatment; others encountered different issues challenging their social support systems. Four related subthemes are illustrated below.

(a) Fear caused by separation from family. Some participants were scared to lose connection with their family, who provided emotional and social support at a difficult time. One of the participants stated: "*I think the move from the family troubles me the most.*" The added emotional and psychological burden of physical removal from their home compounded the emotional challenges for these patients. Another participant stated: *"I am on my own now. And all that stuff… Dilemma."*

(b) Fear of becoming displaced. One of the study participants expressed a fear of being displaced. He said: "*I feel quite homeless and would like to settle down and put some roots down of some kind. I would like to go to Sechelt… I live up there and hopefully they have one spot left for me there and I could go there. It's pretty stressful.*"

(c) Fear of being a burden. At least 50% of the participants reported feelings of being a burden to their family members and perceived themselves as obstacles in life to their family members. One of the patients stated: "*I am getting more dependent on my family to do things for myself. They are supportive, but I don't know how much they can do for me in the future if I got worse*." Another participant stated: *"I started dialysis… I know it will change my life… I don't want to be a burden."*

(d) Financial stress. The majority of the study participants emphasized economic problems as being the most stressful. Some constantly worry about meeting the expenses associated with HD treatment. A participant said: "*Things are in storage, more taxi fares down here. More money gets chewed up that way. I am eating out a more than I would afford to*."

3. Perceived threats to usual lifestyle. All of the participants highlighted that the disease and dialysis treatments had altered their usual lifestyle and future plans. One participant said: "*I am not quite geared up for this stint at a time. I have to think of it like a part-time job without getting paid*." Another participant stated: "*I am very busy with working. I have to take time to go to dialysis too*." At least 20% of the participants had worries about losing their ability to travel as before. One participant said: "*I don't get to go travel right now*."
4. Perceived distortion of body image. Ten percent of participants noted negative facets related to their body image associated with the HD treatment. One of the participants stated: "*I don't look forward to it at all. I kind of feel like a freak, even though when I see how many are here. Not looking forward to that. Looking forward maybe to a transplant*."
5. Perceived positive changes in health and social life after starting HD. Half of the participants tried to maintain a positive outlook towards the start of HD and were hoping that their health and social life would improve after their symptoms subsided. One participant said: "*I know I have to start HD and hope that I can have better health and become more independent after I start hemodialysis. I hope that I will be able to do things I used to do*." Another participant stated: "*I don't know how long that takes to stabilize to do a trip to Hawaii. I figure by March next year… that would have been a good time to go for a week in the sun*."

Family support played a great role in helping during transition to HD. One of the participants said: "*Doing dialysis is not a big problem for me, as long as I can stay with the family, I am happy*." Regardless of the numerous perceived challenges, many study participants demonstrated substantial resilience. A participant stated: *"I am finding my connection with my son better than it has ever been… We have much better relationship… He is very supportive"*.

Throughout the process of reviewing the data, an additional sub-theme of resilience began to emerge. Specific exploration on the element of resilience and how it relates to priming warrants additional investigation in future research.

Post-Orientation Interview

Four weeks after the orientation, study participants had a post-interview to find out if the orientation interview was beneficial for them in their transition to HD. Three main themes emerged from analysis of the responses: (1) support in relieving fears and anxiety toward HD; (2) gaining knowledge about HD; and (3) recommending the priming orientation to other patients.

1. Support in relieving fears and anxiety toward hemodialysis. All of the participants stated that the orientation to dialysis was very helpful in relieving anxiety and fears toward HD. One of the participants said "*Quite helpful… Now I feel better, more confident*." Another stated *"I was depressed when I learned that I will be on HD, but after orientation I feel less stressed"*. The priming interview was particularly helpful in relieving the patient's anxiety level and smoothing out the transition process.
2. Gaining knowledge about HD. All of the participants found that orientation was particularly helpful in providing one-on-one teaching, vascular access training, and general understanding of HD principles. One of the study participants said: "*Being here did help me to have a better understanding of hemodialysis*." Another participant said: "*Orientation provided me comfort and made me feel close to the environment*."
3. Recommending the priming process (orientation) to other patients. All study participants found the priming interview to be very beneficial and recommended it for every patient initiating HD. One of the study participants said: "*Interview before hemodialysis helps to relieve stress. I feel more relaxed. I recommended it to all patients*." Another participant said: "*I think we need longer orientation for about 2 weeks*."

