




CANNT JOURNAL JOURNAL ACITN

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2. National Kidney Foundation. K/DOQI Clinical Practice Guidelines for Bone Metabolism and Disease in Chronic Kidney Disease. *Am J Kidney Dis.* 2003;42(Suppl 3):S1-S201.
3. Renagel® Product Monograph, Genzyme Canada; 2006.

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Letter from the Editor: Gillian Brunier

Lettre de la rédactrice en chef: Gillian Brunier

Thank you to our 2009 reviewers!

Merci à nos critiques de 2009!



There is much work that takes place behind the scenes to bring high-quality articles to publication in the CANNT Journal. I would like to thank the following reviewers

who assisted us in manuscript review during 2009. It is these manuscript reviewers who have volunteered their time and provided such expert assistance in reviewing manuscripts over this past year. Please take a moment to acknowledge their support of the CANNT Journal and advancement of Canadian nephrology practice.

Une part importante du travail se fait dans l'ombre avant la parution d'articles de grande qualité dans le **Journal ACITN**. Je profite de l'occasion pour remercier les personnes suivantes qui ont participé à la révision de manuscrits en 2009. Elles ont donné gracieusement de leur temps et mis à contribution leurs connaissances spécialisées dans la révision des articles avant leur parution au cours de la dernière année. Nous prenons donc le temps ici de reconnaître leur soutien dans la publication du **Journal ACITN** et de souligner leur collaboration aux progrès de la pratique de la néphrologie au Canada.

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De plus, je désire remercier les personnes suivantes qui participent à la revue de la traduction des rapports et manuscrits:

And thank you to the two reviewers this year who have so carefully read the proofs of the French translation of reports and articles for the **CANNT Journal**:

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• Voici les échéanciers à rencontrer pour soumettre des articles/nouvelles au journal :

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*See the highlights and
award winners from CANNT 2009
on page 14 of this issue!*

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Message from the President



This is my final president's message in the **CANNT Journal**. It is hard for me to believe that a year has gone by since I sat staring at the blank page that was supposed to be filled with inspirational words for my first president's message. People who know me well would be surprised to know that I am ever at a loss for words—yet here I sit a year later, again at a loss for words.

This year has been a wonderful year for me. I am surrounded by fabulous people who give their time to serve on the board of directors of CANNT. I have made new friends and been able to work with people who are leaders in their areas of nephrology. I will spend the next year as past-president and have no doubts that this year's new board of directors is going to take us along on an amazing journey.

I have just come home from Saint John and our 41st national symposium. What an amazing conference it was. I think we had almost every area of nephrology covered and then some. There were talks on peritoneal dialysis, hemodialysis, transplant, vascular access, nurses as teachers, home hemodialysis and a dozen sub topics that fit under each of these headings. There was something for everyone. The calibre of posters was also impressive.

One of my favourite concurrent sessions was called "Abstracts and

Presentations and Manuscripts: Oh My!" This session took us through all of the steps required to write an abstract for publication, as well as how to design and set up a poster for presentation at a conference. I think either of these can be daunting to a first-time presenter. The **CANNT Journal** is always looking for articles to publish. It doesn't have to be a research article; it can be a case study or a report on the implementation of a new technique on your unit. I would encourage everyone to try to publish or present at least once during his or her nephrology career. If you have already done this, why not mentor someone on your unit who has not. I always had problems starting, in my mind I had to have all of the components down pat before I could start writing, and then a very wise friend taught me to just get started: start writing my story, and then edit, edit, and edit again. But just get those first words down on paper.

Our new CANNT website launched last year and continues to grow and change in order to serve the membership. Stay tuned for more changes and activities on our CANNT website. We will be using our website as a method of communication on a more routine basis versus mailings whenever possible.

So, stay tuned: the CANNT board of directors will be in touch with news, surveys and information on CANNT 2010.

Jan Baker, RN, BN, CNeph(C)
CANNT President

***Please send all submissions,
questions or comments to:***

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Message de la présidente



Il s'agit de mon dernier « mot de la présidente » pour le **Journal ACITN**. Il est difficile de croire qu'une année s'est déjà écoulée depuis mon premier message en tant que présidente; j'étais alors restée de longues minutes devant mon clavier à me demander ce que j'allais bien pouvoir écrire d'inspirant. Les gens qui me connaissent bien seraient surpris d'apprendre que je souffre du « syndrome de la page blanche »—un an plus tard, me voici de nouveau à chercher mes mots.

Cette année a été extraordinaire pour moi. J'ai été entourée de personnes sensationnelles qui ont donné de leur temps au Conseil d'administration de l'Association canadienne des infirmières et infirmiers et des technologues de néphrologie (ACITN). Je me suis fait de nouveaux amis et j'ai eu la chance de travailler avec des gens qui sont des chefs de file dans leur domaine respectif de la néphrologie. Au cours de la prochaine année, j'agirai comme présidente sortante et je n'ai aucun doute que le nouveau Conseil d'administration nous entraînera dans une aventure incroyable.

Je rentre à peine d'un séjour à Saint John, au Nouveau-Brunswick, où a eu lieu notre 41^e Congrès national. Quel congrès fantastique! Je crois que nous avons couvert presque tous les domaines de la néphrologie. Il y a eu des séminaires sur la dialyse péritonéale, l'hémodialyse, la transplantation, l'accès vasculaire, les infirmières enseignantes, l'hémodialyse à domicile et une douzaine de sous-thèmes pour chacun des sujets. Il y en avait pour tous les goûts! Le calibre des affiches scientifiques était également très impressionnant.

L'un de mes ateliers préférés s'intitulait « *Abstracts and Presentations and Manuscripts: Oh My!* » [Résumés, présentations et articles : Oh là là!]. Cet atelier nous a permis de passer en revue toutes les étapes requises pour rédiger un article en vue de sa publication et

pour créer une affiche scientifique en vue de sa présentation à un congrès. Je sais que la préparation de ces documents peut être déconcertante pour les auteurs d'un premier article, d'une première présentation ou d'une première affiche. Il va sans dire que le **Journal ACITN** est toujours à la recherche d'articles à publier. Nul besoin que ce soit un article portant sur une recherche scientifique; cela peut être une étude de cas ou un compte rendu sur la mise en œuvre d'une nouvelle technique dans votre unité de soins. J'encourage donc toutes les personnes à publier un article ou à donner une communication orale au moins une fois dans leur carrière en néphrologie. Si vous avez déjà vécu cette expérience, pourquoi ne seriez-vous pas le mentor d'un collègue qui désire vivre cette expérience? J'ai toujours éprouvé de la difficulté à entamer la rédaction d'un texte. Je croyais que je devais avoir toutes les données en tête avant de pouvoir commencer à rédiger les premières phrases. Puis un jour, on m'a sagement conseillé de me lancer tout simplement, mot après mot. Depuis ce temps, je commence par écrire mon texte et ensuite je le travaille, je le peaufine, je le retouche encore et encore. L'astuce consiste simplement à écrire noir sur blanc ces premiers mots.

Nous avons inauguré le nouveau site Web de l'ACITN cette année et n'avons cessé de le modifier et de l'actualiser afin qu'il réponde aux besoins de nos membres. Visitez régulièrement le site Web de l'ACITN pour être à l'affût des changements et des activités. Nous utiliserons notre site Web comme moyen de communication privilégié de façon plus régulière que le publipostage, chaque fois que cela sera possible.

Les membres du Conseil d'administration de l'ACITN y hébergeront pour vous les dernières nouvelles, les plus récents sondages et l'information de pointe sur l'ACITN en 2010.

Restez branchés!

Jan Baker, inf. B.Sc.Inf., CNéph(C)
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Awards for Research, Education and Clinical Excellence



Deadlines:

**May 1, 2010: Amgen
Grants, CANNT Awards
of Excellence,
Bursaries & Grants**

Each year there are many opportunities for awards, bursaries and grants available to CANNT members.

Also, take the opportunity to recognize a colleague or two for their excellent and outstanding work in the field of nephrology nursing or technology. Nominate a fellow nephrology professional who makes a difference in your workplace (experienced and novice). If selected, they will receive verbal recognition at the CANNT Annual General Meeting in Toronto, Ontario, a plaque to commemorate the award, and a monetary reward.

Go to www.cannt.ca for more detailed information about the opportunities available. You might be surprised that you are eligible to apply for funding or a bursary to assist you in furthering your studies or promote excellence in nephrology care.

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Le 1^{er} mai 2010 :

Subventions Amgen; bourses, subventions et prix d'excellence de l'ACITN

Chaque année, de nombreux prix d'excellence et de nombreuses bourses et subventions sont offerts aux membres de l'ACITN.

Nous vous invitons également à saisir cette occasion pour reconnaître un ou deux collègues pour leur excellent travail et leur contribution exceptionnelle dans le domaine des soins infirmiers ou de la technologie en néphrologie. N'hésitez pas à soumettre la candidature de professionnels œuvrant en néphrologie qui font la différence dans votre milieu de travail — les lauréats recevront une reconnaissance verbale à l'Assemblée générale annuelle de l'ACITN, qui aura lieu à Toronto, en Ontario, ainsi qu'une plaque commémorative et une récompense en argent.

Rendez-vous à www.cannt.ca pour obtenir une information détaillée sur les occasions qui vous sont offertes — vous serez peut-être étonné(e) d'apprendre que vous êtes admissible à une subvention ou à une bourse pour vous aider dans la poursuite de vos études ou pour promouvoir l'excellence dans les soins de néphrologie.

