CANNT JOURNAL
JOURNAL ACITN

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IN THIS ISSUE:

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CANNT JOURNAL
JOURNAL ACITN

CANNT ACITN
CANADIAN ASSOCIATION OF NEPHROLOGY NURSES AND TECHNOLOGISTS
L'ASSOCIATION CANADIENNE DES INFIRMIÈRES ET TECHNICIENS DE NÉPHROLOGIE

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Publications and presentations—and YOU!

Janet Baker

Alison Thomas

Why would you consider submitting an article to the *CANNT Journal* or presenting a poster or an oral presentation at the annual CANNT symposium?

So many reasons! And here are just a few:

- The sense of accomplishment that you feel as a result of your presentation or publication
- The feeling of pride in your profession and workplace
- The satisfaction of knowing that you have added to a growing body of nephrology nursing or technological knowledge.

Any of the above are good reasons to publish or submit an abstract for a presentation. While the notion of presenting or submitting a manuscript may seem daunting initially, CANNT is here to help. On the CANNT website (www.cannt.ca) we have resources that are intended to assist you in preparing to submit an article for publication or in preparing a poster for presentation at a conference. From the home page, under the CANNT Journal tab, you will find a resource entitled "Guidelines for Authors" for those who have an interest in preparing a manuscript for submission. Under the Education tab you will find a resource dedicated to poster preparation for presentation. Speaking from personal experience, we highly recommend that you investigate these helpful resources. In addition to the web-based resources—and as co-editors, we are available to you, as you work towards your goal of presentation or publication.

You might think that journal submissions have to have a research or scientific component; or that unless you are reporting a major change in practice, there is no point in publishing or presenting. Doesn't everyone out there know about practices currently in use? Will they care about your personal experience? We think they will, and know that they do! Some of the most meaningful publications in the journal have involved activities within individual programs that have focused on everyday initiatives to improve patient care quality or staff satisfaction. There are so many valuable initiatives being implemented across Canada that are worth sharing!

Consider sharing your unit's experience with us—are you trialling a new format for patient scheduling? Have you increased the unit uptake of independent dialysis by providing support to patients in a unique way? Are you involved in a CQI activity that has shown benefit? These are all important experiences that you can share. In this issue's practice corner, you will read about the experiences from a unit in Calgary in setting up an intradialytic exercise program—an excellent example!

Our goal for our readers is to have one of two types of experiences when reviewing the journal. Firstly, exposure to new and inspiring publications—that led to reflection about your own program or unit and how you might make a similar change. Secondly, exposure to publications that describe similar initiatives or experiences that you have in place within your own environment. This acts as validation of your own practice in your own setting, and is equally valuable.

If you have a story to tell—either about a new initiative or an existing one that you believe adds quality or value to your practice as nephrology care providers, these are reasons to publish in the *CANNT Journal*, or to present at the annual CANNT symposium—for others are sure to benefit from hearing about your experiences.

We hope that we have piqued your interest—let us know how we can help!

Articles, affiches, communications orales — et VOUS!

Pourquoi devriez-vous songer à soumettre un article au *Journal de l'ACITN* ou à présenter une affiche scientifique ou une communication orale au congrès de l'ACITN?

Pour de nombreuses raisons! En voici quelques-unes :

- l'accomplissement de soi, après la présentation d'une communication ou la publication d'un article;
- la fierté, au sein de votre profession ou de votre milieu de travail;
- la satisfaction de savoir que vous avez apporté votre grain de sel au corps grandissant de connaissances en sciences infirmières ou en technologie dans le domaine de la néphrologie.

Toutes ces réponses sont bonnes pour publier ou pour soumettre un résumé de communication orale. Bien que l'idée de présenter ou de soumettre un manuscrit puisse sembler un défi de taille de prime abord, l'ACITN est là pour vous aider. Vous trouverez sur le site Web de l'ACITN (www.cannt.ca) des ressources qui ont été conçues pour vous accompagner dans la soumission d'un article pour publication ou la préparation d'une affiche scientifique ou d'une communication orale dans le cadre d'un congrès. À la page d'accueil, à la rubrique Journal de l'ACITN, ceux et celles qui désirent rédiger un manuscrit et nous le soumettre pour publication trouveront une ressource intitulée « Lignes directrices à l'intention des auteurs » pour les aider. À la rubrique Éducation, nous avons hébergé une ressource consacrée à la préparation d'une affiche scientifique en vue de sa présentation dans le cadre d'un congrès. D'après notre expérience personnelle, nous vous recommandons fortement de consulter ces ressources qui s'avèrent de précieux outils. En plus de ces ressources en ligne, nous demeurons, en tant que corédactrices en chef, à votre disposition pour vous appuyer dans l'atteinte de vos objectifs, que ce soit pour la présentation d'une affiche ou d'une communication orale ou pour la publication d'un article.

Vous croyez peut-être que les articles soumis au *Journal de l'ACITN* doivent porter sur une étude de recherche ou présenter un contenu scientifique ou encore faire état d'un changement majeur dans la pratique, sinon ils n'ont aucune chance d'être publiés ou présentés. Y a-t-il quelqu'un qui aimerait en savoir plus sur les pratiques actuellement utilisées? Les lecteurs auront-ils à cœur votre expérience personnelle? Nous croyons que si, et savons qu'ils l'ont! Parmi les articles les plus riches en contenu qui ont paru dans le *Journal de l'ACITN*, certains portaient sur des activités menées dans le cadre de programmes individuels qui décrivaient des initiatives entreprises au quotidien pour améliorer les soins aux patients ou la satisfaction du personnel. Il y a tellement de ces initiatives de grande valeur qui sont mises en œuvre au Canada qui valent la peine d'être partagées!

Faites-nous part des expériences vécues au sein de votre unité; par exemple, l'essai d'un nouveau logiciel de planification électronique des rendez-vous des patients; l'augmentation du nombre de traitements de dialyse autonome effectués dans votre unité grâce au soutien unique que vous offrez à vos patients; l'instauration d'une activité d'amélioration continue de la qualité ayant suscité des résultats bénéfiques; etc. Voilà des exemples d'expériences que vous pourriez partager. À la rubrique Coin de la pratique, vous pourrez en apprendre plus sur l'expérience vécue par les membres d'une unité de dialyse à Calgary qui ont instauré un programme d'exercices à faire entre les dialyses—un excellent choix d'articles!

Nous cherchons à faire vivre à nos lecteurs l'un des deux types d'expériences lorsque nous nous réunissons en comité de lecture. En premier lieu, nous souhaitons exposer les lecteurs à des articles qui portent sur des sujets nouveaux et inspirants, qui suscitent une certaine réflexion quant au fonctionnement de nos unités ou de nos propres programmes et à la façon dont nous pourrions apporter un tel changement. En second lieu, nous voulons exposer les lecteurs à des articles qui décrivent des initiatives ou des expériences qui sont similaires à celles que vous avez en place dans votre milieu de travail, ce qui permet de valider votre propre pratique dans votre propre unité. Nous considérons ces deux types d'expériences comme tout aussi importantes.

Si vous avez une histoire à nous raconter, qu'elle porte sur une initiative nouvelle ou existante et qui, selon vous, rehausse la qualité ou apporte une valeur ajoutée à votre pratique en tant que professionnels de la santé en néphrologie, n'hésitez pas à nous en faire part. Ce sont justement de bonnes raisons pour publier dans le *Journal de l'ACITN*, préparer une affiche scientifique ou présenter une communication orale au congrès annuel de l'ACITN — nos membres gagnent à connaître vos expériences.

En espérant avoir suscité votre intérêt, dites-nous comment nous pouvons vous aider!

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• Voici les échéanciers à rencontrer pour soumettre des articles/nouvelles au journal :
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As the seasons change…

It wasn't that long ago that we were talking about the harsh winter and the newness of spring—how quickly this year is flying by. But summer is finally here! School is out, festivals are in full swing, and summer vacations have started. Unfortunately, CKD never takes a holiday—but wouldn't it be nice if it did! I know a lot of patient teaching occurs this time of year. Advice about how to stay hydrated (but not too hydrated), pay close attention to your vascular access, wear sunscreen, be careful with activity in the heat—the list goes on and on. Now; we offer our patients this advice; but do we follow it ourselves? I hope you are all staying cool and are taking all of the proper precautions with the heat and the sunshine.

Change. I never realized that one little word could mean so much. Have you ever thought about how "change" affects us, or how we feel when we are told things need to "change"? I always become a bit anxious when someone mentions the word "change". The academic part of me knows that change is good and necessary for progress, but the pragmatic part of me thinks "if it's working, why do we need to change?"

Information, especially health information, is always changing. Therefore, how we practise is always changing. Think back to when you were in school. How has what you learned back then (some of us WAY BACK) changed from how we practise today? When I first became a nephrology nurse, hemoglobin targets were 100 g/L to 120 g/L. There are constantly changing guidelines for anemia management, and it seems we just get used to one practice and the next thing you know, that practice changes!

Technology is also in a state of constant change (usually for the better). I come from the Cobe Century era, and I know there are many of you from the Drake-Willock and Gambro AK-10 days of hemodialysis technology. However, I'm sure there are many nephrology professionals who have only heard of these three machines when their more "seasoned" colleagues talk about "the good old days". Today, thinking about adjusting a knob to ensure the arterial pressure is okay, or mixing a batch of bicarb in a pail seems archaic. Back then, it was just the way things were… but then they *changed!* Now we can get bicarb in small cartridges, concentrate jugs arrive on a pallet and our dialysis machines can shut off automatically. None of that would have happened if someone didn't ask the question "How can we do this in a better way?"

I think back to when I first took my nephrology course, and was studying for my CNA certification examination—how things have changed since then. We were giving albumin and 23% sodium chloride to many patients as a routine. Now, I'm not sure if 23% sodium chloride is still prescribed in Canada—I know it is no longer in use in Manitoba. Talk about change—our renal program is going through the transition to the addition of "electronic patient scheduling" and, soon to come, the "electronic patient record". I know many of your programs are already paperless, but I have to confess… I love paper!

Change is going to happen, whether we *want* it to or not, and whether we think it *should* or not. These three tips have helped me adjust to change.

- Be flexible. Change is never easy, but it is necessary.
- Be a mentor. Share your knowledge and you might just help someone who has difficulty with change. This can only make your team stronger.
- Embrace change. It's going to happen anyway, and the more we try to resist it, the more frustrated we will feel. Just let the change happen and try to view it as a learning experience.

After all, without change, we would never meet new people, we would still be mixing bicarb in a bucket with a wooden spoon, and our CANNT organization would not be what it is today.

"Either way, change will come. It could be bloody, or it could be beautiful. It depends on us." – Arundhati Roy

Marilyn Muir
CANNT President 2012–13

Comme changent les saisons…

Il n'y a pas si longtemps encore, nous parlions des rigueurs de l'hiver et du renouveau du printemps—et de la rapidité avec laquelle cette année a passé. Puis, l'été s'est finalement pointé! L'école est finie, les festivals battent leur plein et les vacances d'été sont enfin arrivées. Malheureusement, la maladie rénale chronique ne prend pas congé. Mais, ne serait-ce pas fantastique si elle le faisait! Je sais qu'il y a beaucoup de séances de formation qui sont données en ce moment à l'intention des patients. On leur donne des conseils pour bien s'hydrater (mais sans trop l'être), pour bien prendre soin de leur accès vasculaire, pour appliquer un écran solaire, pour pratiquer avec prudence des activités sous le soleil, etc. Nous prodiguons ce dernier conseil à nos patients, mais l'appliquons-nous nous-mêmes? J'espère que vous prenez soin de vous rafraîchir ainsi que toutes les mesures nécessaires pour vous protéger des coups de chaleur et du soleil.

Le *changement*. Je n'avais jamais réalisé à quel point ce mot est lourd de sens. Avez-vous déjà réfléchi à l'influence qu'exerce le changement sur vous ou à votre réaction lorsqu'on vous dit que les choses *doivent changer*? Je suis toujours un peu anxieuse lorsque j'entends le mot *changement*. Mon côté scientifique me dit que le changement est bon et nécessaire pour assurer le progrès, alors que mon côté pragmatique me chuchote : « À quoi bon changer quelque chose qui fonctionne bien? »

L'information, en particulier l'information en santé, est toujours en changement. Par conséquent, la façon dont nous exerçons notre profession est sans cesse changeante. Rappelez-vous quand vous étiez sur les bancs d'école. Observez comment ce que vous avez appris à l'époque (pour certains et certaines d'entre nous, il y a FORT LONGTEMPS) a changé par rapport à la façon dont vous exercez votre profession aujourd'hui. À mes débuts comme infirmière en néphrologie, la plage des valeurs cibles d'hémoglobine était de 100 à 120 g/L. Les lignes directrices pour la prise en charge de l'anémie changent constamment. En effet, il me semble que dès qu'on s'habitue à une nouvelle pratique, la première chose que l'on sait, c'est que cette pratique vient de changer!

La technologie aussi ne cesse de changer (habituellement pour le mieux). Je suis de l'ère Cobe Century, et je sais que bon nombre d'entre vous êtes de l'époque Drake-Willock ou de Gambro AK-10 en ce qui a trait à la technologie en hémodialyse. Cependant, je suis certaine que de nombreux professionnels de la santé en néphrologie n'ont fait qu'entendre parler de ces trois appareils, alors que leurs collègues plus *expérimentés* parlent du *bon vieux temps*. Aujourd'hui, penser à ajuster un bouton pour s'assurer que la tension artérielle est correcte ou mélanger du bicarbonate dans un seau semble archaïque. À cette époque, c'était ainsi qu'on faisait les choses… puis nous avons *changé* nos façons de faire! De nos jours, le bicarbonate est offert en petites cartouches, les bidons de concentrés sont livrés sur des palettes et les appareils de dialyse peuvent passer en mode arrêt automatiquement. Rien de tout cela ne serait arrivé si personne n'avait posé la question : « Comment pouvons-nous changer notre façon de faire? »

Quand je repense à mes tout premiers cours en néphrologie et lorsque je me préparais à passer l'examen d'agrément de l'Association des infirmières et infirmiers du Canada (AIIC), les choses ont bien changé depuis. À cette époque, nous donnions de routine de l'albumine et une solution de chlorure de sodium (NaCl) à 23 % à beaucoup de patients. Aujourd'hui, j'ignore si le NaCl à 23 % est encore prescrit au Canada, mais je sais qu'il ne l'est plus au Manitoba. En parlant de changement, notre programme de néphrologie est en période de transition pour inclure la planification électronique des rendez-vous des patients et bientôt le dossier médical électronique. Je sais que beaucoup de programmes de néphrologie sont déjà informatisés (zéro papier), mais je dois vous avouer que... j'aime le papier!

Le changement se produira, que nous le *voulions* ou non, quoi que nous en *pensions*. Voici trois conseils qui m'ont aidée à m'adapter au changement :

- Soyez souple. Le changement n'est jamais facile, mais il est nécessaire.
- Devenez un mentor. Partagez vos connaissances. Vous pourriez venir en aide à quelqu'un qui est réfractaire au changement. Votre équipe en ressortira grandie et plus forte.
- Soyez ouvert au changement. Il se produira de toute façon. Plus nous tenterons d'y résister, plus nous éprouverons un sentiment de frustration. Laissez le changement s'opérer et envisagez-le comme une expérience d'apprentissage.