DISCUSSION

Our findings offer an interesting insight and give an in-depth understanding of patients' experiences during the transition to HD. The findings of the health-related questionnaire show that participants have both physical and psychological challenges, role limitations, and difficulties in carrying out simple daily activities such as dressing themselves, carrying groceries, and walking up the stairs. Horigan et al. (2013) and Lee et al. (2007) reported similar findings, i.e., excessive tiredness and difficulty walking upstairs, and doing household work. Loss of appetite is another commonly reported physical stressor that is consistent with findings from the literature (Gerogianni & Babatsikou, 2013; Mathews, 2012; Al-Arabi, 2006).

The analysis of the participants' health-related questionnaire showed that initiation of HD greatly influences the degree of social interactions. Participants reported an inability to socialize with others and spend as much quality time with family and friends as they wanted to. Similarly, Horigan et al. (2013) described that new HD patients had to reduce their social interactions due to their HD schedules and expressed concerns that they could not spend time with their children and grandchildren. Our priming interviews with study participants showed that at least five aspects of a patient's life were affected by HD: health, mood, social support, lifestyle, and body image, which resonates with the findings in other studies (Jadhav & Lee, 2014; Harwood et al, 2005; Cook & Jassal, 2008; Gerogianni & Babatsikou, 2013).

Many participants indicated that initiation of HD created considerable stress, and changes to their lifestyle, family relations, and social life including isolation. Moreover, HD causes deficient coping, creates fears about safety of HD, and lowers patients' outlook about their health. These findings are consistent with findings by Jadhav and Lee (2014) and Mitchell et al. (2009). Gerogianni and Babatsikou (2013) have also shown that many patients experience physical, psychological, and socioeconomic stressors during transition to HD.

Depression, anxiety, and deficient coping were among the most expressed emotional responses by the participants. Our findings resonate with results of other studies (Harwood et al., 2013; Jadhav & Lee, 2014; Gerogianni & Babatsikou, 2013; Sanatombi Dev et al., 2014; da Silva et al., 2015) in which participants expressed feelings of loss and grief due to worsening of health, self-care deficit, functional capacity, and impact on activities. Harwood et al. (2013) specifically pointed out that anxiety was likely related to a lack of knowledge and uncertainty about dialysis therapy. Many participants have expressed deficient coping related to an inability to deal with physical and emotional consequences of HD and deterioration of their health. Several other studies have shown the vulnerability of HD patients and their inability to function fully within society (Cook & Jassal, 2008; Harwood et al., 2005; Jadhav & Lee, 2014; Guerra-Guerrerro et al., 2014). The participants noted that they relied a lot on their family and friends for emotional support, and tried to use a variety of coping strategies to face the changes.

The feeling of being a burden on family, fear of becoming displaced, and financial stress were among commonly mentioned perceived social threats. These findings have been reported in many other studies (Harwood et al., 2005; Jadhav & Lee, 2014; Cook & Jassal, 2008; Li et al., 2014), and draw attention to the social disconnectedness and economic burden experienced by patients during transition to hemodialysis. Guerra-Guerrerro et al. (2014) discussed the concerns expressed by patients about losing jobs and autonomy due to frequent absences from work and limitations.

We found that, during the transition, support from family and friends plays a central role in enhancing the ability of people to keep their positive outlook, which is consistent with findings by Mitchell et al. (2009). We also observed that patients and families needed to feel secure in communication with health professionals and required additional support, which was very important to their well-being.

Our research project also emphasized patients' expressed needs for education during the transition to HD. Jadhav and Lee (2014) and Mitchell et al. (2009) emphasized the benefits of a preparatory program to reduce identified stressors of the patients. Our findings show that all participants recommended orientation priming for all new HD patients. They accentuated the importance of priming in relieving stress and anxiety.