NOTICE BOARD

- ❖ Ottawa Supper Clubs—Contact Janet Graham, Nephrology Unit, Ottawa Hospital, jgraham@ottawahospital.on.ca
- ❖ March 7–9, 2010. 30th Annual Dialysis Conference. Seattle, Washington. Website: www.som.missouri.edu/dialysis/
- ❖ March 11, 2010. World Kidney Day. A joint initiative of the International Society of Nephrology and the International Federation of Kidney Foundations. Website: www.worldkidneyday.org
- ❖ March 15, 2010. Kidney Foundation of Canada. Deadline for Allied Health Fellowships and Scholarships. Contact: Coordinator, Research Grants and Awards, (800) 361-7494, ext. 232, E-mail: research@kidney.ca. Website: www.kidney.ca
- ❖ April 17, 2010. Exam date for CNeph(C) certification exam. Contact Canadian Nurses Association Certification Program, e-mail: certification@cna-aiic.ca. Website: www.cna-aiic.ca. Toll-free phone number: 1-800-450-5206
- ❖ May 1, 2009. CANNT Awards, Bursaries and Grant Application Deadline. For more information, contact Debbie Maure at the CANNT National Office (705) 720-2819, toll-free 1-877-720-2819, e-mail cannt@cannt.ca, or visit our website at www.cannt.ca
- ❖ May 2–5, 2010. The American Nephrology Nurses Association (ANNA) 41st National Symposium, Grand Hyatt San Antonio and Henry B. Gonzalez Convention Center in San Antonio, Texas. Website: www.annanurse.org
- ❖ July 23–26, 2010. 13th Congress of the International Society for Peritoneal Dialysis (ISPD), Centro Banamex, Mexico City, Mexico. Website: www.ispd2010mexico.org
- ❖ September 15, 2010. Nephrology Health Care Professionals Day.
- ❖ September 18–21, 2010. 39th European Dialysis and Transplant Nurses Association/European Renal Care Association (EDTNA/ERCA) International Conference: Dublin, Ireland. Website: www.edtnaerca.org
- ❖ November 18–20, 2010. CANNT 43rd National Symposium. Metro Toronto Convention Centre, Toronto, Ontario. Conference Planner: Heather Reid: e-mail: hreid@innovcc.ca. Website: www.cannt.ca



DID YOU KNOW?

Now it's even easier for you to contact the CANNT/ACITN National Office

- 1) Call TOLL-FREE from anywhere in Canada/US: 1-877-720-2819 or local dial 705-720-2819
- 2) E-mail: cannt@cannt.ca
- 3) Fax: 705-720-1451
- 4) Mail: 336 Yonge Street, Suite 322, Barrie, ON L4N 4C8

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ORTHO BIOTECH

Nephrology Healthcare Professionals Day, September 16, 2009

La Journée des professionnels de la santé en Néphrologie, 16 septembre, 2009

Quebec



Nelson Jule, Nellie Mapile, Amélie Dumont, Johanne Poirier et Bernadette Tulli.

Bonjour à tous,

C'est avec plaisir que nous avons souligné la Journée des professionnels de la santé en néphrologie lors de notre pause de l'après-midi le 16 Septembre 2009. Nous avons partagé un gâteau afin de pouvoir nous réunir pour fêter cette journée dédiée à tout le personnel oeuvrant en Néphrologie. Ce fût un moment très agréable!

Merci à ceux et celles qui ont participé(es) aux célébrations!

Soumis par Amélie Dumont, Inf., Clinicienne, BSc.Inf., CNeph(C), Vice-Présidente du Québec / ACITN Hôpital Général de Montréal (CUSM)

Hello everyone,

It is with great pleasure that we had our celebrations for the Nephrology Healthcare Professionals Day on September 16, 2009. We brought a cake and we had the chance to thank all the hard working staff in nephrology. It was very nice and I would like to thank you all for your participation!

Submitted by Amélie Dumont, Clinician Nurse, BScInf, CNeph(C) Vice-President of Quebec / CANNT Montreal General Hospital (MUHC)

À Val d'Or, nous avons décoré l'unité de soins de ballons et d'une banderolle.

Notre chef de service à offert à chacune de nous (infirmières, préposées et secrétaire) une petite carte dans laquelle elle avait composé un message personnalisé. Elle nous a offert des biscuits, café et jus à la pause du matin, elle nous a cuisiné un excellent gâteau aux framboises et servit une assiette de fruits frais à la pause de l'après-midi! Les employés

lui ont offert un soin dans un spa avec une jolie carte personnalisée.

Toutes sont bien satisfaites de cette première journée en l'honneur des professionnels en néphro!

Soumis par Julie Lagrange. BSc.Inf., CNeph(C), Assistante infirmière-chef, CSSSVO, Val d'Or, Quebec



En avant : Nicole Vadnais, inf. chef unité de dialyse, Odile Mongrains, inf., Micheline Collin, assistante-administrative, Sylvie Arsenault, inf., Julie Lagrange, assistante inf. chef, Jessica Caron-Fluet, préposée aux bénéficiaires, Chantal Rivard, préposée aux bénéficiaires. Rangée arrière : Hélène Gagnon, inf., Lyne Coulombe, inf., (nom inconnu), Nathalie Dion, inf., Marjolaine Potvin, inf.

Manitoba



Marilyn Muir, RN, Brenda DiLello, unit clerk, Jennifer Taylor, social worker, Reena Mathews, RN, Darcy Gillis, RN, and Mary Ann Descallar, RN, celebrating Nephrology Healthcare Professionals Day at the Health Sciences Centre Renal Program in Winnipeg, Manitoba.

The Health Sciences Centre renal program is an interdisciplinary program, and the managers of the renal program (Jennifer Taylor and Gillian Toth) and the director of the program (Jan Schneider) provided the cake for all staff to enjoy. We have celebrated Nephrology Health Care Professionals Day for the past few years... the cake is always a hit!

Submitted by Marilyn Muir, RN, CNeph(C), Clinical Resource Nurse, Local Centres Dialysis Unit, Health Sciences Centre Renal Program, Winnipeg, Manitoba

Nova Scotia



This September, the Nova Scotia Renal Program awarded its first annual Nephrology Health Care Professionals Bursary in recognition of nephrology health care professionals in Nova Scotia who have contributed to the success of nephrology health care in Nova Scotia. This year, the award was presented to Shawna Hudson, Clinical Nurse Educator, QEII Health Sciences Centre, Halifax, NS.

Submitted by Colleen Wile, RN, CNeph(C), Clinical Nurse Educator, Community Dialysis, Halifax, Nova Scotia

Above, Nephrology Health Care Professionals at the QEII in Halifax, celebrate the third annual Nephrology Health Care Professionals Day.



Above, Susan MacNeil (Manager, NS Renal Program) presents Shawna Hudson with flowers and a bursary.

The Kidney Research Scientist Core Education and National Training (KRESCENT) Program

Submitted by Heather Beanlands, RN, PhD

KRESCENT—a potential source of research funding and education for allied health professionals interested in pursuing a career in kidney research.

Launched in January 2005, the Kidney Research Scientist Core Education and National Training (KRESCENT) program is an exciting and unique training initiative for professionals doing kidney-related research. The program is the outcome of the collaborative efforts of the Kidney Foundation of Canada (KFOC) and the Canadian Society of Nephrology (CSN), and the Canadian Institutes of Health Research—Institute of Nutrition, Metabolism and Diabetes (INMD), private sector stakeholders, professional associations such as the Canadian Association of Nephrology Social Workers (CANSW) and the Canadian Association of Nephrology Nurses and Technologists (CANNT), as well as private donors.

KRESCENT is unique because: (a) applications are invited from multiple disciplines, (b) trainees participate in a national core curriculum, (c) mentorship support assists career development at the (post-)doctoral level and the period following a first faculty appointment, and (d) it promotes the development of collaborative research and knowledge translation across research themes.

Objectives

The KRESCENT program is intended to achieve three main goals:

1. To enhance kidney research capacity by training increased numbers of

highly skilled scientists, across multiple disciplines, focused on the prevention of end stage renal disease and improving the health of Canadians with kidney disease.

2. To engage kidney researchers in the development of transdisciplinary kidney research networks.
3. To create sustainable momentum in supporting research careers of kidney scientists (The Kidney Foundation of Canada, 2006).

Types of awards

There are three award categories:

1. New Investigator Awards: Researchers within the first three years of their first faculty appointment (assistant professor level or equivalent) at the time the award commences, who have an MD and/or PhD. New Investigator Awards must be held at universities in Canada.
2. Post Doctoral Fellowship: Includes MDs and Post-Doctoral PhDs.
3. Doctoral Award for Allied Health Professionals: Allied Health Professionals (including, but not limited to nurses, psychologists, social workers, dialysis technicians, dietitians, physiotherapists, pharmacists and occupational therapists) who are enrolled in PhD courses at a Canadian university (The Kidney Foundation of Canada, 2006).

Past awards

Since the first competition in 2005, a total of 24 Post-Doctoral Fellowships and seven New Investigator Awards

have been awarded. To date, two awards have been made in the category Doctoral Award for Allied Health Professionals.

Applications

Applications are invited from professionals in all disciplines relevant to kidney disease including biomedical, clinical, health services, and population health disciplines. CANNT strongly encourages allied health professionals with an interest in a career in research to apply for funding through the KRESCENT program.

Mark your calendar

The deadline for the 2010 competition is January 15, 2010.

Contact

For more information, visit the KRESCENT website: www.krescent.ca, or contact:

Wim Wolfs

Program Manager

KRESCENT Program

c/o The Kidney Foundation of Canada

300-5165 Sherbrooke Street West

Montreal, QC H4A 1T6

Tel.: (514) 369-4806 ext. 225

Fax: (514) 369-2472

E-mail: wim.wolfs@kidney.ca

About the author

Heather Beanlands, RN, PhD, Daphne Cockwell School of Nursing, Ryerson University, CANNT representative to The Kidney Foundation of Canada Allied Health Scientific Committee.

Please address correspondence to hbeanlan@ryerson.ca

Programme national de formation scientifique et d'encadrement des chercheurs spécialisés dans le domaine rénal (KRESCENT)

Soumis par Heather Beanlands, inf., Ph.D.

KRESCENT—une source potentielle de financement pour les professionnels du domaine paramédical cherchant à faire carrière dans la recherche rénale.