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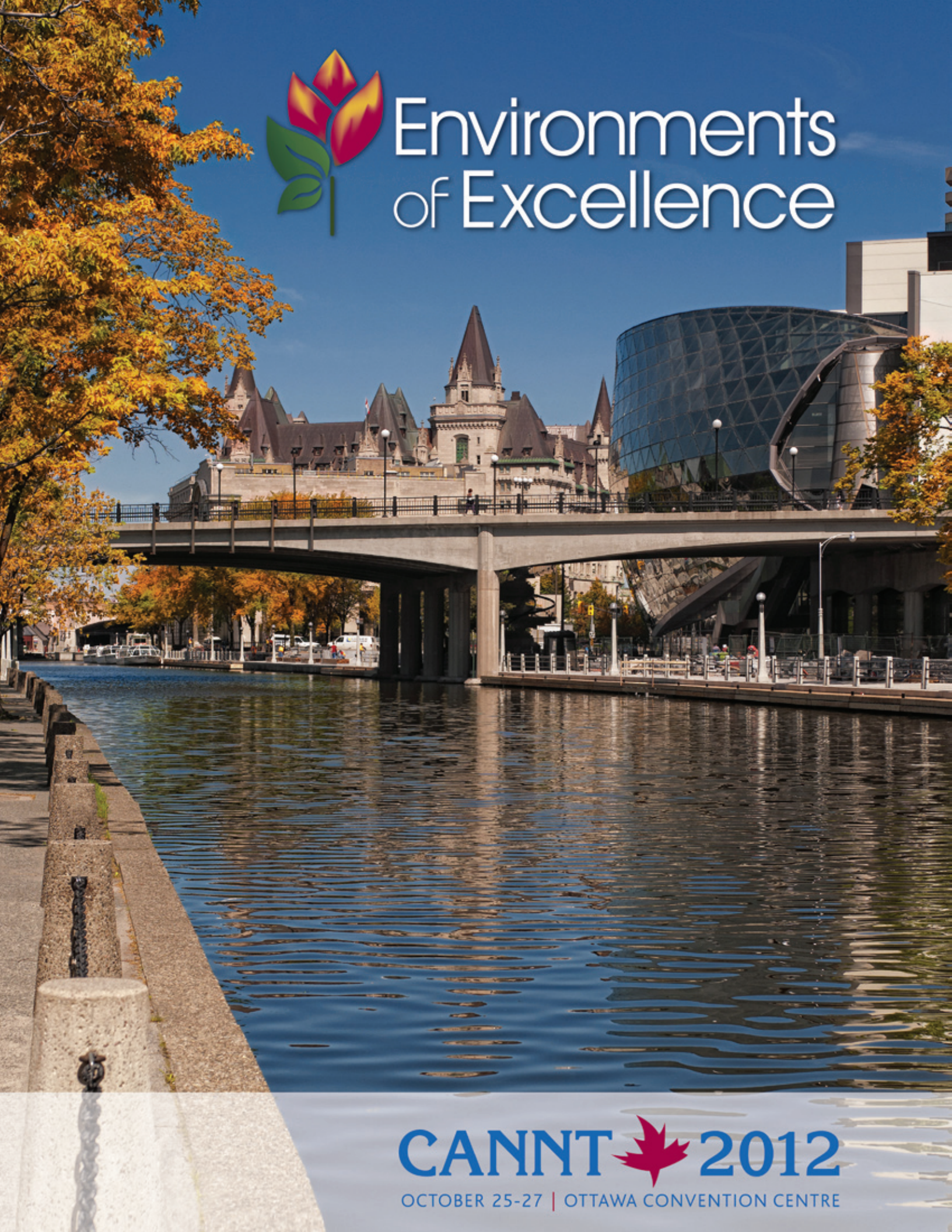
Après tout, sans changement, nous ne pourrions faire la connaissance de nouvelles personnes, nous serions encore en train de mélanger du bicarbonate dans un seau avec une cuillère de bois et notre Association ne serait pas ce qu'elle est aujourd'hui.

« De l'une ou l'autre manière, le changement viendra. Celui-ci pourrait être sanglant, ou il pourrait être beau. Cela dépend de nous. » – Arundhati Roy

Marilyn Muir, inf., CNéph(C)
Présidente, ACITN de 2011–2012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Ask the Green Tech

Hemodialysis and toxins: Is there a risk?

By Réjean Quesnelle

Health care practitioners in Canada go to great lengths to ensure that patients receive the best care available and that any potential risks associated with their treatment are minimized. Unfortunately, the use of medical devices and products designed to treat illnesses may, in fact, be placing patients in the direct line of fire for other serious health risks (Calafat et al., 2008). Furthermore, there is also strong evidence that suggests that health care providers and those who work in a health care setting are equally at risk of being exposed to various harmful elements (Wilding, Curtis, & Welker-Hood, n.d.). And what is the overlooked danger? In a word—toxins.

For the purpose of this discussion, let us look to The Canadian Environmental Protection Act for a description of a toxic substance. The Act defines a toxic substance as: *"A substance is toxic if it is entering or may enter the environment in a quantity or concentration or under conditions that: a) have or may have an immediate or long-term harmful effect on the environment or its biological diversity; b) constitute or may constitute a danger to the environment on which life depends; or c) constitute or may constitute a danger in Canada to human life or health"* (Environment Canada, 2012).

By this definition, then, it is clear that when toxic chemicals surround us, we may become toxic ourselves. Our bodies accumulate more every day, as we come into contact with a toxic substance, usually without our knowledge or consent. Some we absorb by inhaling the air in buildings or cities, others as we consume foods, and during medical procedures. The fact that there are biomonitoring programs, such as those used by the Centers for Disease Control and Health Canada, is proof that we should be concerned. These programs have been in use for many years in order to determine the level of toxic burden we encounter and whether or not these chemicals are of direct concern to human health.

But patients and health care workers are at particular risk. Three recent studies all concluded that each and every one of us is affected by hazardous chemicals. The recently published Canadian Health Measures Survey (CHMS) results determined that within the group of 5,600 participants, 100% of the population had detectable levels of lead and 91% of the population had detectable levels of Bisphenol-A (BPA) (Statistics Canada, 2011). An American study conducted by the Physicians for Social Responsibility (PSR) concluded that all 20 health care professionals in their study had detectable levels of at least 24 of the 62 chemicals tested, with some having as many as 39. All participants had detectable levels of BPA and nearly all had at least one phthalate metabolite in their blood (Wilding, Curtis, & Welker-Hood, n.d.). Additionally, a study by Environmental Defence, a Canadian non-government-based organization, arrived at similar conclusions regarding our exposure to toxins.

With a growing number of chronically ill patients, the urgency to eliminate toxic chemicals from medical devices and procedures increases. Exposure to the growing number of environmental and medical toxins introduces new risks to patient health. Could we see a rise in comorbidity not present before in these groups as a result?

One such group at risk are those suffering from chronic kidney disease (CKD). CKD is already quite prevalent and with an increase in the number of Canadians suffering from high blood pressure and diabetes, the National Research Council of Canada estimates that approximately 5% of the Canadian population is affected by CKD. Of that number, in 2008, the Canadian Institute for Health Information reported that there were 17,762 Canadian patients who were undergoing hemodialysis therapy as treatment for CKD. That figure is translated to approximately 2,770,880 treatments per year.

Where the concern lies with hemodialysis patients is the large number of single-use medical devices (blood tubing, dialyzers) and the risks associated with their use. As previously stated, we all have toxins flowing through our veins. However, some of these chemicals and their metabolic by-products can be relatively safely excreted through urination in the healthy individual. Clearly, this is not possible for individuals with impaired renal function. Most single-use devices for use in hemodialysis contain one of two common chemicals, both of which are known endocrine disruptors. Some of these chemicals are listed on the packaging and others may not be, leading to more confusion and risk for the end user. The chemicals of most concern to us in hemodialysis are Phthalates and Bisphenol-A.

Plasticizing agents known as phthalates are added to polyvinyl chloride plastics (#3) to make them more malleable. The most common of these phthalates used is *di-2-ethylhexyl phthalate* or DEHP (Environmental Working Group, 2007-

2012). DEHP can be found within commonplace items such as vinyl flooring and chair upholstery, but more alarming are medical devices such as hemodialysis blood tubing, IV tubing, oxygen tubing, blood and IV fluid bags, and catheters. Ultimately, many of these products come in direct contact with a patient's bloodstream for extended periods of time, leading to absorption (Tickner, Schettler, Guidotti, McCally, & Rossi, 2001).

Bisphenol-A (BPA) is an industrial chemical used as a key building block in the creation of polycarbonate plastics (#7) and epoxy resins and coatings. Polycarbonate plastics are widely used in hemodialysis in the formation of dialyzer casings and the epoxy resins are used to secure the hollow fibres within the casing.

Under specific conditions, both BPA and DEHP will leach from the respective products into the bloodstream. As endocrine disruptors, BPA and DEHP mimic normal human hormones and may lead to negative health outcomes. The amount of DEHP and BPA that will leach out depends on the temperature, the lipid content of the liquid, and the duration of contact with the plastic (Mercola, 2011).

When considering contact time during hemodialysis, warm blood (37˚C) containing various lipid products comes into contact with both blood tubing and dialyzers for approximately four hours every other day. Due to the continual exposure to these chemicals, patients may develop a high level of these chemicals in their blood. Health care workers can also absorb these chemicals through the dermal manipulation of these products and the inhalation of dust from medical devices containing these chemicals. These endocrine disruptors have been linked to obesity, cancer, neurological and reproductive impairment, thyroid dysfunction, and even changes to a person's DNA (Solomon & Schettler, 2012).

The risks we take today by using medical products that we know could have serious health consequences down the road will have a direct impact on the costs of providing health care services in the future. Under our current model where lower-priced—yet toxic products—are accepted, we most certainly will see not only an increase in service cost, but, more importantly, a rise in the number of chronically ill individuals, leading to increased demand for services to address the untoward effects of medical toxins, and even longer wait times for services needed from an already pressured system.

Unfortunately, as long as we maintain status quo by using the products we use today, the future of our current health care delivery model is in serious jeopardy. Such a system can only function for so long. Albert Einstein said it well, "*We can't solve problems by using the same kind of thinking we used when we created them*". Health care providers and their patients should not serve as Petri dishes for the various toxic time-bombs that await us in the medical devices used today. Our patients will not get better; they will only become more ill due to new complications. Only the medical device manufacturers themselves gain if we turn a blind eye to the risks of their products.

So what lies ahead and what solutions do we have?

Fortunately, large government agencies have finally begun to take notice of the fact that potentially noxious chemicals are being found in medical applications. Health Canada and the Food and Drug Administration (FDA) are beginning to take a very close look at these serious concerns. As of October 13, 2010, Health Canada declared that BPA was a health toxin, something which had first been considered in 2008. Immediate action must be taken to remove these toxic substances from common hemodialysis apparatus such as dialyzers and blood tubing. Using green chemistry and finding a substitute for DEHP and BPA must be considered best practice moving forward. Some European companies, such as BBraun, Gambro and Fresenius have already begun removing these substances from their products. Unfortunately, most of their North American subsidiaries have not yet adopted these same initiatives, but the pressure is on. In October 2011, Baxter Healthcare became the first medical device manufacturer to bring a toxin-free dialyzer to the North American market under the Xenium+ label. Establishing a green procurement policy and sourcing products that meet healthy criteria will situate safer products at the point of use.

Finally, your voice may be our most valuable tool. All companies, medical companies included, look to provide profits to their shareholders, so they recognize that a negative image is bad business. Let your representative know your position and that you will be sourcing a less harmful option. Those of us who choose to speak up will hopefully motivate them to make the right choice and, thus, establish a new model in sustainable hemodialysis and health care.

About the author

Réjean Quesnelle is a graduate of the Georgian College Dialysis Technology Program. Réjean has more than eight years of experience in the dialysis field and is currently employed by Halton Healthcare Services in Oakville, Ontario. Réjean can be reached via email at regq101@gmail.com or phone 705-718-7474.

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Your board in action

Patty Quinan, RN, MN, CNeph(C),
CANNT Past President 2012–13

The purpose of this report is to inform our CANNT members of current and upcoming activities with which the Board of Directors (BOD) are involved. The BOD is composed of nine members; past president, president, president-elect, VPs (Ontario, Atlantic, Western, Technical and Quebec), and the website and financial coordinator.

Membership

There are currently 420 CANNT members. Membership options for nurses and technologists include one- or two-year membership terms. As a Board of Directors, we encourage you to maintain yearly membership, as this assists with the long-term viability of the association, and allows members the opportunity to take advantage of the many benefits of professional membership to CANNT. Some of the benefits include receiving quarterly peer-reviewed journals, reduced membership rates for conference attendance, and opportunities for collaborative networking with colleagues and peers through discussion forums, conference attendance, and awards, bursaries and grants. Annual membership fees have remained the same since 2009. Check out our website at **www.cannt.ca** for more information regarding membership under the section entitled "Why should I become a member?" Refined Clinical Practice Groups (RCPG), discussion forums and information about CANNT awards, bursaries and grants can also be found on the CANNT website.

Finances

CANNT's Administrative Assistant Debbie Maure and the BOD make every effort to reduce expenditures and identify innovative ways to generate income and maintain the long-term viability of the association. For example, for the past three years, our spring board meetings have been held via teleconference rather than in person to reduce costs to the organization. The board also negotiated lower rates for teleconference services along with purchasing Adobe Connect software, which will allow for more business to be done via the internet versus face-to-face meetings in future.

Strategic planning

The Strategic Plan helps to guide board activities and is a major focus for the BOD.

The current Strategic Plan was developed in 2007 and is in effect until 2013. This plan will be reviewed by the BOD for the period of 2013 to 2018. Our goals include increasing membership, sustaining the viability of the association, communication, education, professional practice, research, partnerships and the *CANNT Journal*.

Journal

The *CANNT Journal* is peer-reviewed and is distributed to members quarterly. The journal is recognized as a resource for nephrology professionals and is indexed in the CINAHL, MEDLINE, and OVID databases. We encourage both first-time and experienced authors to submit articles for publication. Guidelines for authors can be found on the CANNT website under the heading "CANNT Journal". For more information, contact journal co-editors Alison Thomas at **thomasal@smh.ca** and Jan Baker at **jbaker@haltonhealthcare.on.ca**. The winner of the 2012 CANNT Journal award will be announced at our annual conference in Ottawa in October 2012.

Website

The website is updated regularly and contains a vast amount of information for nephrology professionals, from career opportunities to discussion forums. CANNT now is on Facebook and Twitter. Check out our website at **www.cannt.ca** to learn more about these and other exciting opportunities available to CANNT members.

Communication

Communication between the BOD, our members and affiliate partners is key to maintaining a viable association and is a priority of CANNT. CANNT has professional relationships with the American Nephrology Nurses Association (ANNA), the Canadian Nurses Association, the Kidney Foundation of Canada, the European Dialysis and Transplant Nurses Association (EDTNA/ERCA) and the National Association of Nephrology Technicians/Technologists (NANT).

Communication to members is facilitated via information found on the CANNT website, the availability of the national office toll-free number, the use of email blasts to members outlining current information and upcoming events, the regional vice-presidents' reports on the website, the quarterly president's message in the journal, the online discussion forum for members, and the Refined Clinical Practice Groups.

Annual symposium

CANNT is pleased to announce the signing of a contract with conference planner Heather Reid of Innovative Conferences and Communications until 2015. An evaluation process for both the conference planner and the planning committee members has been implemented to provide the BOD and the membership with valuable feedback about the conference experience from both perspectives.