New patient orientation in this study was beneficial for both patients and healthcare professionals. For patients, it started a dialogue, which facilitated further patient involvement in their care. For healthcare professionals, the orientation helped to better assess the patient and family needs, and develop a closer partnership in order to improve outcomes of care.

LIMITATIONS OF THE STUDY

Although we were able to glean important information regarding the role of priming in smoothing the transition to dialysis for adult patients from the research project, the results cannot be generalized due to the small sample size. Interviewer bias could have also influenced the results of the study because all interviews were conducted by nurses who worked in the unit where the patients were assigned to have HD. The orientation interviews were conducted by the same nurse and the post-orientation interviews were performed by two different nurses. The timing of orientation interview and initiation of HD were not always consistent.

IMPLICATIONS FOR NURSING

From a nursing perspective, at our hospital site, it has been identified that nurses do not always meet patients' needs as they transition from KCC to HD. Nurses tend to focus on the dialysis treatment, but sometimes fail to recognize just how anxiety-provoking the whole process can be. Fear of the unknown can be very limiting for patients, especially when nurses are trying to provide education. Alleviating patients' anxiety and/or fear may improve patients' ability to retain information. The importance of the continuity of care and seamless transition with nursing staff from other areas in nephrology to be introduced to patients earlier in the transition process have also been highlighted, as a result of this project.

Unfortunately, about half of the patients at our facility initiate HD acutely and do not come from the KCC. These patients have no preparation at all concerning kidney disease. Education and orientation for these individuals can be fragmented. They are also overwhelmed with the news that longer-term dialysis is now part of their life, compounded by the fact that they are extremely ill and unable to retain any information and education at this time. When the patient's condition becomes more stable, there is often an assumption by nurses that education and orientation have already taken place, which can be erroneous. From this research project, it becomes clear that systematic priming needs to be implemented in a planned process. The focus should be on the needs of the patient, as highlighted in our results.

NEXT STEPS

Our patients indicated that the priming orientation was beneficial in alleviating anxiety and fears for patients transitioning from KCC to HD. Priming should be extended to all patients entering the HD program including acute starts. It would be our recommendation that all programs should implement an orientation program for patients. Following this research project, our hospital formalized a priming process for all patients starting HD.

CONCLUSION

Transition from KCC to HD is a big challenge for most patients. Patients not only have to deal with physical discomfort during the transition, but they also have to adapt to significant lifestyle changes. The purpose of this research project was to explore the effect of priming prior to the transition to HD, which has greatly relieved patients' anxiety and stress levels. According to our participants, priming has also led to the development of a closer and more trustful relationship between healthcare professionals and patients. As a result, we highly recommend dialysis units to implement a priming process for all the new patients initiating HD. Our research endeavour has implications for future qualitative research, particularly around which components specifically would be most beneficial to include in a priming process. Consideration of how priming could be utilized to support patients and teams in unscheduled HD starts is another area that could be explored.

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Appendix A. St. Paul's Hospital (SPH) Renal Program – Medical Screening Form

Date: _____ Orientation date: _____
Age: ❑ 20–40 ❑ 41–60 ❑ 61–80 ❑ M ❑ F
Occupation: _____
❑ Employed ❑ Retired ❑ Unemployed
Living condition:
❑ Alone ❑ With family ❑ Assisted living or homes
eGFR_____ Onset of disease: _____

1. In general, would you say your health is?
❑ Excellent ❑ Very good ❑ Good ❑ Fair ❑ Poor

2. Compared to one year ago, how is your health?
❑ Much better than one year ago
❑ About the same
❑ Somewhat worse now than one year ago
❑ Much worse than one year ago

Does your health limit you in the following activities?