Lancé en janvier 2005, le Programme national de formation scientifique et d'encadrement des chercheurs spécialisés dans le domaine rénal (KRESCENT) est une formidable et unique initiative de formation des professionnels engagés dans la recherche rénale et connexe. Le programme est le résultat d'un travail de collaboration de La Fondation canadienne du rein (FCR), la Société canadienne de néphrologie (SCN), des Instituts de recherche en santé du Canada (IRSC)—Institut de la nutrition, du métabolisme et du diabète (INMD), des intervenants du secteur privé, des associations professionnelles comme l'Association canadienne des travailleurs sociaux de néphrologie (ACTSN), l'Association des canadiennes des infirmières et des techniciens de néphrologie (ACITN) et les donateurs privés.

KRESCENT est unique parce que : (a) les demandes couvrent diverses disciplines, (b) les participants suivent un programme national d'études fondamentales, (c) l'encadrement contribue au développement de la carrière au niveau doctoral et postdoctoral, et pendant la période de la première année au poste obtenu dans une faculté, et (d) il promouvoit la collaboration dans la recherche et le transfert des connaissances entre les thèmes de recherche.

Objectifs

Le programme KRESCENT vise à atteindre trois objectifs principaux :

1. Rehausser la capacité de recherche dans le domaine rénal en formant un

plus grand nombre de chercheurs de haut niveau scientifique dans de multiples disciplines inter-reliées (prévention de l'insuffisance rénale terminale et amélioration de l'état de santé des Canadiens atteints de cette maladie).

2. Engager les chercheurs du domaine rénal dans le développement de réseaux de recherche rénale transdisciplinaire.
3. Donner un élan durable au soutien apporté à la carrière des scientifiques engagés dans la recherche rénale (La Fondation canadienne du rein, 2006).

Catégories de bourses

Il y a trois catégories de bourses :

1. Bourses Nouveaux Chercheurs : Chercheurs dans les trois premières années de leur premier poste dans une faculté (professeurs adjoints ou titre équivalent) au moment où la bourse prend effet, qui sont titulaires d'un titre de MD et/ou d'un Ph. D. Les boursiers Nouveaux Chercheurs doivent effectuer leur recherche dans des universités canadiennes.
2. Bourses de postdoctorat : MD et Ph.D. en postdoctorat.
3. Bourses de doctorat pour les professionnels du paramédical (notamment, et entre autres, infirmiers, psychologues, travailleurs sociaux, techniciens de dialyse, diététiciens, physio-thérapeutes, pharmaciens, ergothérapeutes) inscrits à un Ph. D. dans une université canadienne (La Fondation canadienne du rein, 2006).

Bourses antérieures

Depuis le premier concours en 2005, 24 bourses de formation postdoctorale et 7 bourses Nouveaux

Chercheurs ont été octroyées. À ce jour, deux bourses ont été accordées dans la catégorie Bourses de doctorat destinées aux professionnels du domaine paramédical.

Demandes

Nous acceptons les demandes dans diverses spécialités et disciplines se rapportant à l'insuffisance rénale, notamment dans la recherche biomédicale, clinique, les services de santé, et la santé publique. L'ACITN encourage vivement les spécialistes du domaine paramédical intéressés à faire carrière dans la recherche à introduire une demande de bourse du programme KRESCENT.

À noter

La date limite du concours 2010 est le 15 janvier 2010.

Pour de plus amples renseignements, prière de visiter le site web de KRESCENT au www.krescent.ca ou prendre contact avec :

Wim Wolfs

Directeur du programme de recherche
La Fondation canadienne du rein
300-5165 Sherbrooke ouest Montréal,
QC H4A 1T6

T.: 514-369-4806, poste 225

Téléc.: 514-369-2474

Courriel: wim.wolfs@kidney.ca

Au sujet d'auteur

Heather Beanlands, inf., Ph.D., Daphne Cockwell School of Nursing, Ryerson University, représentante de l'ACITN, au Comité scientifique de recherche paramédicale de La Fondation canadienne du rein.

Prière d'adresser toute correspondance à :
hbeanlan@ryerson.ca

CANNT 2009

Turning the Tides for Tomorrow

October 15–18, 2009

Trade and Convention Centre, Saint John, N.B.

CANNT 2009's reference to tides in its theme was in keeping with the Saint John, New Brunswick, location on the Bay of Fundy where the highest tides in the world are found. This conference offered materials, information and strategies for delegates to go forth into the tides of change seen in the health care industry today and in the future.

The goal of this year's planning committee was to build a patient-centred vision of the important role health care providers play in offering best practice. This was interwoven through submitted abstracts and keynote sessions that offered evidence-based, as well as experiential knowledge, to accomplish improved patient outcomes. Twenty-eight poster presentations, 38 concurrent sessions, four pre-conference workshops, six keynote addresses and 29 exhibitor booths provided the content for this goal.

Many symposium program changes, inserted in response to previous years' evaluations, offered exciting variation for more than 400 delegates, faculty and exhibitors.

Continued commitment on behalf of the corporate sponsors played a large part in the success of the symposium: Platinum (\$10,000): Amgen, Baxter, BHC Medical and Fresenius Gold (\$7,500–\$9,999): Gambro Silver (\$5,000–\$7,499): Shire Bronze (\$3,000–\$4,999): Ortho Biotech



Alison Thomas presenting her concurrent session: "Abstracts and Presentations and Manuscripts: Oh My!"

Thursday, October 15, 2009

Pre-conference activity started with a flourish with four sessions: two RN certification exam preparation sessions, one in each of New Brunswick's official languages, sponsored by CANNT, the basics of peritoneal dialysis sponsored by Baxter, and dialysis fluid management sponsored by Fresenius. Delegates then visited the exhibitor booths during the opening reception, which also offered the opportunity to enjoy East Coast hospitality, fiddlin' music and a chance to locate friends from across the country.

Friday, October 16, 2009

Following breakfast in the exhibit hall, delegates were invited to the opening ceremonies where a local piper led the flag procession, and then a local singer, granddaughter of a hemodialysis patient, sang *O Canada*. Bill Carr offered refreshing humour in a message reflecting the need to remain positive within the changing environment in which we work. Business was the next order of the day, as delegates participated in the annual general meeting (AGM) complete with award presentations. Congratulations to the award recipients. Following lunch, three sets of five concurrent sessions highlighting vascular



Amélie Dumont, Quebec Region VP, and Shripal Parikh, VP of Technologists.

access, cultural considerations, equipment technology, transplant and end-of-life care were held. A first-time program event occurred next when delegates were asked to return from the evening meal and have dessert while viewing poster presentations. Poster authors were asked to dedicate this time to be present at their work to enable interaction. After dessert and posters, Kim Barrey of London, Ontario, presented her life story complete with her emotional response to life events such as parental loss, CRF diagnoses, dialysis, marriage break-up, personal accomplishment and her building of self-esteem. Woven through her story was the role of her health care team. Special thanks to Fresenius for sponsorship of Kim and thanks to Kim for sharing with us.

Saturday, October 17, 2009

A revealing keynote speaker, Cheryl Thomas—a speaker for the Renal Support Network, reviewed the myths and facts surrounding renal transplanta-



Jimmy Flynn, the Ambassador of Good Cheer, entertained conference attendees Saturday night.



Evelyn Magee and Cathy Erhardt from the 2009 Planning Committee were ready for the show.

tion. This provided us with some ideas on the perceptions the public may have about transplant. Following this address, delegates attended two morning and two afternoon concurrent sessions from a choice of 22 topics about various nephrology issues and projects. Prior to the afternoon sessions, Dr. Dawn Allen of McGill University presented her work in the production of a patient video. The video, "Living with Kidney Disease: A Video Essay from Patients' Perspectives" was played, which again allowed us to reflect on what our patients truly feel. This video has been offered for copy, and can be obtained from your CANNT VP. Thanks are extended to Dr. Allen. A

Maritime evening of entertainment with dinner, a performance by Jimmy Flynn: the Ambassador of Good Cheer and some dancing brought Saturday to a close.

Sunday, October 18, 2009

An awards breakfast opened the final day with congratulations to the manuscript and poster presentation winners. Two final keynote addresses were provided by Dr. Christine Pippy and Valerie Price, and by Elizabeth Kelman. Dr. Pippy and Valerie Price reviewed a New Brunswick research initiative entitled the DM2 Project: Early Intervention of Type 2 Diabetes, which outlined the chronic disease management initiative

offering software support of clinical guidelines to primary health care providers, as well as a multidisciplinary clinic approach to hard-to-target parameters of type 2 diabetes.

Palliative care and nephrology: A celebration of life presented by Elizabeth Kelman provided some very positive nursing interventions and communication considerations to aid in the care of patients at this point along their life journey. Thanks to these three keynote speakers.

This was the end of the 2009 CANNT Symposium, the banner was passed to Toronto and we hope to see you there November 18–20, 2010.

Award winners from CANNT 2009

Sponsored by Fresenius Medical Care

Bursaries:

Technical Bursary: Darrell Cuza, St. John's, NL

Frances Boutilier Bursary (Baccalaureate level): Monique Moore, Cornwall, ON

Franca Tantalo (Graduate level): Karelle Robichaud, Moncton, NB

CANNT Research Grant:

Joanne Plamondon, Winnipeg, MB

Excellence in Practice Awards:

Clinical Practice: Shelley Burnett, Vancouver, BC

Technical: no applicant

Administration/leadership:

Carolyn Bowman, Orillia, ON

Research: Rosa Marticorena, Toronto, ON

Education: Laurie Pritchard, Orillia, ON

CANNT Awards:

Certification or

Recertification Bursary:

Eastern Region: Norma Jean Martel, Upper Tantallon, NS

Ontario: King Tai Chan, Toronto, ON

Western Region: no applicant

CANNT Journal Award 2009 was awarded to Jane Ridley, Barbara Wilson, Lori Harwood, and Heather K. Laschinger, London, ON, for their article "Work environment, health outcomes, and magnet hospital traits in the Canadian nephrology nursing scene", published in the January–March 2009 issue of the *CANNT Journal*.