Standards of practice

The CANNT Standards of Nursing and Technical Practice can be found on the website under the heading "Standards of Practice". In 2006, the Canadian Educators Network (CEN) guidelines for vascular access were published in the *CANNT Journal.* These guidelines remain a mainstay for practitioners and nephrology professionals in hemodialysis settings nationwide. The Canadian Hemodialysis

Access Coordinators (CHAC) and clinical educators involved in the original guideline development are currently reviewing and updating the vascular access guidelines for updated publication. The Technical Standards are also being reviewed currently by the VP Technology and a committee of technologists and will be updated, as needed.

Awards, bursaries and grants

Information about CANNT awards, bursaries and grants are available on the CANNT website and in the *CANNT Journal.* The deadline for submission of applications for these awards is May 1 annually. The committee is currently reviewing all applications and awards and the successful candidates will be announced at the 2012 annual conference in Ottawa, Ontario.

We strongly encourage all members to review award details and apply for a bursary or award if you are pursuing additional education or research projects in your program or unit.

Nominations committee

The Call for Nominations for Board of Directors positions deadline this year was May 15, 2012. An extension for the positions of VP Ontario and president-elect was issued, as there were no interested candidates by the original deadline.

The nominations committee has reviewed the applications and the new BOD will be announced at the annual conference in Ottawa, Ontario.

Canadian Nurses Association (CNA)

The number of nephrology nurses who are certified continues to increase each year. Currently there are 1,191 nurses in Canada who are nephrology certified and hold the designation of CNeph(C). Congratulations to all certified nephrology nurses and nurses who plan to write the certification exam. The association encourages all nephrology nurses who meet the certification criteria to write the CNA exam. Professional certification demonstrates your commitment to the nephrology profession, and can be very rewarding, both personally and professionally. CNA certification review sessions are offered at the annual conference pre-symposium workshop sessions. For more information about certification, check the CANNT website or www.cna-aiic.ca.

As the past president, one of my roles is CNA representative for CANNT. It is an honour and a privilege to participate in discussions with other nursing leaders within Canada and to represent you, our members, in those discussions.

Nephrology Health Care Professionals Day

Nephrology Health Care Professionals Day is Wednesday, September 19, 2012. This is an annual event that provides an opportunity to recognize and celebrate the efforts of nurses, technologists, renal pharmacists, dietitians and social workers and celebrate their valuable contributions to patients with kidney disease. Talk it up in your unit. We invite you to share your experiences with CANNT by sending us a short description of how your unit celebrated Nephrology Health Care Professionals Day. Photos are welcome and can be submitted to the CANNT office via email at: cannt@cannt.ca.

NOTICE BOARD

- Ottawa Supper Clubs—Contact Janet Graham, Nephrology Unit, Ottawa Hospital, jgraham@ottawahospital.on.ca
- September 4–November 14, 2012. Application period for the Nephrology Certification Exam. Examination date: April 20, 2013. Contact Canadian Nurses Association Certification Program, e-mail: lvachon@cna-aiic.ca. Website: www.cna-aiic.ca. Toll-free phone number: 1-800-450-5206
- September 9–12, 2012. 14th Congress of the International Society of Peritoneal Dialysis (ISPD), Kuala Lumpur, Malaysia. Website: www.ispd2012.org.my
- September 15–18, 2012. 41st EDTNA/ERCA International Conference, Convention Centre, Strasbourg, France. Website: www.edtna-erca-conference2012.com
- September 19, 2012. Nephrology Health Care Professionals Day.
- September 28–30, 2012. ANNA Fall Meeting for Nephrology Nurses, Managers, and Advanced Practice Nurses, Palmer House Hilton, Chicago, IL. Website: www.annanurse.org
- October 15, 2012. Deadline for applications for Allied Health Research Grants, Kidney Foundation of Canada. Contact: Coordinator, Research Grants and Awards, 1-800-361-7494, ext. 232, e-mail: research@kidney.ca. Website: www.kidney.ca
- October 25–27, 2012. CANNT 45th National Symposium. Ottawa, Ontario. Conference Planner: Heather Reid: e-mail: hreid@innovcc.ca. Website: www.cannt.ca
- March 10–12, 2013. Annual Dialysis Conference 2013, Seattle, WA. Website: http://som.missouri.edu/Dialysis/
- April 21–24, 2013. ANNA 44th National Symposium, Rio All-Suite Hotel Casino, Las Vegas, NV. Phone (888) 600-2662, fax (856) 589-7463. Website: www.annanurse.org
- April 20, 2013. Exam date for CNeph(C) certification examination. Contact Canadian Nurses Association Certification Program, e-mail: certification@cna-aiic.ca. Website: www.cna-aiic.ca. Toll-free phone number: (800) 361-8404
- September 27–29, 2013. 15th Congress of the International Society of Peritoneal Dialysis (ISPD), Taipei City, Taiwan. Website: www.ispd2012.org.my

2012 Annual Symposium: October 25–27, Ottawa, Ontario

The organizing committee for the 2012 annual symposium is hard at work planning the 2012 conference. Planning typically begins about 18 months prior to the conference and requires the dedication and commitment of several individuals. Planning includes face-to-face meetings, teleconferences and numerous emails with the planning committee, conference planner and past president of CANNT. This year's conference theme is "**Environments of Excellence**". The conference will be held from Thursday, October 25, to Saturday, October 27, 2012. French translation will be provided.

The BOD encourages all presenters of posters and oral presentations to consider drafting a manuscript based on your presentation for publication in the *CANNT Journal*. If submitted prior to the conference, you will be eligible for the CANNT Manuscript Award. More information on writing an abstract and creating a poster presentation can be found on the CANNT website under the heading "Education".

This year, the organization has seen a number of staffing changes. Both the Administrative Assistant Debbie Maure and Journal Editor-in-Chief Gillian Brunier announced at the 2011 Annual General Meeting that they would be leaving the association in 2012. I am delighted to announce that the position of journal editor is being shared by two former CANNT Presidents—Alison Thomas and Janet Baker. Alison and Janet assumed their new roles in the spring of this year. The BOD is currently seeking alternative business opportunities for the position of Administrative Assistant. The void left by the departure of Debbie Maure will be large and, therefore, requires careful consideration when planning her replacement.

Finally, on behalf of the CANNT Board of Directors, I would like to take this opportunity to extend our sincere gratitude to Debbie Maure and Gillian Brunier for their dedication, expertise, commitment and wisdom during their respective tenures. Both Debbie and Gillian have been with the association for more than 10 years and we bid them farewell with our best wishes for happiness and lasting success in their future endeavours.

Votre ca en action

par Patty Quinan, inf., M. Sc. Inf., CNéph(C), Présidente sortante de l'ACITN 2012–13

Dans le présent rapport, nous désirons vous informer sur les activités qu'a tenues votre conseil d'administration (CA). Le CA comprend neuf administrateurs*: le président sortant, le président, le président élu, les vice-présidents de l'Ouest, de l'Ontario, du Québec et de l'Atlantique, le vice-président des technologues et le coordonnateur du site Web et des finances.

Adhésion

L'ACITN compte 420 membres. Les infirmières, les infirmiers et les technologues peuvent choisir d'adhérer pour une ou deux années. En tant que membres du CA, nous encourageons les membres à renouveler leur adhésion annuellement afin de nous aider à maintenir la viabilité à long terme de l'Association et de tirer profit des nombreux avantages associés à votre adhésion, incluant: l'abonnement à une revue scientifique à comité de lecture, une réduction des frais d'inscription à des congrès et l'occasion de réseauter, de prendre part à des forums de discussion et d'assister à des congrès et l'accessibilité à des bourses et à des prix d'excellence. Les frais de cotisation sont demeurés inchangés depuis 2009. Consultez notre site Web à **www.cannt.ca** pour plus d'information concernant l'adhésion, à la rubrique À propos de l'ACITN, sous l'onglet Pourquoi devrais-je devenir membre? Vous trouverez également une foule de renseignements utiles sur le site Web, notamment des renseignements sur les groupes de discussion sur les pratiques cliniques, les forums de discussion et l'information sur les bourses et les prix d'excellence accordés par l'ACITN.

Finances

Debbie Maure, adjointe administrative, et les membres du CA font tout en leur pouvoir pour réduire les dépenses de l'ACITN et pour trouver des façons innovatrices de générer des revenus et d'assurer la viabilité à long terme de notre Association. Par exemple, pour la troisième année consécutive, les réunions printanières du CA se sont déroulées par conférences téléphoniques au lieu de rencontres en personne, afin de réduire les coûts d'exploitation de l'organisation. Nous avons également négocié des services de téléconférence à prix réduit avec l'achat du logiciel Adobe Connect, ce qui permettra de mener encore plus d'activités commerciales par Internet au lieu d'en personne.

Planification stratégique

La planification stratégique contribue à guider les activités du CA et constitue une priorité majeure pour le CA. Élaboré en 2007, le plan stratégique sera en vigueur jusqu'en 2013. Ce plan

** Par souci de clarté et de concision, le genre masculin englobe à la fois le masculin et le féminin dans ce document.*

sera ensuite révisé pour diriger les activités du CA de 2013 à 2018. Nos principaux objectifs portent notamment sur l'amélioration des secteurs suivants : adhésion, viabilité, communication, éducation, pratiques professionnelles, recherche, partenariat et Journal de l'ACITN.

Journal

Le Journal de l'ACITN (*CANNT Journal*) est une publication révisée par des pairs qui est publiée trimestriellement. Cette source d'information est prisée par les professionnels en néphrologie et est indexée dans les bases de données suivantes : CINAHL, MEDLINE et OVID. Nous encourageons de nouveaux auteurs et les auteurs d'expérience à soumettre des articles pour publication. Vous trouverez sur notre site Web, à la rubrique Journal de l'ACITN, un document intitulé « Lignes directrices à l'intention des auteurs ». Pour plus d'information, veuillez communiquer avec les corédactrices en chef, Alison Thomas à **thomasal@smh.ca** et Jan Baker à **jbaker@haltonhealthcare.on.ca**. Le nom de la personne ayant remporté le Prix d'excellence de 2012 du Journal de l'ACITN sera dévoilé durant le congrès annuel qui aura lieu en octobre 2012, à Ottawa.

Site Web

Le site Web est mis à jour sur une base régulière et contient une grande quantité d'information destinée aux professionnels de la santé en néphrologie—des occasions de carrières aux forums de discussion. Suivez-nous maintenant sur Facebook et Twitter. Consultez notre site Web à **www.cannt.ca** pour en savoir plus au sujet de votre Association et sur d'autres occasions stimulantes offertes aux membres de l'ACITN.

Communication

La communication entre les administrateurs, l'ensemble de nos membres et nos partenaires affiliés est la pierre angulaire pour assurer la viabilité de notre Association. À ce titre, elle représente une priorité pour le CA. L'ACITN entretient des relations professionnelles avec différentes associations, dont l'*American Nephrology Nurses Association* (ANNA), l'Association des infirmières et infirmiers du Canada (ACII), la *European Dialysis and Transplant Nurses Association* (EDTNA/ERCA) et la *National Association of Nephrology Technicians/Technologists* (NANT).

La communication avec nos membres prend différentes formes : diffusion de l'information utile sur le site Web, numéro de téléphone sans frais, envoi de messages électroniques contenant l'information de dernière heure et les renseignements sur les évènements à venir, diffusion sur le Web des rapports des vice-présidents régionaux, publication trimestrielle du mot du président dans le Journal, forums de discussion en ligne réservés aux membres et groupes de discussion sur les pratiques cliniques.

Congrès annuel

L'ACTIN est heureuse de vous annoncer la signature d'un contrat avec Heather Reid, planificatrice d'évènements à *Innovative Conferences and Communications* jusqu'en 2015. Un processus d'évaluation mené par la planificatrice d'évènements et par les membres du comité organisateur a été mis en œuvre afin de fournir aux administrateurs et à tous les membres de l'ACITN une rétroaction de grande valeur issue de ces deux points de vue.

Normes relatives à la pratique

Les normes de pratique infirmière et de pratique technique de l'ACITN sont toujours accessibles en ligne sur notre site Web, à la rubrique Normes relatives à la pratique.

En 2006, les lignes directrices sur l'accès vasculaire du Réseau canadien des éducateurs (*Canadian Educators Network* ou CEN) ont été publiées dans le Journal de l'ACITN. Ces lignes directrices demeurent un élément pivot pour les infirmières praticiennes et les professionnels de la santé en néphrologie des différents centres et unités d'hémodialyse au pays. Les coordonnateurs en matière d'accès pour l'hémodialyse au Canada (*Canadian Hemodialysis Access Coordinator,* CHAC) et les éducateurs cliniques, ayant pris part au processus initial de rédaction, révisent à l'heure actuelle ces lignes directrices afin de les mettre à jour pour une nouvelle publication. Les normes de pratique technique sont également en cours de révision et seront mises à jour, au besoin, par le vice-président à la technologie, épaulé par un comité de technologues.

Prix d'excellence et bourses

Vous trouverez toute l'information nécessaire sur les bourses et les prix d'excellence décernés par l'ACITN sur le site Web et dans le Journal de l'ACITN. La date d'échéance pour déposer une mise en candidature est le 1er mai, de chaque année. Le comité révise en ce moment toutes les candidatures aux différents prix ainsi que les demandes de bourses. Le nom des lauréats et lauréates sera dévoilé au congrès annuel de 2012 qui aura lieu à Ottawa, en Ontario. Nous encourageons fortement tous les membres à passer en revue les détails concernant les prix et les demandes de bourse si vous poursuivez des projets d'études ou de recherche au sein de votre unité ou de votre programme de néphrologie.

Comité des mises en candidature

Cette année, la date limite pour l'appel des mises en candidature était le 15 mai 2012. Une demande de prolongation pour les postes de vice-président pour l'Ontario et de président élu a été déposée, étant donné qu'aucun candidat ne s'est manifesté à la date d'échéance initiale. Le comité des mises en candidature a révisé les candidatures reçues et le nouveau CA sera annoncé au congrès annuel qui aura lieu à Ottawa, en Ontario.

Association des infirmières et infirmiers du Canada (AIIC)

Le nombre d'infirmières et d'infirmiers agréés en néphrologie ne cesse d'augmenter d'année en année. Plus de 1 191 infirmières et infirmiers sont maintenant agréés en soins infirmiers en néphrologie au Canada et ont obtenu le titre réservé de « CNéph(C) ».

Nous tenons à féliciter toutes les infirmières et tous les infirmiers qui planifient de passer l'examen d'agrément. L'Association encourage ceux et celles qui répondent aux critères d'agrément de passer l'examen de l'ACII. L'agrément professionnel témoigne de votre engagement dans la profession en néphrologie et il peut être très gratifiant, tant sur le plan personnel que sur le plan professionnel. Des séances de préparation à l'examen d'agrément de l'ACII sont offertes sous forme d'ateliers avant la tenue du congrès annuel. Pour plus d'information à ce sujet, veuillez consulter le site Web de l'ACITN ou rendez-vous à **www.cna-aiic.ca**.

En tant que présidente sortante, je dois assumer entre autres le rôle de

représentante de l'ACITN à l'ACII. C'est un honneur et un privilège de participer aux discussions avec d'autres directeurs et directrices de services infirmiers au Canada et d'agir comme votre porte-parole à ces rencontres.