3. Vigorous activities such as running, lifting heavy objects, participating in strenuous sports
❑ Yes, interfered a lot
❑ Yes, interfered a little
❑ No, not interfered at all

4. Moderate activities such as moving a table, pushing a vacuum cleaner, bowling or playing golf
❑ Yes, interfered a lot
❑ Yes, interfered a little
❑ No, not interfered at all

5. Lifting or carrying groceries
❑ Yes, interfered a lot
❑ Yes, interfered a little
❑ No, not interfered at all

6. Climbing several flights of stairs
❑ Yes, interfered a lot
❑ Yes, interfered a little
❑ No, not interfered at all

7. Climbing one flight of stairs
❑ Yes, interfered a lot
❑ Yes, interfered a little
❑ No, not interfered at all

8. Kneeling or stooping
❑ Yes, interfered a lot
❑ Yes, interfered a little
❑ No, not interfered at all

9. Walking one block
❑ Yes, interfered a lot
❑ Yes, interfered a little
❑ No, not interfered at all

10. Walking several blocks
❑ Yes, interfered a lot
❑ Yes, interfered a little
❑ No, not interfered at all

11. Bathing or dressing
❑ Yes, interfered a lot
❑ Yes, interfered a little
❑ No, not interfered at all

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your emotional problems (such as feeling depressed or anxious)?

12. Cut down the amount of time you spent on work or other activities
❑ Yes ❑ No

13. Accomplished less than you would like
❑ Yes ❑ No

14. Didn't do work or other activities as carefully as usual
❑ Yes ❑ No

During the past 4 weeks, to what extent have your physical health or emotional problems interfered with your normal social activities with family, friends, neighbours and groups?
❑ Yes, interfered a lot
❑ Yes, interfered a little
❑ No, not interfered at all

Appendix B. Interview Questions (Post Orientation)

For those patients who participated in the HD orientation program:
Think about your transition to the hemodialysis unit.

- "What was helpful about the HD orientation program?"
- "What was not helpful about the HD orientation program?"
- "Would you recommend the HD orientation program to new HD patients?"
- "Why or why not?"
- "What was the most helpful to you during the transition to the hemodialysis?"
- "What was the least helpful?"
- "Do you have any recommendations for improved service to patients going through the transition?"

Appendix C. BATHE Interview Technique

- **B**ackground issues: What is going on in your life? (Elicits life circumstances, potential stressors, etc.)
- **A**ffect: How do you feel about that? (Allows the patient to report feelings and emotions.)
- Most **t**roubling problem: What troubles you the most about this? (Focuses on the meaning of the circumstances.)
- **H**andling situation: How are you handling that? (Provides an assessment of functioning and potentially a connection to somatic complaint.)
- **E**mpathy by interviewer: That must be very difficult for you. (Normalizes the patient's reaction and demonstrates understanding.)

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❑ I have attained CNeph(C)/cdt designation

❑ I am a member of CNA

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Do you belong to RNAO?
❑ Yes ❑ No

Professional Status
❑ Registered Nurse
❑ Registered Practical Nurse/Registered Nursing Assistant/ Licensed Practical Nurse
❑ Technician
❑ Technologist
❑ Other (Specify) _____

Number of years in nephrology _____

Area of responsibility
❑ Direct Patient Care
❑ Administration
❑ Technical
❑ Teaching
❑ Research
❑ Other (Specify)

_____

Work environment
❑ Acute Care
❑ Self-Care Unit
❑ Independent Health Care
❑ Private Sector

Highest level of education

Nursing	*Non-Nursing*
❑ Diploma	❑ Diploma
❑ Baccalaureate	❑ Baccalaureate
❑ Master's	❑ Master's
❑ Doctorate	❑ Doctorate

I am at present studying toward

Nursing	*Non-Nursing*
❑ Specialty Certificate	❑ Specialty Certificate
❑ Baccalaureate	❑ Baccalaureate
❑ Master's	❑ Master's
❑ Doctorate	❑ Doctorate

Primary area of practice
Choose one
❑ Adults
❑ Combined Adult/Pediatrics
❑ Pediatrics
❑ Other

Select all that apply
❑ Full-Care Hemo
❑ Self-Care Hemo
❑ Home/Independent Hemo
❑ In-Patient Nephrology
❑ In-Patient Peritoneal Dialysis
❑ In-Patient Transplantation
❑ Home/Independent PD
❑ Out-Patient Transplantation
❑ Clinical Educator
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