2009 CANNT Manuscript Award was awarded to Barbara L. Paterson, Lee Ann Sock, Denis LeBlanc and Joan Brewer from Fredericton, NB, for their manuscript "Ripples in the water: A toolkit for aboriginal people on hemodialysis."

Poster Award Winners

1st place: Kimmy Lau, Richmond Hill, ON, for her poster "Research dissemination to clinical practice: Hepatitis B vaccination program at the progressive renal insufficiency clinic."

2nd Place: Rick Luscombe, Vancouver, BC, for his poster "Catheter tip design: A question of functionality."

3rd Place: Nicole Aitken, Chris Horton, Debbie Norton, Cathy Nadiger and Elan Paluck, Regina, SK, for their poster "Delaying renal replacement therapy: Is dialysis destiny? Evidence from the Regina Qu'Appelle Health Region (RQHR) chronic renal insufficiency (CRI) program population."

Sponsored by AMGEN

International Nursing Conference

Travel Grant: Judith Ferguson, Richmond Hill, ON

Nephrology Research Grant—Novice:

Manon Campbell, Ottawa, ON, and Diane Pouliot, Saint-Anaclet, QC

Nephrology Research Grant—

Experienced: Kimmy Lau, Richmond Hill, ON

Preceptorship/Mentorship Grant—

Vascular Access: Suzanne Seiler, London, ON

Preceptorship/Mentorship Grant—

Nurse Practitioner: Isabelle Thibeault, Chicoutimi, QC

Health Care Professional

Preceptorship/Mentorship Grant—

Outreach: no applicants

Technology Grant: no applicants



Kimmy Lau receives the 1st place poster award from CANNT 2009 Chairpersons Faye Clarke and Sherry MacPhee.



Rick Luscombe receives the 2nd place poster award from CANNT 2009 Chairpersons Faye Clarke and Sherry MacPhee.

Our Mosaic of Renal Care



CANNT ACITN
2010

November 18–20

Metro Toronto Convention Centre

CALL for ABSTRACTS



Abstracts are currently being accepted for ORAL and POSTER presentations for **CANNT 2010**, the annual national meeting of the Canadian Association of Nephrology Nurses and Technologists, to be held **November 18–20, 2010** at the **Metro Toronto Convention Centre**, Toronto, Ontario. Topics of interest may include: clinical research, innovative projects and solutions, ethics, case presentations and clinical reviews. All abstract submissions must be evidence-based.



CONFERENCE THEME:

The theme for CANNT 2010 is **"OUR MOSAIC OF RENAL CARE"**. In keeping with the conference theme, abstract submissions should demonstrate leading edge nephrology topics, appropriate for the novice through to the advanced practice professional. *Please consult the sidebar for possible areas of interest.*

ABSTRACT SUBMISSION GUIDELINES

All abstracts must be submitted via e-mail to: hreid@innovcc.ca as an attachment in Word or WordPerfect. **Deadline: April 1, 2010**

Submissions must include the following:

- ABSTRACT TITLE** • must accurately reflect the content of the presentation
- ABSTRACT TEXT** • should be no longer than 250 words (font: Times New Roman 12 point)
 - provide author information on a separate page
 - should be as informative as possible

IF RESEARCH-BASED SHOULD INCLUDE:

- purpose of study
- methods
- results
- conclusions
- implications for nephrology care

IF PRACTICE/EDUCATION-BASED, SHOULD INCLUDE:

- purpose of the project
- description
- evaluation/outcomes
- implications for nephrology practice/education

ALL SUBMISSIONS MUST:

- define all abbreviations the first time they appear in the abstract
- use only the generic names of drugs
- do not identify companies and/or products in the body or title of the abstract

IMPORTANT NOTES:

- Only **COMPLETE** submissions received by **Thursday, April 1, 2010** will be considered.
- All correspondence will be with the first author only.
- Acceptance of abstract does not waive attendance fees (registration, transportation, accommodations).
- Notification regarding selection decisions will be provided by Friday, April 30, 2010.
- Should the abstract be selected for presentation, the author(s) authorize(s) the publication of the abstract submitted for publication in the CANNT Journal.
- The presentation shall not make comparison to companies or products for any purposes of product marketing, nor will topics or materials used discredit companies or products.
- The abstract should make full disclosure of corporate funding sources.
- Abstracts not in the required format will be returned to the author for revision.
- The language of abstract submission would be the language of presentation, if selected.



Modes of Dialysis
Pathophysiology
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Nutrition
Infection control
Vascular access
Professional development
Ethics
Professional practice
Research
Disaster planning



PRESENTATION INFORMATION:

(provided on separate page)

- identify preferred format of presentation (ORAL or POSTER)
- full names and credentials of authors
- contact information for first author must include: full name, e-mail address, fax number, mailing address with postal code, home and work telephone numbers
- identify preferred audiovisual requirements (PC Viewer for Powerpoint or Slides)

FORWARD ABSTRACTS TO:

MAIL: CANNT 2010 ABSTRACTS
Innovative Conferences & Communications
P.O. Box 319, 59 Millmanor Place
Delaware, Ontario, Canada N0L 1E0

EMAIL: hreid@innovcc.ca (with file attached)

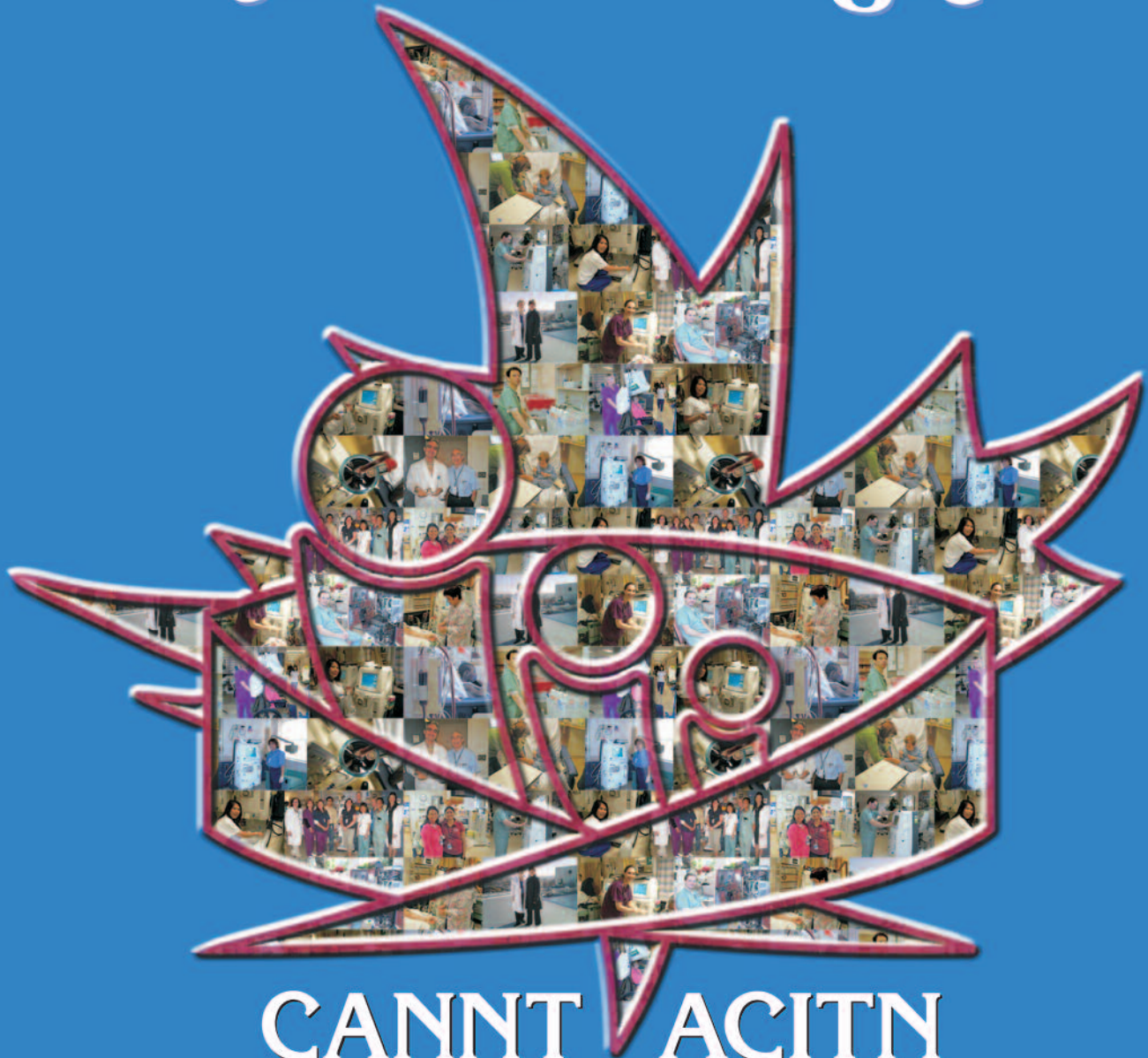


ABSTRACT SUBMISSION DEADLINE

April 1, 2010



Notre mosaïque de soins en néphrologie



CANNT ACITN
2010

18 au 20 novembre
Metro Toronto Convention Centre

DEMANDE de COMMUNICATIONS



Nous acceptons présentement pour des présentations ORALES et des SÉANCES D’AFFICHAGE pour **CANNT/ACITN 2010**, la réunion nationale annuelle de l’Association canadienne des infirmières/iers et technologues en néphrologie, qui se déroulera du **18 au 20 novembre 2010** au **Metro Toronto Convention Centre**, Toronto, Ontario. Les sujets d’intérêts peuvent comprendre: la recherche clinique, les solutions et les projets innovateurs, l’éthique, la présentation de cas et les examens cliniques. Toutes les communications présentées doivent être basées des résultats cliniques et scientifiques.