Journée annuelle des professionnels de la santé en néphrologie

La Journée annuelle des professionnels de la santé en néphrologie aura lieu le 12 septembre 2012. Il s'agit d'une activité annuelle qui permet de reconnaître et de souligner les efforts déployés par les infirmières, les technologues, les pharmaciens, les diététistes et les travailleurs sociaux en néphrologie et de célébrer leur travail exceptionnel auprès des patients atteints de néphropathie. Faites la promotion de cette Journée dans vos unités respectives. N'oubliez pas de partager vos expériences avec les membres de l'ACITN, en envoyant une courte description des activités prévues à l'horaire dans votre unité pour souligner cette merveilleuse journée. Faites-nous parvenir aussi des photos à : cannt@cannt.ca.

Congrès annuel de 2012, du 25 au 27 octobre, à Ottawa, en Ontario

Le comité organisateur du congrès annuel de 2012 est à pied d'œuvre pour l'organisation de ce congrès. La planification commence habituellement 18 mois avant la tenue du congrès et requiert l'engagement et le dévouement de plusieurs personnes. La planification inclut notamment des rencontres en personne, des téléconférences et de nombreux courriels avec les membres du comité organisateur, la planificatrice d'évènements et la présidente sortante de l'ACITN. Cette année, le thème choisi est « **Milieux d'excellence** ». Le congrès aura lieu du jeudi 25 octobre au samedi 27 octobre 2012. La traduction en français sera fournie.

Le CA encourage toutes les personnes qui présenteront une affiche scientifique ou une communication orale au congrès annuel d'envisager la possibilité d'en rédiger un manuscrit pour publication dans le Journal de l'ACITN. Si vous soumettez un manuscrit avant la tenue du congrès, vous serez admissible au prix d'excellence remis pour le meilleur manuscrit. Pour plus d'information sur les règles à suivre pour rédiger un résumé ou créer une affiche ou une communication orale, veuillez consulter notre site Web à la rubrique Éducation.

Cette année, l'organisation a fait l'objet d'un certain nombre de changements organisationnels. Deux départs sont prévus en 2012 et ont été annoncés lors de l'assemblée générale annuelle de 2011. Il s'agit de Debbie Maure, adjointe administrative, et de Gillian Brunier, rédactrice en chef du Journal de l'ACITN. Je suis tout à fait ravie que deux ex-présidentes de l'ACITN se partagent les responsabilités de corédactrices en chef : Alison Thomas et Janet Baker. Alison et Janet ont pris la relève de Gillian au printemps, cette année. Le CA explore en ce moment de nouvelles possibilités d'affaires pour le poste d'adjointe administrative. Le vide laissé par le départ de Debbie Maure est immense. Par conséquent, la planification de son remplacement exige un examen minutieux des candidatures par rapport aux besoins et aux attentes.

Pour conclure, au nom des membres du CA et de l'ACITN, je profite de cette occasion pour remercier très sincèrement Debbie Maure et Gillian Brunier pour le dévouement, l'expertise, l'engagement et la sagesse dont elles ont fait preuve durant leur mandat respectif. Debbie et Gillian ont œuvré au sein de l'Association pendant plus de 10 années. Nous désirons leur exprimer notre plus profonde gratitude pour toutes ces années et leur souhaitons beaucoup de bonheur et un succès durable dans leurs nouveaux projets.

Partnering with our American neighbours

Colleen Wile, RN, BScN, CNeph(C), CANNT President-Elect

CANNT and the American Nephrology Nurses Association (ANNA) have a reciprocal agreement that sees the president-elect from each organization attend the other's annual conference. Every fall ANNA's president-elect attends our annual conference and, in turn, CANNT's president-elect attends ANNA's annual spring conference. This provides a great opportunity for both organizations to connect and share common concerns facing nephrology nurses in these trying times of economic uncertainty. This spring I had the privilege to represent CANNT at the 43rd ANNA National Symposium in Orlando, Florida, from April 29–May 2, 2012. It was a wonderful opportunity to network with more than 1,000 colleagues from the USA, Canada and other parts of the world. ANNA's membership base totals over 12,000 registered nurses and other health care professionals at all levels of practice.

The format of their spring conference is very similar to what we would typically see at our national symposium. There are keynote speakers, concurrent sessions, and vendor exhibits—as well as an exhibitor theatre where individual vendors are allotted time during the exhibit hours to host a short presentation about their products, provide product training, or host an information session. Most sessions in the exhibitor theatre are limited to 20-minute timeframes. One of the keynote addresses presented was by Kathy B. Dempsey, CSP, and was entitled: "Shed or You're Dead—How to Stay Alive & Thrive in the Midst of Health Care Change!" This was an interactive session that was packed with practical strategies to help us SHED old ideas and perceptions in order to allow us to move forward with the demands of the health care changes we are all facing. Concurrent sessions were held on topics related to hemodialysis, peritoneal dialysis, transplantation, chronic kidney disease, stress management and much more. There truly was something for everyone.

As is the case with CANNT, ANNA hosts an evening of entertainment. This year it was an outdoor dance party around the pools of the resort—an evening enjoyed by all who attended. Nothing beats having the opportunity to have a refreshment break sitting around a pool with 700 of your closest friends, catching up and listening or dancing to great music. During the Nephrology Nurse Recognition Luncheon on May 1, Glenda Payne, of Duncanville, TX, assumed the position of the 2012–2013 ANNA President. Ms. Payne shared her vision for ANNA for the upcoming year and challenged ANNA members to "make a difference" by working together to move ANNA forward.

Also during the conference, ANNA presented 59 awards totalling $104,053. These awards provide huge opportunities for ANNA members to obtain funding for education or research. CANNT also presents awards and bursaries during our own national conference—we offer excellence in practice awards and several bursaries to CANNT members who are pursuing further education and/or doing research. This is a great opportunity for all CANNT members and further details regarding these awards and bursaries are found on CANNT's website **www.cannt.ca**.

Attending a national conference is a great opportunity for you to accelerate your professional growth, while at the same time strengthening your practice as nephrology nurses and technologists. Join your colleagues from across Canada, as we meet together at CANNT's National Conference in Ottawa in October 2012. The theme of this year's conference is "Environments of Excellence". Hope to see you in Ottawa from October 25–27!

Self-management support for peritoneal dialysis patients

By Mari Sarian, RN, DESS, MScN, Diane Brault, RN, MEd, CMSN(C), and Nathalie Perreault, RN, BScN

Abstract

The increasing prevalence of chronic illnesses and kidney disease, in particular, makes it necessary to adopt new approaches towards their management (Wagner, 1998). Evidence suggests that promoting self-management improves the health status of peritoneal dialysis (PD) patients, as they manage upwards of 90% of their own care. Patients who are unable to self-manage suffer from various complications. This project proposes an intervention aimed at improving self-management skills among PD patients.

Goal: *To promote self-management in peritoneal dialysis patients. This is achieved through the following objectives: (a) develop an algorithm that can improve patients' ability to solve the specific problem of fluid balance maintenance, (b) develop an educational session for patients on how to use the algorithm, and (c) develop an implementation strategy in collaboration with the PD nurse.*

Method and results: *Three measures evaluate the effectiveness of the intervention. First, a telephone call log shows that participating patients call the clinic less to inquire about fluid balance maintenance. Next, a pre- and post-intervention knowledge test measures definite knowledge increase. Finally, a Patient Satisfaction Questionnaire reveals overall satisfaction with the intervention.*

Conclusion: *This project, which proved beneficial to our patient population, could be duplicated in other clinics. The algorithm "How do I choose a dialysis bag" and the slides of the educational sessions can be shared with PD nurses across the country for the benefit of PD patients.*

Key words: chronic care model, self-management support, patient education, fluid balance, fluid overload, and peritoneal dialysis

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Introduction

The increasing prevalence of chronic illness, and kidney disease, in particular, makes it necessary to adopt new approaches towards their management (Wagner, 1998; World Health Organization, 2002). Because patients and their families are often expected to manage complex treatment regimens at home, one recommended approach is to place an emphasis on self-management (Accreditation Canada, 2009; Ryan, 2009; Wilkinson & Whitehead, 2009). In the case of peritoneal dialysis, patients manage upwards of 90% of their care (Hall et al., 2004), and their survival depends on them performing their dialysis procedure, taking their medications, following diet and fluid restrictions, and managing co-morbid conditions (Curtin, Johnson, & Schatell, 2004). Patients who are able to self-manage their symptoms maintain an optimal level of health. However, the ability to self-manage varies among individuals. Therefore, there is a need to identify and support patients who are limited in their capacity to self-manage (Alt & Schatell, 2008; Hall et al., 2004). This project will propose an intervention, using a problem-solving algorithm for the improvement of self-management skills among peritoneal dialysis patients.

Problem

Peritoneal dialysis is one form of renal replacement therapy that allows for the survival of 3,888 Canadians who have kidney failure (Canadian Institute for Health Information, 2009). In continuous ambulatory peritoneal dialysis (CAPD), which is one type of peritoneal dialysis, the patient performs four to five dialysis exchanges per day in order to eliminate waste products and maintain the balance between the intake and the output of water and electrolytes from the body. Therefore, it is crucial that, each day, patients determine the amount of water that needs to be removed from their bodies in order to maintain their fluid balance. Next, they choose the appropriate dialysis bag from the three standard concentrations of the osmotic agent that are available. The osmotic gradient, the difference in osmolarity between the patient's blood and the dialysis solution, causes the water to move from the blood to the dialysate-filled peritoneal space. The higher the concentration of the dialysis solution, the more fluid is removed from the body.

Choosing the right concentration for each exchange is a challenge because it requires (a) careful consideration of measured parameters such as blood pressure and body weight, and (b) interpretation of symptoms such as the presence of peripheral edema and shortness of breath. Currently, whenever patients are unable to choose, they call a support nurse at the peritoneal dialysis clinic. Nursing staff have noted two important trends in the calls of clients. The first is that one-third of the patients find

it difficult to determine how much fluid to remove, and the second is that these patients often call the clinic for help regarding problems that they have already been taught how to solve. An intervention designed to increase patients' fluid management problem-solving skills was clearly needed in order to improve patient self-management.

Literature review

A recurring theme in the medical literature is the importance for peritoneal dialysis patients to achieve optimal fluid balance. Indeed, fluid excess increases cardiac load and causes hypertension, both of which are critical risk factors for cardiovascular disease (Chazot, 2009; Chen, Lin, Wu, Chen, & Yeh, 2009; Nakayama, 2006). Fluid depletion, on the other hand, induces hypotension, which in turn engenders the loss of residual renal function (Crepaldi et al., 2009). Of the two imbalances however, fluid excess is associated with worse outcomes (Engels & Davies, 2007). This concept of fluid balance is one of the most difficult concepts for patients to understand (Baillod, 1995), and research demonstrates that peritoneal dialysis patients have difficulty controlling their fluid balance (Cocchi et al., 1999; Mujais et al., 2000). In fact, 25% of these patients have symptomatic fluid overload. It is not surprising, then, that cardiovascular disease is the leading cause of death in peritoneal dialysis patients, accounting for 41% of all mortality (United States Renal Data System database, 2008).

National Kidney Foundation Guidelines (2006) consider interventions that optimize volume status to be central to the management of peritoneal dialysis patients. Indeed, an improved fluid status not only reduces the chance of cardiovascular mortality (Asci et al., 2006), but is also associated with improvement in nutritional status (Cheng, Tang, & Wang, 2005). As those interventions must be carried out by the patient/family, it becomes fundamental that health care professionals provide support for self-management by empowering patients and making them active participants in self-care (Tsay & Hung, 2004; Mason, Khunti, Stone, Farooqi, & Carr, 2008).

Curtin and Mapes (2003) envision self-management as "involving an individual's efforts to advance optimal health, prevent illness, recognize symptoms as early as possible, and cope with or manage chronic conditions". Skills needed for self-management are identified by Lorig et al. (2000), as follows: problem solving, decision-making, finding and using resources, forming partnerships with health care professionals and taking action. One problem-solving skill required by peritoneal dialysis patients is the selection of the proper dialysis solution concentration to achieve optimal fluid balance. Teaching patients how and why to achieve optimal fluid balance and providing the tools they need to succeed is essential.

Nurses play a critical role in helping patients acquire the necessary skills and knowledge to manage their chronic condition (Su, Lu, Chen, & Wang, 2009; Wilson, Kendall, & Brooks, 2006). Nurses present ideas and offer solutions to patients. However, imparting knowledge alone does not mean that self-management behaviour will necessarily follow (Tsay & Healstead, 2002). In clinical practice, nurses need to help patients develop skills for independent problem solving (Bernardini, Price, & Figueiredo, 2006) and foster rational decision-making procedures (Anderson, Fitzgerald, Funnell, & Marrero, 2000). The problem-solving process requires that when the patient is confronted with a new situation, he or she must first recognize the situation as problematic, have some basic comprehension of the nature of the problem, know of solution options, take the appropriate action, and evaluate the solution (Hall et al., 2004; Suter & Newton Suter, 2008). Thus, teaching patients the problem-solving process allows them to be independent in the future. This self-management education also provides techniques such as algorithms to help patients make decisions and take appropriate actions, as they encounter changes in circumstances (Bodenheimer, Lorig, Holman, & Grumbach, 2002). While most of the teaching can be done with groups of patients, the interventions need to be tailored to individual patients.

Project goal and objectives

The goal of this project was to promote self-management in peritoneal dialysis patients. This was achieved through the following objectives: (a) develop an algorithm that can improve patients' ability to solve the specific problem of fluid balance and maintenance; (b) develop an educational session for patients on how to use the algorithm; and (c) develop an implementation strategy in collaboration with the peritoneal dialysis nurse.

Intervention design

Development of the algorithm

The algorithm (Appendix 1) was developed to guide patients in the independent assessment of volume status and the subsequent choice of dialysis bag concentration. Patients who use this algorithm are prompted to take into consideration two objective measurements (weight and blood pressure) and symptoms indicative of fluid overload (swelling, shortness of breath) or dehydration (dizziness, cramps). They can then use the combined information to direct the necessary actions (the choice of bag strength, the limitation or increase of water intake, etc.). This algorithm contains information indicating the moment at which it becomes necessary to call for help; such information is important because the recognition of worsening symptoms and the need to seek help could avert a hospital admission (Wright et al., 2003). The design of the algorithm is centred on the state of optimal fluid balance, a state where the patient experiences no unpleasant symptoms and his weight and blood pressure are "as usual." States of positive and negative fluid balances are set respectively above and below the optimal fluid state. In addition, three different colour schemes help to differentiate between each type of fluid status. The algorithm makes use of clearly illustrative pictographs and uses plain language.

Education session development

The key concepts were presented in the following order: a) optimal fluid balance, b) fluid overload, c) dehydration, and d) fluid overload and heart failure. Microsoft PowerPoint presentations were used to display the information and present case studies. These scenarios stimulate problem-solving ability because they require learners to identify problems and choose appropriate solutions, in the same way that they would do at home (Hall et al., 2004).

Implementation of one-hour small group educational sessions

The pre-intervention knowledge test was the first item on the agenda, followed by the teaching. Slides were projected onto a screen, case studies were discussed, and the algorithm was explained. The patients received a paper copy of the algorithm. As family members were invited to attend, three patients came accompanied by their spouse. The small group format was preferred because it had the potential to (a) provide social support, (b) validate the patient's own experience, and (c) provide social models for solving common self-management problems (Wilson, 1997). The amount of disclosure a patient was willing to share was strictly respected.

Review of education material, in individual sessions

During these individual sessions, the content of the education was reviewed and it was tailored to the patient's individual problems, learning style, and learning speed. In support of this approach, Wilson (1997) writes that tailoring the education to the learner is more likely to be effective in changing patient behaviour.