LIGNES DIRECTRICES POUR LA PRÉSENTATION DES COMMUNICATIONS

Toutes les communications doivent être présentées par courriel à l’adresse suivante: hreid@innovcc.ca avec pièce jointe en format Word[®] ou WordPerfect[®].

Les communications doivent comprendre les éléments suivants : Échéance: **1^{er} Avril 2010**

Titre de la communication

- doit refléter avec exactitude le contenu de la présentation;

Corps de la communication

- texte avec un maximum de 250 mots (caractère : Times New Roman, 12 points);
- fournir les renseignements sur l’auteur sur une page séparée;
- doit être le plus informatif possible;

SI ELLE EST AXÉE SUR LA RECHERCHE:

- l’objet de l’étude;
- la méthodologie;
- les résultats;
- les conclusions;
- les implications pour les soins en néphrologie;

SI ELLE EST AXÉE SUR LA PRATIQUE/L’ÉDUCATION, ELLE DOIT COMPRENDRE:

- but du projet;
- la description;
- l’évaluation/les résultats;
- les implications pour la pratique et l’éducation en néphrologie;

TOUTES LES SOUMISSIONS DOIVENT :

- définir **toutes les abréviations** dans le texte;
- utiliser uniquement les noms **génériques** des médicaments;
- **ne pas identifier de compagnie ou de produit dans le titre ou le contenu de la communication.**

REMARQUES IMPORTANTES:

- Seules les présentations **RÉPONDANT AUX CRITÈRES ÉNONCÉS** reçues avant le **jeudi 1^{er} avril 2010** seront étudiées.
- Toute correspondance sera effectuée exclusivement avec l’auteur principal.
- L’acceptation de l’abstrait n’écarte pas des honoraires d’assistance (enregistrement, transport, logement).
- Les décisions de sélection seront communiquées avant le vendredi 30 avril 2010.
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Implementation of a diabetic foot management best practice guideline (BPG) in hemodialysis units

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Abstract

The aim of this study was to examine the impact of introducing the Registered Nurses' Association of Ontario Best Practice Guideline (BPG), Assessment and management of foot ulcers for people with diabetes (2005), on foot ulcer incidence, recurrence, and amputation rate in adult diabetic clients who are undergoing chronic hemodialysis treatments. Fifty-seven individuals from three hemodialysis units participated in the study. Data were collected at three points in time over a 15-month period. A significant reduction in the number of wounds was noted ($p < 0.05$) from time one to time three, and the grade of wounds ($p < 0.01$). However, five new amputations were reported. Although implementation of the BPG showed a positive patient outcome, further research needs to be conducted with a larger sample size.

Introduction

Evidence-based practice is supported through the development and implementation of best practice guidelines (BPGs) (Canadian Nurses Association [CNA], 2002). Nursing practice that is informed by research-based data, patients' preferences and values, and health care providers' knowledge and skills is evidence-based (Melnik et al., 2004). In 1999, the Registered Nurses' Association of Ontario (RNAO), with funding from the Ontario Ministry of Health and Long-Term Care, initiated a multiyear project to develop, implement and evaluate a series of BPGs to support evidence-based nursing practice (Grinspun et al., 2001/2002). A component of the RNAO BPG was the **Assessment and Management of Foot Ulcers for People with Diabetes** (2005). This initiative supports nurses and other health care professionals in practice, education, and policy development.

The World Health Organization (WHO, 2009) warns that diabetes is reaching epidemic proportions, citing that rates of diabetes have escalated from 30 million in 1985 to more than 150 million in 2000. The International Diabetes Federation (IDF, n.d.) estimates the rate will rise to 380 million by 2025. Canadian projections mirror these statistics, indicating that diabetes rates will rise from 1.4 million in 2000 to 2.4 million by 2016 (Ohinmaa et al., 2004). People with diabetes have a 15% chance of developing a diabetic foot ulcer in their lifetime (IDF, 2005). Even with successful healing, the recurrence rates for foot ulcers may be as high as 50% to 70% over three to five years (Boulton et al., 2005). Diabetic foot ulcers in about 14% to 24% of people will require amputation (American Diabetes Association, 1999).

Diabetes is the leading cause of renal failure, and the IDF states renal failure will be the cause of death for 10% to 20%

of people with diabetes. According to the Canadian Institute for Health Information (CIHI, 2004), end stage renal disease (ESRD) has climbed almost 20% from 1997 to 2001. As the degree of nephropathy increases in severity, so does the incidence of foot ulcerations and amputations (Schlieffer et al., 1998). In persons with both diabetes and ESRD, the risk of amputation increases tenfold (Eggers et al., 1999). Locking-

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Cusolito et al. (2005) found that nearly 13.4% of hemodialysis patients in their study had undergone amputations. The mortality rates following amputation for those with ESRD are two-thirds within two years following the first amputation, which is a worse prognosis than for most malignancies (Eggers et al., 1999).

The purpose of this study was to examine the impact of the RNAO BPG **Assessment and Management of Foot Ulcers for People with Diabetes** on foot ulcer incidence, recurrence, and amputation rate in adult clients with diabetes who are undergoing chronic hemodialysis. Besides this quantitative study, the research project also has a qualitative component, which explored nurses' perceptions regarding the implementation of a BPG on the assessment and management of foot ulcers for people with diabetes.

Relevant literature

A review of the literature revealed a paucity of research pertaining to the implementation of foot ulcer BPGs in the diabetic ESRD population. Literature concerned with foot care of patients with diabetes and ESRD has tended to focus specifically on the prevention and management of foot complications. The need for an increased emphasis on foot care is a recurrent theme. Richbourg (1998), Mark et al. (2003), Neil et al. (2003), Evans and Chance (2005), and Papanas et al. (2007) discussed the importance of comprehensive foot care management for ESRD patients and the necessity for nephrology nurses and other health care professionals to play a key role in early detection and intervention. A convenience sample of 23 adult men and women who had diabetes and were receiving hemodialysis were involved in a quasi-experimental pilot study by Neil et al. (2003). The experimental group participated in foot care education and foot assessments and each member was provided with special shoes. This group fared slightly better on a post-test of their foot care knowledge, which prompted the authors to conclude that nephrology nurses must take the opportunity to enhance their involvement in their clients' foot care. McMurray et al. (2002) conducted a study to determine the impact of intensive education and care management on patient outcomes, glycemic control, and quality of life of dialysis patients with diabetes. What was found was that the 83 patients who received the "aggressive" approach to foot care education had positive outcomes in the areas of foot risk and incidence of amputations, which was statistically significant. Mark et al. (2003) surveyed 55 diabetic ESRD patients over a three-month period. They found that 58.2% of the patients had not been seen by a podiatrist in the previous year and of the 36 patients who had been deemed as having 'high risk' feet, only 21 (58.3%) had been seen by a podiatrist the year before. Additionally, seven patients presented with an ulcer during the audit. Mark et al. concluded that foot care deficiencies were rampant and recommended increasing access to podiatry services and multidisciplinary foot clinic referrals for patients who present with an ulcer.

The grim statistics associated with foot complications in patients with diabetes and ESRD, the lack of research in the area of BPG implementation, and the opportunities for nephrology nurses to play a crucial role in assessment and management provide rationale for this study.

Study background

A partnership between individuals from a university-affiliated tertiary hospital health care network, community care organization, and university faculty of nursing made a successful bid for project funding from the RNAO. Fifty per cent of the funding was provided by the RNAO and the remaining 50% was contributed by the organizations where the study took place. The project's steering committee included advanced practice nurses (APNs), administrators, and the nursing faculty. BPG implementation and coordination were carried out by APNs in the settings and the university nursing faculty coordinated the research project.

Methodology

Sample

Ethics approval was obtained from the university and the hospital system where the study occurred. The study took place at three hemodialysis units, which were located in a large teaching hospital with more than 800 beds in Ontario. A convenience sample of 57 diabetic clients over the age of 19 receiving outpatient hemodialysis at one of the three hospital sites was invited to participate by the APNs. Those awaiting transfer to satellite sites closer to their homes were excluded.

Data collection

Data were collected at three points in time. Times one, two and three were done at zero, nine and 15 months. Baseline data were collected before BPG implementation (May 2007). The data collection tool was developed by the APN group involved in the study. The RNs who collected the data had similar years of nursing experience, had worked in dialysis units and both had basic wound-care knowledge. They were instructed in completion of the tool for the study by the same APN. Time one RN completed the tool for time one only (baseline). Times two and three were completed by a second RN. The tool took approximately 20 minutes to complete.

Data collection instrumentation

The data collection tool was developed by a team comprising eight APNs with expertise in nephrology and diabetes, an APN wound-care consultant, and two faculty members. The tool was based on recommendations outlined in the RNAO BPG **Assessment and Management of Foot Ulcers for People with Diabetes** (RNAO, 2005). It included demographic information, medical and hemodialysis history, physical assessment of lower extremities, wound status as per the University of Texas Health Science Center San Antonio Diabetic Wound Classification System (Armstrong, Lavery, & Harkness, 1988), functional assessment (Eliopoulos, 2001), and a quality-of-life Likert scale ranging from 0–10 with '0' rated as the 'worst possible'.

Education sessions

Utilizing a train-the-trainer approach, the BPG recommendations were introduced by the APNs to hemodialysis nurses during "lunch and learn" sessions. These educational sessions included a new practice protocol involving foot assessments of all clients on admission. Clients determined to be at high risk would be assessed monthly, while those at low risk would be checked annually. In addition, high-risk clients were given a foot care kit that contained a mirror to assess the bottom of their feet, and booklets outlining diabetic foot care.

A “quick tip” card was given to nurses outlining the change in care protocol. Furthermore, two nurses on each of the units received additional education and acted as resources for their peers. A patient pamphlet was developed to complement teaching and a video on foot care targeting patients and staff was made available.

Data analysis

Data were analyzed using SPSS Version 16. Descriptive statistics were calculated for demographic variables and all items on the data collection tool. The one-tailed Wilcoxon's paired signed-ranks test (Sokal & Rohlf, 1981) was used to determine a change in the number of foot wounds, and a change in the grade and stage of wounds after nine and 15 months for patients presenting with at least one wound at time one using the University of Texas Health Science Center San Antonio Diabetic Wound Classification System (Armstrong, Lavery, & Harkness, 1988).

Results

Fifty-seven individuals participated in the study at time one. Slightly more were male (58%) and the average age was 64.2 years (± 12.14 years) (Table One). The majority had type 2 diabetes (85%) and 15% reported having type 1 diabetes. Diabetic nephropathy was the primary etiology for ESRD

(75%). From time one to time three there were 19 dropouts. The majority was due to deaths ($n=12$). Of those clients who were deceased, there was an even distribution of males and females and the average age was 70 years (± 10.6 years), all were insulin dependent and 42% had some type of coronary artery involvement. Additionally, the majority were hypertensive. Fifty per cent of the deceased group had at least one foot wound present at baseline and two of the individuals had an amputation.

Functional assessment hygiene and mobility

At time one, one-third of the participants required partial assistance with hygiene and this increased to more than 45% by time three. Similarly at time one, partial assistance with mobility was reported at 9% increasing to almost one-third by time three. This decline was due to the patient's deterioration over time and, subsequently, the need for more assistance. Thirty-nine per cent of participants reported managing their own foot care and the remainder reported that home care (26%), family members (19%) or a chiropodist/podiatrist (13%) managed their foot care and (2%) noted that others were responsible for their foot care.

Change in wounds status

For those patients who presented with an ulcer at time one, results from the one-tailed Wilcoxon's paired signed-ranks test showed a significant reduction ($p<0.05$) in the number of wounds at time two and time three. Additionally, there was an improvement in the grade of wounds ($p<0.01$) at time two and time three (Table Two). However, no significant improvement in the staging of the wound was noted.

Table One. Characteristics of the Sample		
Characteristic	Number	Per cent
Male	33	57.9
Female	24	42.1
Smoker	6	10.5
CAD/ HD/CHF	31	54.4
Hypertension	47	82.5
PVD	9	15.8
Intermittent Claudication	17	29.8
Hammer toe	8	14
Bunion	2	3.5
Claw toe	14	24.6
Charcot joint	10	17.5
Numbness	33	57.9
No. of wounds at baseline:		
None	27	47.4
1	11	19.3
2	7	12.3
3	6	10.5
4	6	10.5
Average age	64 years (± 12)	
Average time on dialysis	30.56 months (± 24.2)	
Average quality of life score at baseline (0–10)	6.45 (± 2.29)	

Table Two. Foot wound incidence stage and grade using the University of Texas Health Science Center San Antonio Diabetic Wound Classification System comparison with pre-implementation of BPG (time one) after nine and 15 months for patients presenting with at least one wound at time one				
	Change from Time 1 (% N)			
	Better	Same	Worse	N
# of Wounds				
9 months*	15 (65%)	3 (13%)	5 (22%)	23 (100%)
15 months*	10 (50%)	5 (25%)	5 (25%)	20 (100%)
Texas Grade (0–3)				
9 months**	13 (57%)	8 (35%)	2 (9%)	23 (100%)
15 months**	12 (60%)	7 (35%)	1 (5%)	20 (100%)
Texas Stage (A–D)				
9 months	9 (39%)	8 (35%)	6 (26%)	23 (100%)
15 months	6 (30%)	12 (60%)	2 (10%)	20 (100%)
Table values represent number of patients (% row N). Significant (* $p<0.05$; ** $p<0.01$) improvement from Time 1 detected with 1-tailed Wilcoxon paired signed rank test.				

Amputations

There were five new amputations noted from time one to time three (one toe amputation, one above-the-knee amputation and three below-the-knee amputations) on five patients. Due to the small sample size, further statistical analysis was not conducted.

Quality-of-life scale

The mean quality-of-life scores at time one were 6.45, 7.13 at time two and 7.09 at time three. Further analysis to determine patients' change in score from time one to time three was not possible due to the small sample size.

Discussion

This study provides a foundation for further research and reveals some of the intricacies of BPG implementation with a client population with diabetes and ESRD. The purpose of this study was to examine the impact of the RNAO BPG **Assessment and Management of Foot Ulcers for People with Diabetes** had on foot ulcer incidence, recurrence, and amputation rate in adult diabetic clients who are undergoing hemodialysis treatment. In summary, the statistically significant improvement in ulcer incidence and severity and its relationship to BPG implementation must be cautiously viewed within the context of the study limitations.


The most important contribution of this study is the implications for practice. The fact that 40% of these participants were handling their own foot care and only 13% receiving assistance from a health care professional provides further rationale for enhanced vigilance regarding the status of the clients' feet. As a result of the implementation of the BPG **Assessment and Management of Foot Ulcers for People with Diabetes**, a short, user-friendly assessment tool (Figure One) based on the evidence was developed for the hemodialysis nurses to assess their clients' feet. This assessment is now being completed on admission and monthly for clients deemed to be high-risk. This is in keeping with the suggestions outlined in the BPG **Reducing Foot Complications for People with Diabetes** (RNAO, 2004) where it is recommended that clients be taught to do a daily inspection of feet and annually have their feet checked by a health care professional. Ongoing assessment of feet is an important preventative factor that can be implemented by health care providers in managing foot care for diabetic clients (Lipsky et al., 2004). The development of a foot assessment protocol resulting from the implementation of this study changed nursing practice to include a more preventative and holistic approach. Given the possibility of cross-contamination in the dialysis unit, only the foot assessment and referral components of the BPG were implemented.

Figure One. Renal program: Foot assessment and plan

1. Does the patient have diabetes? ☐ Yes (high risk) ☐ No

2. Has the patient had any previous foot or leg ulcers or ischemic digits? ☐ Yes (high risk) ☐ No

3. Assessment of sensation—monofilament testing. Indicate level of loss of sensation:
☐ Cannot feel the filament (high risk) ☐ Can feel the filament



Right foot Left foot

4. Structural/biomechanical abnormality. Check (✓) if present (high risk).
☐ Callus ☐ Hammer toes ☐ Bunion(s)
☐ Charcot foot ☐ Abnormal shape to foot Other: _____

5. Circulation. Check (✓) if present (high risk)
Skin Temperature: ☐ Cool ☐ Right ☐ Left
☐ Rubor ☐ Blanching ☐ Cyanosis

6. Other. Check (✓) if present (high risk).
☐ Dryness ☐ Corns ☐ Edema ☐ Cracking
☐ Toe nails (thickened, ingrown) ☐ Ulcer(s) present—Describe: _____

7. Self-care. Is patient able to see bottom of feet and/or able to reach bottom of feet and has someone been taught to perform appropriate foot care inspection?
☐ Yes ☐ No (high risk)

8. Plan:
☐ High risk (q monthly foot checks) ☐ Low risk (q yearly foot checks)
☐ Note on Hemodialysis Treatment Plan ☐ CCAC referral
☐ Refer to MD or NP/CNS ☐ Pamphlet
☐ Patient Education—Describe: _____ ☐ DVD—Diabetic Foot Care
☐ Foot Kit Other: _____

Signature: _____ Date: _____

Additionally, family involvement should be supported through health teaching strategies and foot care specialist referrals tracked as outlined in the assessment protocol.

Sustainability of this practice change emerges as a priority, as a result of this study's findings. These particular hemodialysis units had implemented a number of strategies addressing foot care issues, as a result of the high prevalence of risk factors in their ESRD clients. For a variety of hypothesized reasons, these initiatives lost momentum. Implementation of the BPG promoted a return of focus on these crucial foot care issues. Staff and organizational support of this project is deemed as an essential component of BPG viability, and there is a plan to revisit the qualitative component of this project to explore sustainability issues and strategies with the RNs and other stakeholders.

Limitations

The major limitation of the study was the relatively small initial sample size, which was further reduced by one-third over the study's course. A 21% death rate and decline in the participants' functional and mobility status demonstrated the overall vulnerability of this population.

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- Although only two RNs were involved in data collection and both were trained on use of the tool by the same APN, a variation in measurement could have occurred when the nurses were conducting the wound assessment. To address this possibility, one recommendation would be to have the same RN conducting the assessments at all three points in time.
- Recommendations for future research**
- Further research needs to be conducted with a larger sample in order to increase generalizability of the results. Another recommendation would be to conduct an experimental design at two matching hospitals with one hospital implementing the BPG and the second hospital would be a control.
- Conclusion**
- In conclusion, the results of this study demonstrate the high degree of vulnerability of diabetic hemodialysis patients with ESRD. The major contribution of this study is the impact on practice. Implementation of the **BPG Assessment and Management of Foot Ulcers for People with Diabetes** signifies a comprehensive approach to the prevention and management of foot ulcers and amputations, improving the quality of care to ESRD patients.
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Sodium thiosulfate, bisphosphonates, and cinacalcet for calciphylaxis

By Colette B. Raymond, PharmD, MSc, Lori D. Wazny, PharmD, and Amy R. Sood, PharmD

Learning objectives

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

1. Describe the pathophysiology and etiology of calciphylaxis.
2. Recognize patients at risk for calciphylaxis.
3. Discuss the utilization of sodium thiosulfate, bisphosphonates and cinacalcet (Sensipar®) for the treatment of calciphylaxis including evidence for efficacy and toxicity.

Calciphylaxis

Calcific uremic arteriopathy, more commonly referred to as calciphylaxis, is a vasculopathy, which presents as calcification of arteries and soft tissues and resulting skin and fat necrosis. Clinical manifestations include altered sensations, mottled skin lesions, plaques or subcutaneous nodules, which can evolve to excruciatingly painful ischemic and necrotic ulcers (Guldbakke & Khachemoune, 2007; Rogers, Teubner, & Coates, 2007). Diagnosis is based on the clinical presentation, bone scans and, occasionally, skin biopsy (Rogers et al., 2007). Multiple risk factors have been proposed, and include chronic kidney disease, female gender, Caucasian ethnicity, obesity, diabetes, liver disease, protein C and S deficiency, local trauma, medications and derangements of mineral metabolism (see Table One) (Weenig, Sewell, Davis, McCarthy, & Pittelkow, 2007). Calciphylaxis has a one-year mortality rate of approximately 50% (Mazhar et al., 2001).