Evaluation

Design

Three evaluation tools, administered pre- and post-intervention, allowed for the collection of quantitative and qualitative data.

Participants

Ten patients participated in the teaching sessions and their selection was based on the nurses' assessment of their need for problem-solving support. The collection of the demographic data, statements of self-rated health, and illness characteristics at the start of the intervention allowed the project coordinator to have a better understanding of the participants, of the availability of social support, and of the co-morbidities they suffered. This, in turn, allowed for the tailoring of the intervention to individual differences. The age range of the patients was between 32 and 79 years old at the time of the intervention, and most participants spoke either French or English. This population, which was ethnically diverse, consisted of four men and six women. Half of the participants were married, while the remaining five were single, widowed, or divorced. Five patients were retired, four led active professional lives, and one was looking for employment. Table 1 summarizes patients' health and illness characteristics:

Measures

Pre- and post-intervention telephone log. This measure was created by the project coordinator in response to the problem initially described by the peritoneal dialysis nurse, whereby patients often call the clinic for help relating to the management of their fluid balance. The telephone log allowed every call to be documented, including information about the date, the caller, and the topic of the call.

Pre- and post-intervention knowledge test. In their systematic review of educational interventions in kidney disease, Mason, Khunti, Stone, Farooqi and Carr (2008) report the lack of appropriate validated questionnaires for use in these populations. In the case of this intervention, the knowledge test was developed by the project coordinator in order to measure an increase in patient knowledge related to restoring or

Table 1: Participants' health and illness characteristics

Variable	Participant n (%)
Self-rated health	
Poor	2 (20)
Fair	3 (30)
Good	4 (40)
Very good/excellent	1 (10)
Primary diagnosis (i.e., cause of renal failure)	
Diabetes	2 (20)
Vascular disease	1 (10)
Glomerulonephritis	2 (20)
Autoimmune Disease	2 (20)
Polycystic Kidney Disease 1 (10)	
Unknown	2 (20)
Length of time on peritoneal dialysis	
Less than a year	2 (20)
Between 1 year and 2 years	4 (40)
Between 2 years and 4 years	2 (20)
Longer than 4 years	2 (20)
Co-morbid conditions suffered by participants	
Hypertension	5
Diabetes	4
Chronic Pain (knee pain)	3
Heart Problems (CAD, CHF)	2
Lung disease (asthma)	1
Cancer	1
Other	4
Burden of co-morbid conditions	
Participant with no comorbidity	3 (30)
Participant with one or two comorbidities	2 (20)
Participant with three to four comorbidities	5 (50)

maintaining a state of optimal fluid balance. The test was composed of 15 questions in total. The first and last questions were open-ended. The first open-ended question explored patients' understanding of the concept of target weight, which is the weight of the patient when his body is at optimal fluid status. The last open-ended question probed if they knew when it was important to call the clinic as soon as possible. The remaining questions were closed-ended, offering the participant two or three alternative responses from which they were required to choose the correct answer.

Patient satisfaction questionnaire. This questionnaire used predominantly closed-ended questions. Six questions focused on the ease of use, utility, and helpfulness of the algorithm, and five questions centred on the evaluation of the education session. Two open-ended questions explored ideas for future workshops and requested any additional comments. The closed-ended questions were structured as four–point, Likert-type response scales where a score of zero was attributed to "very poor" and four to "very good". Lastly, the patient was asked to give an overall evaluation of the session using a scale of one to five.

Procedures

Pre- and post-intervention telephone log. A log was kept by the two nurses as they answered calls from patients for a period of two weeks pre- and post-intervention. On the log template, the nurses noted the problem each patient was calling about.

Pre- and post-intervention knowledge test. In respect of ethical guidelines, the patients were told that they could decline taking the test yet still participate in the teaching session. They were also informed that this testing process was necessary in order to determine the efficacy of the teaching. All agreed to participate. When family members accompanied the patients, they were allowed to help with the answers. The post-intervention knowledge test could not be completed immediately after the teaching session because of time constraints and patient fatigue. Therefore, it was completed during individual patient encounters, two weeks after the education session had taken place.

Patient satisfaction questionnaire. The data concerning this questionnaire were collected during the individual patient meetings. Closed-ended questions from the knowledge test and the satisfaction questionnaire provided quantitative data, which were analyzed using descriptive statistics; open-ended questions, allowed the participants to respond in their own words, thus providing qualitative data for content analysis. Additional comments made by patients as they were answering closed-ended questions were noted on the questionnaire.

Once all education sessions and interviews had taken place, a copy of the algorithm and a thank-you letter was mailed to each patient who participated in the education sessions. Paper and electronic copies of the teaching material were given to the peritoneal dialysis nurses to be used at their discretion.

Results

This project targeted patients who were struggling with balancing their fluid status and who would often call the clinic for advice regarding the choice of the dialysis bag.

The intended outcomes of the project were to improve these patients' problem-solving skills. As indicated in the literature, this allows for better control of hypertension and improved survival. Intervention outcomes that were measured included: a) the number of phone calls to the nurses—it was hoped that there would be a 75% decrease in the number of phone calls originating from patients who participated in the education session; b) patient knowledge increase—it was expected that the minimum score for the post-intervention test would be 80% and that all patients would get better scores in the post-test; and c) patient satisfaction—it was hoped that 50% of patients would rate the intervention as excellent and that no more than 10% would be dissatisfied. Therefore, sessions and subsequent interviews were carefully planned with the intent to maximize knowledge uptake and elicit patient satisfaction.

Pre- and post-intervention telephone log. Comparison of the pre/post logs allowed for the evaluation of the impact of the intervention on the frequency of calls about fluid balance. The pre-intervention telephone log recorded 39 calls in a period of 10 days. Five main categories of recurrent problems could be identified in the records of those calls. These were, in order of frequency: peritonitis; medications, administrative issues; fluid balance; drainage problems; and "other" which included problems as diverse as hernia, exit site infection, blood tinged drained dialysate, and help with the technology involved with this type of dialysis. The post-intervention log showed results similar to the pre-intervention log in some aspects such as total number of calls, calls for administrative issues, and calls for medication issues. There were differences, however, as there was an increase in the number of calls for dialysis bag choice (this unexpected difference will be explained in the discussion section of this article).

Pre- and post-intervention knowledge test. Answers to the first open-ended question, "What is target weight?" were analyzed to determine whether the patient showed understanding of the concept of target weight. In the pre-test, only one participant had the correct answer. Examples of answers given to this question include: "It is my weight plus the dialysis solution," "It's after I drain," "It's before drinking," or "It's when I'm not too fat or too skinny." For the second open-ended question, "When is it important to call the clinic as soon as possible?" patients answered: "When I am not draining," "When the liquid is not clear," and "When there is blood in the drained solution."

In the post-intervention knowledge test, all patients attained a perfect score. They consistently explained "target weight" as "my weight when I have the right amount of water in my body", and they all understood the importance of calling the clinic when their "weight is higher than normal, but the blood pressure is low".

Patient satisfaction questionnaire. The overall score on the questionnaire was 93%. Two of the participants did not think it was useful to have this education session when they first started dialysis, stating that it would be a case of information overload. When solicited for topics of future education sessions, six patients gave suggestions. Of these, five themes emerged: transplant information, signs and treatment of peritonitis, support groups to share insight on living with a catheter, ideal weight from the dietitian's perspective (based on height and weight), and loss of appetite.

Patients expressed their appreciation of the teaching method and usefulness of the algorithm. The following two statements are indicative of knowledge uptake:

"Before this session, I didn't know when I had to use the 4.5% bag," and

"Before this session, I didn't think much before getting a dialysis bag."

A change in behaviour was clearly evident when Patient 2 said, "This teaching helped me a lot last Sunday when I had problems with fluid overload, I managed it on my own."

Discussion

As part of the self-management of their illness, peritoneal dialysis patients need to choose the correct concentration of their dialysis bag, in order to keep their body in a balanced state of hydration. Failure to do so results either in over-hydration, which is related to hypertension, or dehydration, which leads to hypotension and reduction of residual renal function (Crepaldi et al., 2009). This concept of fluid balance is not easy to understand (Baillod, 1995). Hence, a number of patients needed additional help to master the problem-solving skills necessary to making the right choice of dialysis bag.

This project was designed within the framework of self-management support, an approach shown to improve the quality of the care for chronically ill patients (Bayliss et al., 2007). The focus of the intervention was the provision of an education session aimed at improving patients' problem-solving skills by means of the utilization of a decision support tool, with a diagram that will guide patients in their choice of dialysis bag. The planning phase of the intervention incorporated evaluation measures in order to show the efficacy (or lack thereof) of the project. Evaluation was an ongoing process throughout the project and by the end of the intervention, results indicated that patients appreciated this intervention that improved their understanding and maintenance of fluid balance. The following is an analysis of the outcomes and of the barriers and the supports that were encountered.

Pre- and post-intervention telephone call log. Analysis of the telephone call log indicated an unexpected rise in the number of calls about fluid balance. The tracing of each call to its caller, however, provided the much-needed explanation for this result. The five calls in the pre-intervention log came from two patients. Sadly, right before the initiation of this intervention, the patient who had placed three of those five calls was hospitalized for fluid overload and passed away. The importance of telephone support for peritoneal dialysis patients cannot be over-emphasized. Next, in the post-intervention log, three of the calls were from patients who did not receive the training, and the other five calls originated from a single patient—one who had just started on peritoneal dialysis. This analysis suggested that all patients would benefit from this intervention, even those who demonstrated a good understanding of fluid balance at some point in time.

Pre- and post-intervention knowledge test. The pre-intervention knowledge test showed a wide margin of inter-participant variation, which supports the legitimacy of the intervention design—likely because the group teaching was supplemented by an individual session that matched the patient's learning style and needs (Wilson, 1997). The increase of the mean score from 75% (pre-intervention) to 100% (post-intervention) translates into 33% overall improvement rate. The results showed that patients, in general, were better informed about the signs and symptoms of fluid overload, as opposed to dehydration. This can be explained by the fact that these patients suffer to a large extent from fluid overload (Chazot, 2009; Engels & Davies, 2007).

Patient satisfaction questionnaire. The results of the questionnaire, where all participants expressed a high level of satisfaction, can be ascribed to the educational approach and overall design of the intervention. When solicited for topics of future education sessions, six patients gave suggestions. Of these, five themes emerged: transplant information, signs and treatment of peritonitis, support groups to share insight on living with a catheter, ideal weight from the dietician's perspective (based on height and weight), and loss of appetite.

The home interviews allowed the patients to disclose personal information, ask additional questions, and discuss important comorbid conditions. In support of this approach, Polit and Beck (2004) describe that in-home interviews give the interviewer the opportunity to observe the participant's world. The value of getting to know and understand what each patient is confronting in their larger life context has been widely recognized (McWilliam, 2009). That "larger life" may be filled with feelings of anxiety and isolation, which overwhelm the patient and undermine his self-management skills (Mead, Andres, Ramos, Siegel, & Regenstein, 2010). Moreover, the home visit allowed the participation of the patient's spouse in the session.

Impact of the intervention on the organization. Both dialysis nurses showed great interest and took turns in participating in three out of the six sessions.

Supports. All stakeholders showed tremendous support: two nephrologists gave their valuable input in designing the algorithm and validating the teaching material, the nutritionist showed interest and was present at one session, two hemodialysis patients helped test the questionnaires, and the nurse manager provided financial support by covering the fees of the medical illustrator and the cost of printing the algorithm. As for the peritoneal dialysis nurses, their support was unwavering throughout the project.

Barriers. Barriers encountered during this project were of a logistic nature. For example, finding a free conference room not too far from the dialysis clinic was always a challenge. Home visits for the interviews required driving distances ranging between 10 and 50 kilometres to reach some patients' homes.

The scope of this intervention made it necessary to limit the number of patients to those who were deemed most in need for the educational session. To this effect, a purposive sampling method was used, based on the judgement of the peritoneal dialysis nurse. It is noteworthy that the results of the pre- and post-intervention analysis of the telephone log showed that three patients who had not been targeted by the intervention revealed that they had the same need as those who received the education. Therefore, it was felt that a larger number of patients could benefit from a similar intervention.

Recommendations. One recommendation stems from the fact that complex information needs to be repeated in order to be assimilated. Therefore, the education sessions should be repeated by the peritoneal dialysis nurse whenever necessary.

A second recommendation is based on the patients' suggestions: regular teaching sessions on different topics should become part of the routine of the clinic and would enhance sociability between patients. In fact, self-management support includes planning peer interactions (Schaefer, Miller, Goldstein, & Simmons, 2009).

Conclusion

This intervention was based on a real problem, with which our patients were struggling. The literature search confirmed this problem to be widespread and to have serious consequences. Self-management support, an essential element of the Chronic Care Model, was deemed the best approach to guide the intervention because the changes elicited through this approach have the potential to be self-sustaining. For example, teaching the patient to self-manage one problem forms the basis of teaching for how to self-manage a second or third problem. It is known that providing ongoing support to patients is essential (Warmington & Baxter, 1996). Therefore, this intervention should only be seen as a start to providing self-management support, and not as an end in itself. As a start, this project was a good one for the following reasons: (a) the education session proved to be beneficial for the patients in terms of both knowledge uptake and behavioural change, (b) the entire health care team became involved in the project (providing informational, instrumental, or financial support), and (c) institution-wide resources were mobilized to produce patient education material. While self-management support has often been advocated by nephrology nurses (Alt & Schatell, 2008) as a valid approach to patient care, this successful intervention takes a small step towards proving them right.