Current therapy for calciphylaxis is multifaceted, with a focus on supportive treatment such as wound care, antibiotics and analgesics, as well as aggressive management of mineral metabolism through treating elevated serum calcium, phosphate and parathyroid hormone levels. Efforts to minimize risk factors where possible, such as to avoid skin trauma and to discontinue medications associated with calciphylaxis have been recommended. Other strategies include changing to hemodialysis if patients receive peritoneal dialysis, increasing the frequency of

dialysis (e.g., daily dialysis) and reducing the dialysate calcium (Guldbakke & Khachemoune, 2007; Hayden, Goldsmith, Sowers, & Khanna, 2008; Raymond & Wazny, 2008). Treatment strategies with limited evidence such as corticosteroids, hyperbaric oxygen therapy, parathyroidectomy, tissue plasminogen activator and low-molecular weight heparins have been proposed in the literature (Rogers et al., 2007).

Recent case reports suggest an evolving role for drug therapy that targets bone and mineral metabolism for the treatment of calciphylaxis. The purpose of this article is to describe the use of sodium thiosulfate, bisphosphonates and cinacalcet (Sensipar®) for the treatment of calciphylaxis in patients with chronic kidney disease.

Sodium thiosulfate evidence for efficacy

Sodium thiosulfate has been used in the treatment of calciphylaxis since 2004, when the first case report was published (Cicone, Petronis, Embert, & Spector, 2004). Since then, several case reports have been published with the majority describing dramatic improvement in pain, wound healing and/or bone scans. Of 13 published cases of sodium thiosulfate monotherapy used for calciphylaxis in adults with chronic kidney disease, five cases reported negative outcomes. In the case reports that described a positive response to sodium thiosulfate, pain relief was observed within several days, whereas ulcers were slower to heal, generally over several months. Although not reported for all cases, the duration of therapy ranged from six weeks to more than a year (Hayden et al., 2008; Musso et al., 2008; Raymond & Wazny, 2008; Sood et al., 2009; Tindni, Gaurav, & Panda, 2008).

Table One. Risk factors associated with calciphylaxis (Raymond & Wazny, 2008; Weenig, Sewell, Davis, McCarthy, & Pittelkow, 2007).

Patient factors	Disease factors	Medications
Female gender Caucasian ethnicity	Obesity Diabetes Stage 4–5 chronic kidney disease Elevated serum calcium and phosphate Elevated calcium x phosphate product Hyperparathyroidism Liver disease Malnutrition Hypoalbuminemia Local trauma Hypotension	Corticosteroids Warfarin Calcium Iron Insulin Methotrexate Vitamin D

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Sodium thiosulfate drug properties

Sodium thiosulfate is thought to dissolve calcium deposits in tissues by forming soluble calcium thiosulfate complexes and may also act as an antioxidant to improve endothelial dysfunction and reduce pain (Hayden et al., 2008). The dializability of sodium thiosulfate is unknown, but, given its low molecular weight (248 Daltons), water solubility, and small volume of distribution (0.15 L/kg), it is likely to be removed by hemodialysis and should, therefore, ideally be administered after hemodialysis over 30 to 60 minutes (Bruculeri, Cheigh, Bauer, & Serur, 2005). It is unknown if sodium thiosulfate is removed by peritoneal dialysis. Sodium thiosulfate can be administered undiluted. The most common dose used is 25 g intravenously three times weekly. A 25 g dose corresponds to 100 mL intravenous solution, as in Canada it is currently available as 10 mL vials containing 0.25 g/mL sodium thiosulfate. The most common dose used is 25 g intravenously three times weekly. The cost of this medication in Canada is extremely high, at approximately \$3,000 per week. As a result, many dialysis units, hospital formularies and renal programs are struggling with coverage decisions and guidelines for use of this medication.

Sodium thiosulfate safety and tolerability

Adverse effects of sodium thiosulfate include nausea, vomiting, headache, rhinorrhea and anion gap metabolic acidosis (due to the unmeasured anion, thiosulfuric acid, generated when sodium thiosulfate is dissolved in aqueous solution), although adverse reactions to this drug are usually mild (Hayden et al., 2008; Raymond & Wazny, 2008). Other adverse effects may include central nervous system effects such as blurred vision, confusion, hallucinations, musculoskeletal adverse effects such as arthralgias and muscle cramps or cardiovascular effects such as hypotension or hypertension. However, there are no specific contraindications to this drug (Raymond & Wazny, 2008).

Bisphosphonates evidence for efficacy

Five published case reports describe the use of bisphosphonates (including oral etidronate [Didronel®], intravenous pamidronate [Aredia®], and intravenous ibandronate) alone for the treatment of calciphylaxis; all cases reported positive outcomes. Pain relief occurred within days to weeks, and ulcers improved within weeks to months (Raymond & Wazny, 2008). The most commonly administered drug is pamidronate (Aredia®), given at a dose of 30 mg intravenously repeated up to five times (Soni & Leslie, 2008; Sood et al., 2009). Etidronate (Didronel®) has been administered orally at a dose of 200 mg daily for 14 days.

Bisphosphonate drug properties

Bisphosphonates are felt to be effective for calciphylaxis due to an inhibitory effect on macrophages and local proinflammatory cytokines, and binding to calcified vascular smooth muscle cells to inhibit further arterial calcification (Raymond & Wazny, 2008). Bisphosphonates are generally felt to be removed by hemodialysis (Miller, 2007). However, there are no data to describe removal by peritoneal dialysis (Johnson, 2008).

Bisphosphonates safety and tolerability

No adverse reactions to bisphosphonates were reported in any of the case reports, but fever, pain at injection site, hypocalcemia, hypomagnesemia and hypophosphatemia and, rarely, osteonecro-

sis of the jaw are reported adverse effects of bisphosphonates when used for other indications (Raymond & Wazny, 2008). Additionally, long-term effects of bisphosphonates on bone metabolism in patients with an estimated glomerular filtration rate less than 30 mL/min/1.73m² are unknown (Miller, 2007).

Cinacalcet (Sensipar®) evidence for efficacy

Six cases describe the use of cinacalcet (Sensipar®) monotherapy for the treatment of calciphylaxis, generally accompanied by hyperparathyroidism, with five reporting positive outcomes and one with initial improvement, but subsequent death from sepsis. For those with improvement, pain and ulcers began to improve in the range of two to eight weeks, and healing was complete in four to 14 months in the reported cases. The most commonly prescribed dose of cinacalcet (Sensipar®) is 30 mg given orally once daily (Prey et al., 2009; Raymond & Wazny, 2008).

Cinacalcet (Sensipar®) drug properties

Cinacalcet (Sensipar®) is a calcimimetic agent that increases the sensitivity of the calcium-sensing receptor on the parathyroid gland to calcium (Byrnes & Shepler, 2005). The mechanism of action of cinacalcet (Sensipar®) in calciphylaxis is believed to be related to its action in decreasing serum parathyroid hormone, and stabilization of calcium and phosphate concentrations (Prey et al., 2009). Cinacalcet (Sensipar®) is not removed by hemodialysis or peritoneal dialysis (Johnson, 2008).

Cinacalcet (Sensipar®) safety and tolerability

Adverse effects of cinacalcet include nausea, vomiting and hypocalcemia. Cinacalcet (Sensipar®) undergoes extensive hepatic metabolism and has several significant drug interactions, such as with tricyclic antidepressants like amitriptyline (Byrnes & Shepler, 2005). One case reported (Andress, 2008) suspected adynamic bone syndrome (slowed bone laying down and resorption, which can predispose patients to hypercalcemia, fracture and cardiovascular disease) after administration of cinacalcet 30 mg daily to a patient with CKD not requiring dialysis who did not have hyperparathyroidism. The authors went on to suggest that cinacalcet (Sensipar®) should be reserved for those with secondary hyperparathyroidism (Ackermann et al., 2007).

Combination therapy

The use of combinations of drugs affecting bone and mineral metabolism has also been used to treat calciphylaxis. To date, five cases describe combination therapy with cinacalcet (Sensipar®) and sodium thiosulfate (Hayden, Kolb, & Khanna, 2006; Kyritsis et al., 2008; Raymond & Wazny, 2008) and five cases describe use of sodium thiosulfate and bisphosphonates (Soni & Leslie, 2008; Sood et al., 2009). Of these 10 cases, seven had positive outcomes.

Discussion

Evidence to support the use of sodium thiosulfate, bisphosphonates and cinacalcet (Sensipar®) alone or in combination for the treatment of calciphylaxis is limited to heterogeneous case reports with variable patient outcomes (Raymond & Wazny, 2008). Limitations to this type of literature are important to consider. Not all cases describe calciphylaxis confirmed by biopsy or bone scan. The case reports are limited in detailed drug information, including dose, duration of therapy, time to response and adverse effects. For all case reports, authors report multiple supportive care and pharmacologic interventions. It is difficult to attribute success of these interventions to just the

drug. Additionally, most case reports do not report long-term outcomes. Most of the case reports describe positive outcomes, but there is a demonstrated bias in the medical literature towards publishing successful patient cases. Overall, there is an urgent need for better quality of evidence in order to determine the relative place in therapy of sodium thiosulfate, bisphosphonates and cinacalcet (Sensipar®) in the management of calciphylaxis.

Implications for practice

Calciphylaxis remains a complex and poorly understood condition with high mortality that requires multiple therapeutic interventions. It is important to prevent calciphylaxis through management of bone and mineral metabolism according to current guidelines (Levin et al., 2008). Calciphylaxis should be considered in patients with CKD who develop mottled skin lesions, plaques or subcutaneous nodules (Guldbakke & Khachemoune, 2007). The dialysis or renal clinic nurse can play an important role in alerting the nephrology team to the presence of abnormal skin lesions, particularly in patients with chronically elevated calcium, phosphate or parathyroid hormone levels or other risk factors for calciphylaxis.