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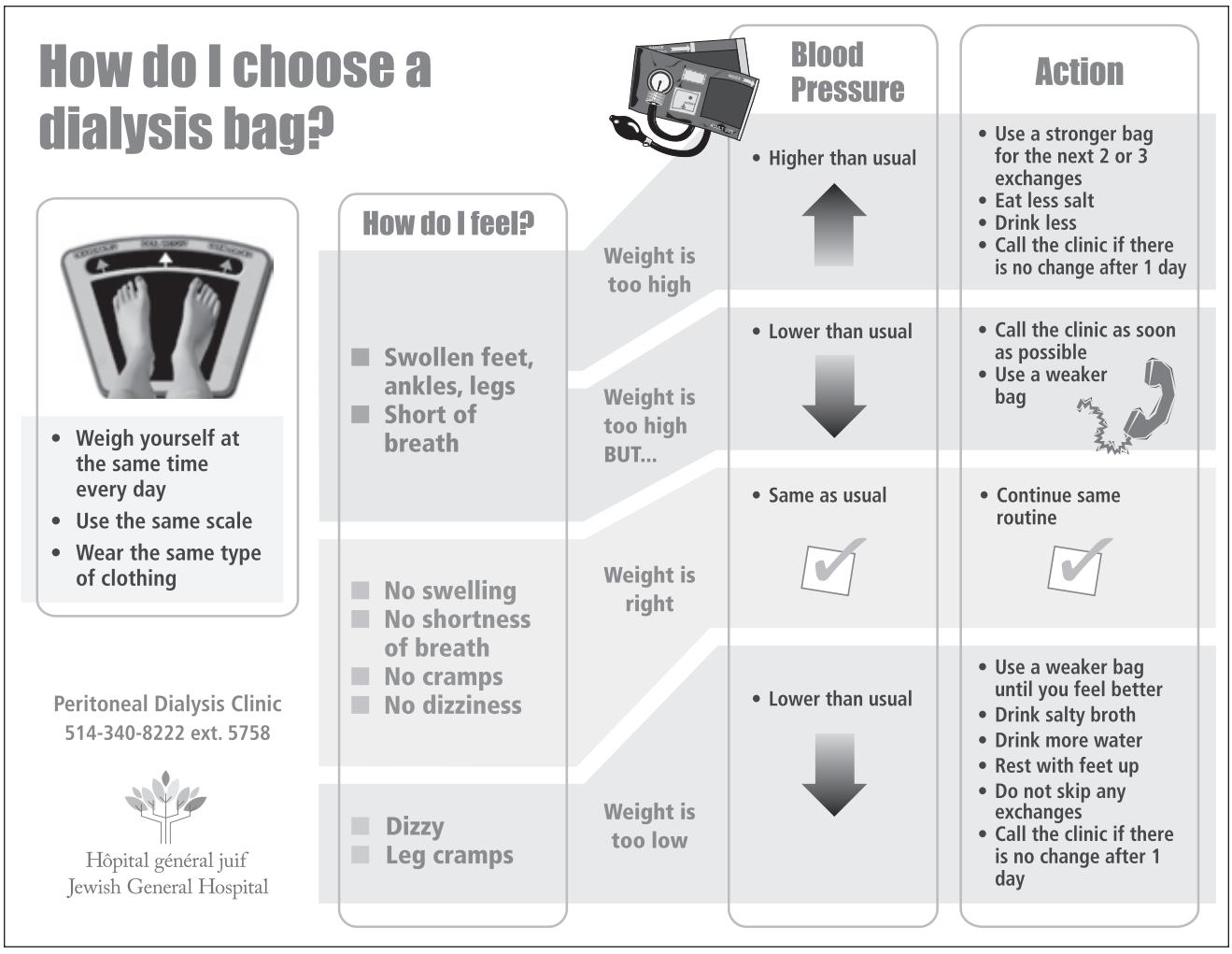

Appendix 1: Algorithm

The community health promotion plan: A CKD prevention and management strategy

By Lisa Sinasac, RN, BScN, MSN

Abstract

Chronic kidney disease (CKD) is one of the top 10 causes of death. CKD is often caused by diabetes mellitus (DM) and hypertension (HTN). Both DM Type 2 and HTN are treatable and preventable and, yet, the population of individuals diagnosed with these two diseases is increasing. Millions of dollars are spent every year providing dialysis treatments for patients with CKD. This money only accounts for dialysis and does not include the millions spent on complications such as infections, medications, tests and procedures. The burden to society is tremendous and the quality of life for these people is often poor.

Health promotion and early detection is a key factor in reducing the risk for and incidence of DM and HTN, thus reducing the incidence of CKD. Three-quarters of health problems are preventable. Educating and providing the community with resources about diet, exercise, regular physical examinations, medication, and smoking cessation can empower the population with the necessary knowledge to help prevent these diseases. Health promotion and access to health promotion activities can, therefore, provide an active and healthier life.

Key words: chronic kidney disease, diabetes, hypertension, dialysis, health promotion

Chronic kidney disease (CKD) is a chronic condition resulting in the gradual loss of kidney function. The two leading causes of CKD are diabetes mellitus (DM) and hypertension (HTN) (Almaguer et al., 2005). Stage 5 CKD (also known as end stage) is effectively treated with renal replacement therapies such as hemodialysis, peritoneal dialysis, and kidney transplantation. CKD has become a global health issue with projections of a dramatic increase in its prevalence and incidence. More than 1,000,000 people worldwide are receiving renal replacement therapy with an estimated global treatment cost of 1.1 trillion U.S. dollars per year (Almaguer et al., 2005).

Canada has an estimated two million people living with or at risk for developing CKD (Kidney Foundation of Canada, 2009). In 2015, the number of Canadians who will be relying on renal replacement therapy is estimated at 65,000 (Kidney Foundation of Canada, 2009). Every year, there are approximately 2,000 additional people who start dialysis in Canada (Kidney Foundation of Canada, 2009). This is an indication that national projections of prevalence and incidence mirror global projections.

Currently, there are 500,000 Ontarians living with or at risk for developing CKD who may require renal replacement treatment in the future (Kidney Foundation of Canada, 2009). Ontario alone has witnessed a 112% increase in the incidence of CKD since 1996 (Kidney Foundation of Canada, 2009). In Windsor Essex County, there are currently 402 clients followed in the Windsor Regional Renal Program and 240 clients receiving renal replacement therapy (personal knowledge, 2012). This is complicated by high rates of DM and HTN in the region. CKD can be challenging in many respects—challenging not only for those living with CKD and their families, but also challenging health care resources in Southwestern Ontario. This article will discuss the development and evaluation of a health promotion plan designed to target the prevention and treatment of CKD through healthy living strategies and ongoing follow-up in Southwestern Ontario.

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Why is a health promotion plan needed?

There are many benefits related to the early detection and management of CKD. As the leading causes of CKD, improving the management of DM and HTN can significantly prevent the development of CKD. Furthermore, early identification and proper treatment for CKD can slow the progression of the disease. However, for those clients already living with CKD in Southwestern Ontario, the burden of disease is great and current health care practices are insufficient in the prevention and treatment of CKD.

Quality of life

For those people receiving renal replacement therapy, their quality of life is affected by a number of factors. Clients often report that they spend 12 to 20 hours per week travelling for and undergoing their dialysis treatments. Many clients often feel unproductive on their dialysis days due to associated symptoms both before and after treatment (personal knowledge, 2010).

In clients living with CKD, the reduced quality of life permeates beyond their health status. It also greatly restricts their ability to complete their activities of daily living. Many are unable to work and are forced to rely on disability and other benefits to survive. The loss of non-productive employees, as well as their wages and income, increases the loss of revenue to the region.

Access to health care

Due to the large geographic area of Windsor Essex County, access to health care can be very difficult for people living in rural settings. In fact, Southern Ontario has more than 100 "under-serviced" areas (Burke, 2009). It is also interesting to note that of all the nurses in Ontario, only four per cent work in rural areas (Burke, 2009). Because of barriers presented by geographic location, people will often not seek out health promotion opportunities, not accessing health care services until they have symptoms.

It may be too late at this point to prevent any further harm from CKD (Burke, 2009). If educational classes, resources or health care facilities are not locally available, then the likelihood of people scheduling or attending appointments is poor. Transportation is one of the biggest challenges for the CKD clients in rural areas (personal knowledge, 2010). There is no public transportation from rural areas for dialysis appointments, and private transportation is very expensive. Clients may skip treatments altogether in an effort to save money, or shorten their treatment time, which in time may lead to negative outcomes, and may even be dangerous (Kidney Foundation of Canada, 2009). Development of a health promotion plan that takes into consideration location and convenience to the client, even in rural areas, has the potential to be attended by more individuals, leading to increased success.

Financial burden

The Kidney Foundation of Canada estimates that Ontario spends approximately $600 million per year providing treatment for CKD clients (2009). This number does not include medications, hospitalizations, tests and procedures, or transportation. The burden to society is substantial. The need for payout of disability benefits, the loss of wages and income, and the problem of non-productive employees also increase the cost to a community. Considering the national projections for CKD and its associated financial costs, it is imperative that provincial health care systems employ a health promotion plan to target early detection and treatment of the disease.

Health promotion plans

The Health Promotion Model (HPM) is well suited for the development of a health promotion plan for people with CKD in Southern Ontario. As it is client-focused, the HPM considers the clients' values and beliefs in their own definition of health, empowering the client to set and reach their health goals. Viewing the client holistically, it considers their behavioral, situational, interpersonal, biological, and demographic characteristics, as well as their internal and external locus of control and cues (Galloway, 2003). There are several characteristics key to the success of a community health promotion plan aimed at CKD.

Self-actualization

The HPM uses self-actualization, which is based on the self-management theory. It recognizes that a client has a central role in their health promotion and disease management. The self-management principles involve: goal setting, verbal persuasion, tailoring messages to clients' readiness to change, self-monitoring, stimulus control, problem solving, social support, building self-confidence, addressing barriers, and positive reinforcement (National Kidney Foundation, 2006).

In order to achieve self-actualization and self-management, one must have gained empowerment. Empowerment is a client's ability to be responsible for their own life by having adequate knowledge to make rational decisions, implement their decisions, use resources appropriately, and evaluate the effectiveness of their choices. Evidence suggests that a client who is able to set their own goals, and identify and monitor them, has an increased chance of making life-style changes that they can maintain (Milat, O'Hara, & Develin, 2009).

Approaches to implementing the plan

Individual level

At an individual level, health screening for CKD and its risk factors can be carried out. This would include blood pressure and blood sugar measurements and renal lab work, followed by discussion regarding any history of DM or HTN. Setting up health screening in many different locations increases accessibility to the larger population. Utilizing health care resources in non-traditional locations such as schools, community centres, and drug stores will help maximize the outreach potential (Almaguer et al., 2005; Victorian Government, 2009). Screening centres such as these will help to identify people requiring specialized care to manage their conditions and prevent complications.

Once patients are referred to a nephrologist, education can begin with a multidisciplinary team approach through group classes and shared medical appointments (Hain, Calvin, & Simmons, 2009). Educational classes can be offered throughout the community with the help of local health care professionals using the community's facilities. The classes should discuss risk factors for CKD such as diabetes and hypertension, prevention and/or control strategies such as diet, exercise, medication, and the need for ongoing follow-up (Victorian Government, 2009). These classes should be advertised broadly and offered in various locations to maximize the number of people who are able to participate.

Collaboration with community agencies would be important to success in plan implementation. For example, making use of existing transportation systems may assist patients in attending health screening, clinic appointments, or dialysis treatments. Local gyms and schools may offer reduced or free educational sessions related to wellness activities such as exercise programs or basic health education. Work places and schools may also promote healthy lifestyles by encouraging physical activities such as biking to school or work or taking time to walk at lunch, making healthy food choices, and the importance of hygiene to health (Victorian Government, 2009). By making use of existing resources within a community, the education burden would be shared and the benefits to the CKD patients and the members of the community would be many.

Community level

It is also essential to include a population-based focus within the health promotion plan. According to the Victorian Government (2009), "The most effective disease prevention and health promotion strategies are those that address the individual, social and environmental determinants of health" (p. 7). Dr. Pender (Laureate Education Inc., 2005) explains that health promotion is important because 75% of health problems are preventable such as diabetes mellitus Type 2 and hypertension. Health promotion can promote longevity and increased activity level.

Dr. Pender (Laureate Education Inc., 2005) also explains that science, practice and policy work together to create a health promotion plan. Providing accessible programs through which community-based health care professionals can effectively treat their patients in a consistent manner that is effective in preventing CKD will be important to the success of a health promotion plan. Policies must be implemented and education given to all physicians that any patient with a serum creatinine > 133 umol/L should be referred to a nephrologist within six months (Almaguer et al., 2005).

Statistics, research and evidence-based practice provide a good foundation to pave the way for new public health policies. To begin the process of implementing strategies to meet the objectives, all available resources in a particular area and health status statistics would need to be assessed. Epidemiology studies should be researched, focus groups developed, and social marketing assessed (Almaguer et al., 2005; Moore, McGowan, Donato, Kollipara, & Roubideaux, 2009).

National Health Promotion Plan

The *Healthy People 2020* initiative (Office of Disease Prevention and Health Promotion, 2009) listed six standards of care for patients with CKD. These included:

1. Increase the proportion of persons with diabetes and chronic kidney disease who receive recommended medical treatment with angiotensin-converting enzyme (ACE) inhibitors or angiotensin II receptor blockers (ARBS).
2. Improve cardiovascular care in persons with chronic kidney disease.
3. Increase the percentage of hospital patients who incurred acute kidney injury who have follow-up renal evaluation arranged and carried out within six months post discharge.
4. Reduce the percentage of the U.S. population with chronic kidney disease.
5. Reduce the death rate among people with chronic kidney disease.
6. Increase the percentage of persons with chronic kidney disease who know they have impaired renal function.

The National Health Promotion Plan, therefore, focuses on the treatment and early detection of CKD. These objectives coincide with the Ontario Provincial Health Promotion Plan. Use of the Ontario Provincial Health Promotion Plan in CKD care provides the community of South Western Ontario with specific, evidence-based approaches to CKD prevention and management.

Ontario Provincial Health Promotion Plan

The Ontario government has developed a rural plan with goals to improve access to health care services, promote healthy living, and protect public health. These are outlined as follows:

1. The development of creative approaches to attract more health care professionals to rural areas
2. Increase in the number of community-based initiatives that improve health care services, through the Rural Economic Development (RED) funding program
3. Increased access to primary health care by enrolling more Ontarians in family health teams
4. Development of strategies for reducing tobacco use, preventing obesity and increasing physical activity (Government of Ontario, 2008).

Enactment of the health promotion plan has the potential to improve a client's quality of life through a delay in the need for dialysis and lower costs to the health care system (Kidney Foundation of Canada, 2009).

Evaluation

Whitehead (2003) describes health promotion evaluation as "assessing the capacity and/or performance of an intended action for health improvement, in terms of its *effectiveness* and *efficiency*… It is conducted for three overarching reasons: accountability, future program development and knowledge building" (p. 491). When process and outcome evaluation are used together, the program is monitored for health intervention changes, and for contributing factors that either assisted or hindered the desired changes (Whitehead, 2003).

To perform an evaluation of a health promotion program, Whitehead's (2003) model that uses the four Es (effectiveness, efficiency, efficacy, and equity) and incorporates qualitative and quantitative research and process and outcome evaluations can be followed. Measuring the program's effectiveness refers to assessing how well a program is meeting its objectives, whereas efficiency measures the success of the program. Review of the program's efficacy is used alongside effectiveness and efficiency, and may be measured quantitatively or qualitatively. Equity is assessed by the participants and measures the program's capacity (Whitehead, 2003). Pronk (2003) suggests using self-reports from participants and clinical or program administrative data in order to calculate the effectiveness of the program.

Quantitative and qualitative measures can be used both to assess actual outcomes data (quantitative) and perceived health benefits (qualitative). To assess quantitative measures, health care professionals could record and graph specific parameters such as serum creatinine levels, blood sugars, and blood pressures. Qualitative data are equally important because they supply us with the communities' concerns, opinions, and perspectives, rather than the health promoter's assumptions (Whitehead, 2003). Data can be obtained using interviews, questionnaires, windshield tours, focus groups, and lived experiences (Farquhar, Parker, Schulz, & Israel, 2006; Whitehead, 2003). Interviews and questionnaires can be designed for community participants and those involved in the community health promotion project. Farquhar et al. (2006) suggests that strengths, weaknesses, resources, challenges, suggestions, and rewards should be assessed in program evaluation.

Quantitative data could be collected from the community's health care facilities and might include documentation of serum creatinine levels, glucose and blood pressure measurements. It would also be informative to track the number of referrals made to nephrologists when creatinine levels of 133 umol/L or over were reported. Education to the primary care physician can be initiated at this point, as needed (Almaguer et al., 2005).

Qualitative data could be used to assess the situation in a more holistic manner. The participants' thoughts, feelings, and suggestions, along with those of the supporting staff would be used to assess the program's strengths and weaknesses all throughout the process, not just at program end. Data would be collected throughout using interviews, questionnaires and focus groups, and would ensure that all areas of the population are being addressed, including both residents of city and rural settings.

Sustaining the program

Sustaining the health promotion program long-term would involve engaging all of the stakeholders in the process and assessing the implementation, measurement, documentation, and monitoring of resources (Pronk, 2003). Leaders within the city and town councils, health care facilities, and other community leaders such as priests, teachers or volunteers could also be included in the ongoing maintenance of the program. It would also be best to choose leaders who represent different types and areas of the population, particularly if the population is culturally diverse.

Financing is important to sustaining the project. As CKD is one of the targeted diseases identified in the Healthy People 2020 document, lobbying for Federal Government funds may be an option. The use of not-for-profit organizations, such as the Kidney Foundation of Canada, can be beneficial in developing and providing population health education. As described earlier, making use of the local university would be an asset. Professors are often working on funded research projects. Partnering for data collection could prove mutually beneficial.

Conclusion

The HPM can assist in developing a health promotion plan targeting CKD. The plan needs to be developed using the resources and health care professionals available locally, while at the same time employing these strategies at both an individual level and with a population-based focus. The development of a strong evaluation plan is imperative for the success of a health promotion program. A solid evaluation plan will allow one to see what is working and what is not. Ongoing evaluation will allow for improvements throughout the process and will look at the program from many different perspectives, including the impact data and observations of the population and staff participants. Stakeholder feedback is required to assess the program holistically and to meet the needs of the entire community.

Health promotion and early detection are a key strategy that may reduce the risk of complications in people with DM and HTN, thus reducing the number of people with CKD. Three-quarters of health problems are preventable. Educating and providing the community with resources about diet, exercise, routine medical care, medication use, and smoking cessation can empower people with the knowledge to help fight and prevent these diseases. Health promotion and access to services may play a role in facilitating longevity and health.

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Contact hour: 2.0 hrs

Management of depression in hemodialysis patients

By Marisa Battistella, BSc Phm, PharmD, ACPR

Objectives

After reading this article, the reader will be able to:

- Understand the epidemiology of and methods of diagnosis of depression in ESRD patients
- Understand the risk factors associated with depression in ESRD patients, and its impact on patient outcomes
- Understand treatment options for depression in ESRD patients, both pharmacological and non-pharmacological.

Introduction

Depression is a common, under-recognized and under-treated problem in the end stage renal disease (ESRD) patient, and has been associated with increased morbidity and mortality. A very small number of patients are treated with antidepressant medications and/or nonpharmacological therapy. Reasons for low treatment rates include a lack of well-designed clinical trials in this population. Furthermore, patients on hemodialysis are twice as likely to die or require hospitalization within a year, as compared to those without depression (Hedayati et al., 2007). Therefore, the aim of this article is to provide a comprehensive review of the studies exploring diagnosis and management of depression in hemodialysis patients.

Epidemiology of depression

Depression is thought to be the most common psychological problem encountered in patients with ESRD (Finkelstein, 1999; Levy, 2009, Kimmel, Peterson, Weihs, Simmens, Alleyne, Cruz & Veis, 2000; Kimmel, 2000). While the prevalence of depression in the general population is 2% to 10%, approximately 20% to 30% of patients with ESRD suffer from depression with a range of 5% to 59% reported in the literature (Kessler et al., 2003). Although the reported incidence of depression in patients on dialysis varies widely, these differences have been attributed to the differing criteria and methodology used to diagnose depression (Finkelstein, 1999; Kimmel, 2000). Therefore, given this high prevalence of depression in dialysis patients, it is suggested that depression screening be integrated into routine patient care, as this will allow for better overall care of the patient.

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Screening for and diagnosis of depression

Screening can take place all along the spectrum of kidney disease; it can begin on initial presentation of the CKD patient in the pre-dialysis clinic, on initiation of dialysis and then every six months to a year thereafter (Hedayati et al., 2006).

Several studies have validated commonly used depression screening self-report questionnaires against DSM IV-based structured interviews among patients with CKD and ESRD (Hedayati, 2006; Hedayati, 2009; Watnick, 2005; Craven, 1988). See appendix 1 and 2 respectively for diagnosis of depression and the Beck Depression Inventory screening tool definition. There are a number of validated screening tools. However, one of the most common ones used in clinical practice is the Beck Depression Inventory (BDI). This is a 21-question survey completed by patients. Answers are scored on a 0 to 3 scale. A score of greater than 11 has a 90% specificity and sensitivity to diagnose depression in CKD patients. Furthermore, it should be noted that somatic symptoms such as fatigue, loss of energy, decreased appetite, sleep disturbances and difficulty concentrating that are suggestive of depression may be more commonly reported by ESRD patients, as these are typical complaints of dialysis patients (Sokyan, 2004; Abdel-Kader, 2009; Cukor, 2007; Kurella, 2005). Therefore, for a definitive diagnosis of depressive disorder based on DSM IV, either feelings of sadness (depressed mood) or loss of interest (anhedonia) must accompany these symptoms. If sadness or anhedonia are absent, consideration should be given to other causes such as dialysis inadequacy, poor nutritional status, cognitive dysfunction, dementia and/or exacerbation of other comorbid illnesses such as congestive heart failure. To help distinguish these traditional symptoms of depression from uremic symptoms, a structured interview should be performed to confirm a depressive disorder in patients who screen positive before treatment is considered. Alternatively, referral can be made to mental health professionals for further diagnosis. Finally, recognizing symptoms of suicidal intention in depressed patients is important in order to intervene in patients who may harm themselves or even others.

Table 1: Summary of Studies on Antidepressant Use in ESRD Patients						
Study	**Year**	**Population**	**Number of Patients**	**Intervention**	**Results**	**Comments**
Wuerth	2005	PD patients Observational Cohort Study	380 patients screened using BDI and 171 eligible for treatment but only 44 agreed for further assessment and 23 patients received treatment for 12 weeks	SSRIS: sertraline, paroxetine, citalopram Others: burpropion, nefazodone, nortriptylline	BDI Score at baseline: 17.4 ± 6.6 12 weeks: 8.4 ± 3.0	High level of refusal rate to participate 50% completed therapy—reason for failure to complete—side effects, acute medical illness Limitations: No control group Small numbers
Levy	1996	HD patients Pharmacokinetic and non randomized case series study	7 HD pts compared to 9 pts with normal renal function. Pts selected by referral 5 pts in each group completed therapy	Fluoxetine 20mg x 8 weeks Pharmacokinetic and efficacy study	No difference in side effect profile between groups Similar improvement in depression severity rating scales (> 25% reduction in HAMD-17 score and clinical evaluation)	Limitations: Very small numbers; Pharmacokinetics based on one dose Short duration No placebo arm
Koo	2005	HD patients Non-randomized case series	62 pts screened and 34 pts with BDI score > 18 received therapy 28 others without depression were control group	Paroxetine 10mg/day plus psychotherapy x 8 weeks	No major side effects with therapy Treatment group saw increase in albumin and BUN HDRS and SDS scores improved significantly	Limitations: Control group did not have depression Short duration Small numbers Combined therapy
Turk	2006	HD patients Open-label observational study	97 HD patients screened and 40 patients had depression score > 15 by BDI and were treated	Sertraline 50mg x 8 weeks	Significant improvement in QOL parameters: PCS and MCS No adverse events	Limitations: Short duration No control group Small numbers
Atalay	2010	PD patients Non-randomized	135 pts screened and 124 eligible for assessment by BDI and DSM-IV; 32 patients diagnosed as depressed by BDI > 17 received treatment compared to 25 non depressed patients received treatment	Sertraline 50mg/day for 12 weeks	No adverse events Improvement in HRQoL- PCS and MCS components all improved significantly. BDI score significantly improved (22.4 ± 6.5 to 15.7 ± 5.2)	Limitations: Small numbers Short duration No placebo group
Kalender	2007	All CKD pts Open-label observational study	141 patients: 26 patients with CKD on conservative management, 68 patients on HD, 47 patients on CAPD and 107 healthy controls were enrolled in the study BDI > 17 and depression based on SCID-CV offered treatment	Citalopram 20mg/day for 8 weeks	A total of 34 pts diagnosed with depression and all accepted treatment. BDI scores decreased significantly with treatment (45.8 ± 10.8 to 38.5 ± 11.3) No adverse effects reported	Limitations: Elderly were excluded No placebo group Short duration Small numbers

Risk factors associated with depression

In the Dialysis Outcomes and Practice Pattern Study (DOPPS), younger age, white race, female sex and longer duration of maintenance dialysis therapy were associated with a greater prevalence of physician-diagnosed depression (Lopes et al., 2002). In other studies of depression in patients with ESRD, there also appears to be a relationship between various comorbid conditions, such as diabetes, coronary heart disease, cerebrovascular disease, peripheral vascular disease, lung disease and hypoalbuminemia and depressive symptoms (Hedayati, 2006; Lopes, 2002; Hedayati, 2005; Watnick, 2003; Fischer, 2012). Therefore, patients with these co-morbidities and risk factors should be screened for depression.

Impact of depression on outcomes

Depression in dialysis patients has been associated with increased morbidity and mortality (Hedayati et al., 2008). Large observational studies in the prevalent dialysis population have repeatedly demonstrated an association between adverse outcomes such as hospitalization and mortality and depression (Hedayati, 2008; Kimmel, Peterson, Weihs, Simmens, Alleyne, Cruz & Weis, 2000; Lopes, 2002; Kimmel, 2005; Lopes, 2004). A study that assessed 98 consecutive patients on hemodialysis found that the risk of death or hospitalization was more than two-fold greater in patients with a diagnosis of depression than it was in patients without depression even after adjustment for demographic and comorbid conditions (Hedayati et al., 2006). A larger retrospective study found that mortality rates were higher in those who had either a formal diagnosis of depression or reported symptoms of depression than in those without depression (Hedayati et al., 2005). Finally, in longitudinal studies, higher depressive symptom scores over multiple assessments were significantly associated with increased mortality (Kimmel et al., 2000). Even in chronic kidney disease (CKD) patients, there was a higher risk of hospitalization and mortality, with depressed patients being 2.5 times more likely to start onto dialysis within 12 months compared to non-depressed CKD patients (Hedayati et al., 2010).

Depression also has been associated with disruptions of social interactions and relationships and these can result in breakdown of support provided by family, work or community and religious organizations. Therefore, clinicians should also help inform the caregivers and family of the typical symptoms of depression in ESRD patients.

Given the association of depression and poor outcomes, reduced quality of life and increased mortality, it is prudent for clinicians to identify those with depression and manage the disease appropriately.

Pharmacological treatment of depression

Few studies have evaluated the pharmacologic treatment of depression in CKD patients. However, these studies have many limitations including small sample sizes, lack of placebo control and short duration. Table 1 describes the studies using antidepressants in ESRD patients (Wuerth, 2005; Levy, 1996; Koo, 2004; Turk, 2006; Atala, 2010; Kalender, 2007). Therefore, the choice of antidepressant is based on its pharmacokinetics, drug-drug interactions and adverse event profile (see Table 2 for a summary of the common antidepressant medications used in depression).

Table 2: Common antidepressant medications used in patients with ESRD

Drug	Advantages	Disadvantages
Selective serotonin reuptake inhibitors (SSRIs)		
Paroxetine, sertraline, fluoxetine, citalopram, Escitalopram	Useful for anxiety cases; few drug interactions	Increase risk of bleeding, GI symptoms common including nausea and diarrhea, sexual dysfunction, hyponatremia
Selective serotonin norepinephrine reuptake inhibitor (SNRIs)		
Venlafaxine, desvenlafaxine Duolexetine	Low weight gain, few drug interactions Duolexetine is used for neuropathic pain	May need to dose adjust in CKD; increase in BP; sexual dysfunction
Norepinephrine dopamine reuptake inhibitors (NDRIs)		
Bupropion	Low rates of weight gain and sexual dysfunction; helpful for smoking cessation	High seizure potential and arrhythmia potential
Tricyclic antidepressants (TCAs)		
Amitriptyline, nortriptylline, desipramine, doxepin	Less GI symptoms; Helpful for treatment of neuropathic pain and migraine prophylaxis	High anticholinergic side effects: dry mouth, blurred vision, constipation
Serotonin-2 antagonists/reuptake inhibitors (SARI)		
Trazodone	Low rates of weight gain and sexual dysfunction; significant hypotension	Very sedating
Noradrenergic/specific serotnergic antidepressants (NaSSA)		
Mirtazapine	Low GI symptoms and low sexual dysfunction	Weight gain and sedation

Antidepressant medications are generally highly protein bound, have higher volume of distributions and, thus, are not significantly removed by hemodialysis. Although they are mainly excreted by hepatic metabolism, many antidepressants have active metabolites that are renally excreted, which may lead to accumulation of potentially toxic metabolites. For instance, SSRIs (such as citalopram and escitalopram) and bupropion are not renally eliminated, while SNRIs (such as venlafaxine and duloxetine) and mirtazapine need dose adjustments in CKD patients. Therefore, dose adjustments with these renally eliminating agents may be cumbersome for the clinician. It would be much easier for the clinician to choose an agent such as an SSRI for the CKD patient, as they are not renally eliminated.

In addition to their altered pharmacokinetics in CKD, antidepressants also have the potential to interact with many other medications especially in CKD patients who are taking multiple medications for many comorbidities. Although all antidepressants have the potential to interact with many other medications, escitalopram has the fewest drug-drug interactions. Therefore, antidepressants such as SSRIs with fewest drug interactions would be safer to use in the CKD population.

Antidepressant agents also differ in their adverse event profiles. The SNRIs (i.e. venlafaxine, duloxetine) can increase blood pressure, however, duloxetine is also used to treat neuropathic pain. Although bupropion has fewer sexual side effects compared to SSRIs, it can lower the seizure threshold in patients. This lowering of seizure threshold can be problematic in CKD patients who already have abnormalities with electrolytes and, thus, may be more susceptible to seizure disorders. Finally, mirtazapine can cause significant sedation and weight gain. Generally, SSRIs are very well tolerated except sertraline can cause significant diarrhea and may also be associated with insomnia along with ciralopram while paroxetine may cause more sedation; the SSRIs are especially useful in situations where depression is associated with pain and anxiety. The FDA and Health Canada have recently implemented dosing recommendation for citalopram, as the drug has shown abnormal changes in the electrical activity of the heart, specifically QTc prolongation at doses higher than 40mg per day. The FDA and Health Canada have not made any changes to the product monograph for escitalopram, but this enantiomer of citalopram is also associated with QTc prolongation and monitoring of QTc prolongation is warranted especially for higher doses.

The choice of antidepressant for the ESRD patient should be individualized based on the patient's comorbidities, pharmacokinetic profile of the drug, potential drug-drug interactions and safety data for each agent. A good rule of thumb when starting antidepressants in patients with ESRD is to start low and go slow.

Once medication is initiated, response to treatment, need for dose adjustment and development of side effects should be monitored closely. This can be easily accomplished in dialysis patients given their repeated encounters with health care providers in the dialysis unit. The medication dose should not be titrated sooner than intervals of one to two weeks. The onset of improvement of symptoms should occur within two to four weeks of treatment. If this is not seen, then change of medication or addition of further therapy is warranted. Patients should be referred to psychiatry if no improvements are seen.

Non-pharmacological treatment of depression

Management of depression in ESRD patients has also been treated with nonpharmacologic regimens such as alterations in dialysis treatment, exercise therapy and cognitive behavioural therapy.

Alterations in the dialysis treatment

The Following Rehabilitation, Economics and Everyday-Dialysis Outcome Measurements (FREEDOM) study is an observation cohort study of patients changed to six times per week HD with targeted standardized weekly KT/V of a minimum of 2.1. After conversion to six times per week HD, BDI scores decreased from baseline value of 11.2 ± 0.8 to 7.4 ± 0.6 at four months and at 12 months. Although there was no control group, improvement in BDI scores may have occurred for reasons other than the dialysis intervention alone. However, similar findings in improvement of BDI scores were also seen in the The Frequent Hemodialysis Network (FHN) randomized trial comparing six times per week in-centre HD with three times per conventional HD (Jaber, 2010; Chertow, 2010).

Exercise training programs

There are two separate trials where HD patients are randomized to intradialytic exercise training program versus control. Each of these studies shows a reduction in BDI scores between 35% and 39% (Ouzouni, 2009; Kouidi 2010).

Cognitive behavioural therapy (CBT)

Cognitive behavioural therapy, a well-documented, evidence-based therapy for depression, is based on the premise that "automatic thoughts" in response to strong negative feelings or emotions can result in distorted or emotional thinking and reasoning and, in turn, poor decisions and ineffective problem solving. In a nine-month randomized trial of CBT, 90 HD patients were randomized to receive standard care or CBT with a trained psychologist. Group sessions were held weekly for 12 weeks and then monthly sessions were continued for a total of nine months. Baseline BDI scores decreased from approximately 25 in both groups to 10.8 ± 8.8 in the treatment group versus 17.6 ± 11.2 in the control group at nine months. These significant improvements in depressive symptoms in the treatment group were confirmed with standardized patient interviews where patients reported improved symptoms (Duarte, Miyazaki, Blay, & Sesso, 2009).

Conclusion

In summary, clinical depression is commonly encountered in patients with ESRD and the BDI is an easily administered questionnaire that is useful for screening for potential depressive symptoms in the ESRD population. Although there is a paucity of data on the treatment of depression in ESRD, medical management can result in a significant improvement in depressive symptoms. Most antidepressants are well tolerated and do improve depressive symptoms. However, the impact on mortality by their improvement on depressive symptomatology is not known and requires further investigation.

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Appendix 1: DSM IV: Major Depressive Episode

A. Five (or more) of the following symptoms have been present during the same two-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure.
   1. depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful). **Note:** In children and adolescents, can be irritable mood.
   2. markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others).
   3. significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day. **Note:** In children, consider failure to make expected weight gains.
   4. insomnia or hypersomnia nearly every day.
   5. psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down).
   6. fatigue or loss of energy nearly every day.
   7. feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick).
   8. diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others).
   9. recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

B. The symptoms do not meet criteria for a Mixed Episode.

C. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The symptoms are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hypothyroidism).

E. The symptoms are not better accounted for by bereavement, i.e., after the loss of a loved one, the symptoms persist for longer than two months or are characterized by marked functional impairment, morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms, or psychomotor retardation.

Appendix 2: Beck Depression Inventory

1. Background (Screening Tool)
   1. Twenty-one question survey completed by patient
   2. Answers scored on 0 to 3 scale
      1. Minimal: 0
      2. Severe: 3
2. Questions
   1. Sadness
   2. Hopelessness
   3. Past failure
   4. Anhedonia
   5. Guilt
   6. Punishment
   7. Self-dislike
   8. Self-blame
   9. Suicidal thoughts
   10. Crying
   11. Agitation
   12. Loss of interest in activities
   13. Indecisiveness
   14. Worthlessness
   15. Loss of energy
   16. Insomnia
   17. Irritability
   18. Decreased appetite
   19. Diminished concentration
   20. Fatigue
   21. Lack of interest in sex

CONTINUING EDUCATION STUDY QUESTIONS **Contact hour: 2.0 hrs**

Management of depression in hemodialysis patients

By Marisa Battistella, BSc Phm, PharmD, ACPR

1. **The reason for low treatment rates of depression in ESRD patients is because:**
   (a) antidepressants are unsafe in ESRD patients
   (b) depression is not common in ESRD patients
   (c) there is a lack of well-designed clinical trials in ESRD
   (d) ESRD patients have symptoms of uremia that are not associated with depression

2. **Diagnosis of depression requires these two symptoms:**
   (a) sadness and loss of energy
   (b) sadness and loss of interest
   (c) loss of interest and fatigue
   (d) feelings of worthlessness and loss of energy

3. **Which is not a risk factor for depression in ESRD?**
   (a) female sex
   (b) diabetes
   (c) coronary heart disease
   (d) older age
   (e) longer duration of hemodialysis

4. **Which statement is false?**
   (a) ESRD patients who are depressed have higher mortality rates
   (b) ESRD patients who are depressed have two-fold higher risk of hospitalizations
   (c) CKD patients who are depressant start dialysis later than non-depressed patients
   (d) Depression can lead to disruptions of social interactions

5. **The choice of antidepressants in ESRD patients is based on?**
   (a) response rates
   (b) side effects
   (c) co-morbidities
   (d) cost and coverage
   (e) all of the above

6. **This agent is sedating and causes significant weight gain:**
   (a) trazadone
   (b) paroxetine
   (c) mirtazapine
   (d) amitripytlline

7. **M.J. is a 55-year-old male on HD for five years secondary to polycystic kidney disease. He has no other comorbidities. He was recently stated on this antidepressant for symptoms of depression. He has been feeling better but has more diarrhea since starting this medication. Which antidepressant did M.J. start recently?**
   (a) citalopram
   (b) mirtazapine
   (c) sertraline
   (d) venlafaxine

8. **Non-pharmacological treatment of depression includes all of the following except**
   (a) psychoeducation
   (b) cognitive behaviour therapy
   (c) modification in dialysis treatment
   (d) exercise
   (e) diet modification

Case for Questions 9 and 10

R.J. is a 55-year-old female on HD for seven years because of DM nephropathy. The past month she has decreased energy, difficulty sleeping, loss of interest and increasing sadness and anxiety. Her past medical history includes DM nephropathy and neuropathy, coronary artery disease. Her mother recently passed away from an MI.

Her medications include: Aspirin, metoprolol, ramipril, calcium carbonate, replavite, iron and erythropoietin.

She was seen by the social worker who screened her for depression. The MD also saw the patient who believes she is depressed.

9. **What are the risk factors for R.J.'s diagnosis of depression?**
   (a) longer duration of hemodialysis
   (b) female
   (c) DM
   (d) CAD
   (e) recent death of mother
   (f) all of the above

10. **Which medication is best suited for this patient?**
    (a) mirtazapine because it is most sedating and this patient needs more sleep
    (b) duloxetine because it also treats neuropathic pain and this patient has neuropathy
    (c) amitriptyline because it is good for melancholic depression
    (d) escitalopram because it is also useful for depression associated with anxiety

CONTINUING EDUCATION STUDY
ANSWER FORM

CE: 2.0 hrs continuing education

Management of depression in hemodialysis patients

Volume 22, Number 3

By Marisa Battistella, BSc Phm, PharmD, ACPR

Post-test instructions:

- Select the best answer and circle the appropriate letter on the answer grid below.
- Complete the evaluation.
- Send only this answer form (or a photocopy) to:
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- Post-tests must be postmarked by September 30, 2014.
- If you receive a passing score of 80% or better, a certificate for 2.0 contact hours will be awarded by CANNT.
- Please allow six to eight weeks for processing. You may submit multiple answer forms in one mailing, however, you may not receive all certificates at one time.

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Post-test answer grid

Please circle your answer choice:

1.	a	b	c	d		
2.	a	b	c	d		
3.	a	b	c	d	e	
4.	a	b	c	d		
5.	a	b	c	d	e	
6.	a	b	c	d		
7.	a	b	c	d		
8.	a	b	c	d	e	
9.	a	b	c	d	e	f
10.	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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Practice corner

By Kristen Parker MKin, CEP, CSCS, MES

Establishing a successful intradialytic exercise program: Part 1

Intradialytic exercise programs in the world are still in their infancy, but times are changing. Remember, there was a time when pulmonary or cardiac rehabilitation was new and innovative! We feel there will be a time when exercising during dialysis will be commonplace around Canada. To date, there are only a handful of these unique programs in Canada. Intradialytic exercise programs are the norm in European countries such as Germany, Sweden, Greece and the United Kingdom; meanwhile Canada, USA, and Australia are making significant progress in this field through research and pilot programs. In the Southern Alberta Renal Program (SARP) we have 170 patients at 9 units biking every week. The oldest exercising patient is 94 years old and the youngest is a 12-year-old boy at the Alberta Children's Hospital. Two kinesiologists operate the four largest Calgary sites and consult with "Exercise" Registered Nurses (RNs) who run the program at the rural units.

Research and benefits of exercise for patients with ESRD

Numerous studies have illustrated the benefits of exercise for those with kidney disease. Most of this body of work focuses on community-based interventions occurring outside of dialysis units. Cardiovascular benefits include reduced arterial stiffness (Mustata, Chan, Lai, & Miller, 2004), reductions in blood pressure medications (Miller, Cress, Johnson, Nichols, & Schnitzler, 2002) and increased aerobic capacity (Kouidi, Grekas, & Deligiannis, 2009). It is also well known that muscle catabolism occurs as a result of hemodialysis (Ikizler et al., 2002), which can be counteracted with the implementation of a simple resistance training (Headley et al., 2002) or cardiovascular program (Kouidi et al., 1998).

More studies are starting to take place inside the dialysis unit. Patients who sit for several hours each week are the perfect "captive" audience and can be encouraged to utilize this idle time. Furthermore, patients who exercise during dialysis have a greater compliance rate than those who exercise 3 times a week in community-based settings (Konstantinidou, Koukouvou, Kouidi, Deligiannis, & Tourkantonis, 2002). Intradialytic exercise on a cycle ergometer (such as the Monark 881E Rehab Trainer) can increase muscular peak torque, muscle fibre size (Sakkas et al, 2003), overall physical function (Painter, Carlson, Carey, Paul, & Myll, 2000), decrease depression (Kouidi et al., 1997), increase urea clearance (Kong, Tattersall, Greenwood, & Farrington, 1999; Parsons, Toffelmire, & King-VanVlack, 2006) and improve patient quality of life (Kolewaski, Mullally, Parsons, Paterson, Toffelmire, & King-VanVlack, 2005).

Anecdotal benefits as reported by our SARP patients include less cramping or restless legs during dialysis, improved leg strength, reduced shortness of breath on exertion (SOBOE), less joint pain, more energy, decreased blood pressure medication dosage, lowered insulin requirements and weight loss. Statistically, our exercising patients are less likely to be admitted to the hospital for emergencies. Furthermore, if admitted, their length of stay is significantly shorter, which mirrors the findings of Courtney, Edwards, Chang, Parker, Finlayson, and Hamilton (2009).

Overcoming barriers

Despite this compelling body of research, there is still apprehension about establishing these programs in dialysis units. Concerns about safety, funding and staffing are usually listed as major barriers. These issues have all been addressed within our program.

1) SAFETY: In our units, safety has been our top priority. Cheema and Singh (2005) have conducted a literature review and have found hypotension to be the most common (yet still rare) concern. To date, there have been an estimated 30,000 workouts done during dialysis treatments in Calgary since starting in 2008. No major incidents have been reported. We have policies and procedures that assist in making decisions about a patient's safety to exercise on a given day.

2) FUNDING: In our opinion, covering the cost of bikes and the salaries of our two full-time kinesiologists is offset by the significant cost-savings in reducing hospital admissions and length of stay. Exercise rehabilitation in those with COPD (Hui & Hewitt, 2003; Garcia-Aymerich, Lange, Benet, Schnohr, & Anto, 2006) and exercise adherence in heart failure patients (Evangelista, Hamilton, Fonarow, & Dracup, 2010) have shown lower hospital utilization. It is also imperative to note that SARP's program started with a few passionate RNs and one bike (costing about $1,600.00 per unit) to rotate around to the patients. The key is to start with something simple and manageable, which can gradually grow with time as resources become available. Having a part time or full time kinesiologist or physiotherapist may seem like a luxury to some units, but these staff members play a crucial role in preventing falls, reducing muscle weakness and managing joint pain (Lorig et al., 1999). Consider the costs associated with physical inactivity in Canada (Jannsen, 2012), and then ask yourself, "How can we afford not to start this program in our unit?"

3) STAFFING ISSUES: Our nursing staff is an important part of the team involved in running the bike program. Nurses are expected to help with the daily set-up and monitoring of patients on the bike when a kinesiologist is at the other unit. This is listed in their job description. We are currently in the process of expanding the roles of our nursing aids, who can help with bike set up after the RN or LPN declares the patient is safe to proceed. Practicum students who are studying in the fields of nursing, physiotherapy or kinesiology are now regular fixtures in our units and provide assistance in keeping the bike program running consistently.

Other challenges within our units include the following issues:

- Staff and patient "buy in."
- Space for bike storage—this is a problem at our smaller rural units.
- Individual patient setbacks due to medical issues and hospitalizations.
- Maintenance/repairing bikes—although our Monark bikes are the gold standard, their repetitive use puts them at risk for constant breakdowns. (A bottle of "Loctite" applied on the bolts of the pedals has become our best ally!)

For support in setting up an intradialytic exercise program or to share your success stories, contact Kristen at: 3103- 31 Sunpark Plaza SE, Calgary, AB T2X 3W5 403-943-9402. kristen.parker@albertahealthservices.ca

Department Editor: Eleanor Ravenscroft, RN, PhD, CNeph(C)

Guaranteed success

According to other programs, the single greatest predictor of success is whether the program is supported by a whole multidisciplinary team, which includes RNs, nephrologists, dietitians, social workers, etc. (Bennett, 2010). The SARP exercise program has adopted this approach. Our nephrologists provide written orders for patients to start exercise, nurses and nurse aids help put patients on the bikes when the kinesiologist is at a different site, and finally, social workers and dietitians may send referrals or talk with patients about exercise. The exercising patients are even encouraging non-exercising patients to join the program and are part of creating this culture shift.

We also firmly believe that the kinesiologist needs weekly contact with each of the patients. If this was not possible, we would likely see a decline in patient participation. Furthermore, new units cannot come at the expense of an established exercising unit. Currently, we have chosen to hold back on expansion of our program to ensure we maintain once a week kinesiologist-patient interaction to help support staff and patients more thoroughly. For new units to start an exercise program, we will need more staff or creative solutions.

Recently, the World Health Organization (2010) stated, "Physical inactivity has been identified as the fourth leading risk factor for global mortality (6% of deaths globally). This follows high blood pressure (13%), tobacco use (9%) and high blood glucose (6%)". More than ever, we need to run interventions that empower our patients and encourage self-management on issues most often thought of as being part of "just getting older." Recently, 36 physiotherapists, RNs, kinesiologists and nephrologists gathered at the first Canadian "Renal Exercise Conference" in April 2012 at Queen's University in Kingston, ON. Much was accomplished in this groundbreaking event and we feel Canada is on the right track for improving health, fitness levels and quality of life for individuals with all stages of kidney disease. Remember that "exercise is a form of medicine" and must become part of routine care. This will truly improve our patients' quality of life.

NOTE: Part 2 of this report in the next CANNT Journal will outline "How to Run a Successful Intadialytic Exercise Program."

About the author

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Acknowledgement:

The author would like to acknowledge the ongoing support of nursing staff who work tirelessly to keep our patients as active as possible. The patients within the Southern Alberta Renal Program are also to be commended, for taking control of their health and for exercising at our units with a smile on their faces. The passion and enthusiasm of these two groups of people is truly inspiring and makes for a successful program.

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❑ Other (Specify) _____

Number of years in nephrology _____

Area of responsibility
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Work environment
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Highest level of education

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I am at present studying toward

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