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Sodium thiosulfate, bisphosphonates, and cinacalcet for calciphylaxis

By Colette B. Raymond, PharmD, MSc, Lori D. Wazny, PharmD, and Amy R. Sood, PharmD

1. Clinical manifestations of calciphylaxis include:

- (a) hyperparathyroidism, elevated serum calcium, elevated serum phosphate
- (b) mottled skin lesions, subcutaneous nodules, and necrotic ulcers
- (c) decreased hemoglobin, transferrin saturation, ferritin
- (d) hypocalcemia

2. Mrs. DT is a 62-year-old female receiving hemodialysis. She was initiated on cinacalcet (Sensipar®) for treatment of calciphylaxis presenting as painful subcutaneous nodules on her shins. Diagnosis was confirmed with bone scan. How should the nurse monitor this patient for adverse effects to therapy?

- (a) results of a skin biopsy to confirm that calciphylaxis is decreasing
- (b) measure serum calcium to monitor for hypocalcemia
- (c) observe patient for signs and symptoms of osteonecrosis of the jaw
- (d) measure serum electrolytes to monitor for anion gap metabolic acidosis

3. Mr. TW is a 75-year-old male receiving hemodialysis. He presented with painful, necrotic ulcers on his buttocks and was diagnosed with calciphylaxis. The most rational approach to his therapy is:

- (a) wound care, antibiotics and analgesics, treating lowered hemoglobin, transferrin saturation and ferritin levels
- (b) plastic surgery consult, antibiotics and analgesics, treating lowered serum calcium, phosphate and parathyroid hormone levels
- (c) wound care, antibiotics and analgesics, treating elevated serum calcium, phosphate and parathyroid hormone levels, minimizing risk factors
- (d) wound care, antibiotics and analgesics, treating elevated serum calcium, phosphate and parathyroid hormone levels, minimizing risk factors and consideration of sodium thiosulfate, cinacalcet or bisphosphonates

4. Ms. SJ is a 69-year-old female receiving peritoneal dialysis. She was diagnosed with calciphylaxis after she presented with sensory alterations, mottled skin lesions and subcutaneous nodules on her abdomen that evolved to painful necrotic ulcers. Treatment has included conversion to hemodialysis, wound care, pain management, antibiotics, discontinuation of vitamin D analogues and calcium, and management of hyperparathyroidism with cinacalcet. Therapeutic options for Ms. SJ now include:

- (a) sodium thiosulfate
- (b) discontinue cinacalcet
- (c) sodium laurel sulphate
- (d) heparin

5. The most common adverse effects that Ms. SJ will need to be monitored for after she received sodium thiosulfate would include:

- (a) nausea, rhinorrhea, hypocalcemia, nightmares
- (b) nausea, rhinorrhea, anion gap metabolic acidosis, headache
- (c) nausea, rhinorrhea, hyperphosphatemia, osteonecrosis of the jaw
- (d) hypercalcemia, rhinorrhea, anion gap metabolic acidosis, headache

6. Ms. JK is a 63-year-old female with stage four chronic kidney disease. She has a medical history of depression, vasculitis, atrial fibrillation, obesity and gastroesophageal reflux. She has the following complications of chronic kidney disease: hyperparathyroidism, hyperphosphatemia, and anemia. Her medications include warfarin, prednisone, ranitidine, calcitriol, darbepoetin, oral iron, ramipril, nifedipine, metoprolol, paroxetine. Risk factors for calciphylaxis that Ms. JK has include:

- (a) prednisone, iron, warfarin, depression, obesity, female gender, liver disease, insulin
- (b) anemia, depression, hyperphosphatemia, diabetes, malnutrition
- (c) chronic kidney disease, iron, local trauma, prednisone, warfarin, anemia, calcium, vitamin D, methotrexate
- (d) chronic kidney disease, warfarin, hyperphosphatemia, calcium, vitamin D, iron, prednisone, obesity, female gender

(d) chronic kidney disease, warfarin, hyperphosphatemia, calcium, vitamin D, iron, prednisone, obesity, female gender

7. An important strategy to minimize Ms. JK's risk for developing calciphylaxis includes:

- (a) administer bisphosphonates, oral calcium and vitamin D as prophylaxis
- (b) avoid subcutaneous injections such as insulin and erythropoietin
- (c) management of bone and mineral metabolism according to current guidelines
- (d) treatment of anemia to target hemoglobin according to current guidelines

8. Limitations to the literature describing the use of sodium thiosulfate, cinacalcet and bisphosphonates include:

- (a) all cases describe calciphylaxis confirmed by biopsy or bone scan
- (b) cohort studies are limited in detailed drug information, including dose, duration of therapy, time to response and adverse effects
- (c) authors report single supportive care and pharmacologic interventions, making it simple to ascribe a benefit to a particular treatment
- (d) most case reports do not report long-term outcomes

9. The most commonly prescribed dose of sodium thiosulfate for the treatment of calciphylaxis is:

- (a) 25 g IV three times weekly
- (b) 25 g orally three times weekly
- (c) 30 mg orally daily
- (d) 30 mg IV after each dialysis session for five doses

10. The optimal duration of sodium thiosulfate therapy for the treatment of calciphylaxis is:

- (a) indefinitely
- (b) six to 12 months
- (c) until successful ulcer healing has occurred and a repeat bone scan is negative
- (d) until parathyroidectomy surgery

CONTINUING EDUCATION STUDY
ANSWER FORM

CE: 2.0 hrs continuing education

**Sodium thiosulfate, bisphosphonates,
and cinacalcet for calciphylaxis**

Volume 19, Number 4

By Colette B. Raymond, PharmD, MSc, Lori D. Wazny, PharmD, and Amy R. Sood, PharmD

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A descriptive study of the cultural competence of hemodialysis nurses

By Suzette A. Mahabeer, RN, BScN, MScN, CNS

Abstract

Within a society that is becoming increasingly multicultural, it is vital for nurses to become culturally competent in order to meet the needs of a culturally diverse population. Cultural knowledge plays a primary role in influencing the quality of care that nurses provide on a daily basis.

The purpose of this descriptive study was to assess the cultural competence level of hemodialysis nurses. The study was conducted in an outpatient setting at a large teaching hospital in Canada. The Inventory for Assessing the Process of Cultural Competence-Revised (IAPCC-R) was used as the questionnaire for this study. A convenience sample of 58 hemodialysis nurses completed the IAPCC-R tool. Data were analyzed using descriptive statistics. The nurses had a mean score of 65.58% on the IAPCC-R tool, indicating that they were culturally aware, but not culturally proficient. Further analysis of the IAPCC-R results showed that the nurses were lacking information in the area of cultural knowledge, but that they were motivated to become culturally competent.

The findings from this study indicated that, in a society that is becoming increasingly multicultural, hemodialysis nurses were motivated to become culturally competent. There is a need for nurse educators to support nurses to reach this goal.

Key words: culture; cultural competence, nursing, hemodialysis, health disparities.

Introduction

Cultural competence is defined as the ability of an individual to understand and respect the values, attitudes, beliefs and mores that differ across cultures, and to consider and respond appropriately to these differences in planning, implementing, and evaluating health education, promotion programs and interventions (Luis & Perez, 2003).

Cultural competence, an important component of nursing practice, allows nurses to collaborate effectively with people from diverse cultures within the patient population and the workforce (Grant & Letzring, 2003). A great deal of the literature (Campinha-Bacote, 2003; Grant & Letzring, 2003) lists shifting demographics as the primary reason why health care providers must become culturally competent.

Health care providers are legally and ethically responsible for providing health care consultations and interventions that patients can understand (Green-Hernandez, Quinn, Denman-Vitale, Falkenstein, & Judge-Ellis, 2004). Physical harm and possibly death, due to insufficient cultural knowledge to provide appropriate care, may result from cultural incompetence (Green-Hernandez et al., 2004).

Literature review

Cultural competence has become increasingly important in the nursing profession to address the needs of the increasing number of people from diverse cultures, as well as to reduce health disparities among culturally diverse people. Shifting demographics have had a significant impact on health care and health care professionals (Campinha-Bacote, 2003; Grant &

Letzring, 2003). Canada has been delineated as an international country where citizens representing more than 100 languages live in harmony. Kirkham (2003) explained that in response to the changes in demographics, health care providers have made an effort to accommodate the needs of clients of ethnic backgrounds. The discussions regarding cultural competence and diversity in health care are becoming more prevalent (Kirkham, 2003). Nurses need to be knowledgeable about the preferred health practices of the people served. Rosenjack-Burchum (2002) indicated that culturally competent care will be better received by the client and will result in increased client satisfaction. Cultural competence also improves quality of care and health outcomes (Rosenjack-Burchum, 2002).

Cultural competence also plays a role in reducing health disparities (Johnson, 2005). Khamisha (1997) explained that despite the prevalence of particular health problems in certain cultural groups, they might be reluctant to seek appropriate health care services due to language barriers and health beliefs. Johnson (2005) found that people from ethnic minorities not only experience disproportionately high rates of serious diseases such as cancer, diabetes, cardiovascular disease and AIDS, they are also less likely to receive the same quality of health care as Caucasians.

Anderson (1999) found that multicultural populations, women, seniors, children, and adolescents were among the groups identified as suffering from poorer health or experiencing barriers to health care in British Columbia. The health commissioners in British Columbia produced a report known as the report of the **British Columbia Royal Commission on Health Care and Costs** (Anderson, 1999). The commissioners concluded that despite the fact that British Columbia has one of the best health care systems in the world, not all people receive equitable service. The rationale for people from ethnic backgrounds not utilizing the existing health care services available is due to the fact that the services are not culturally sensitive or readily available to them (Anderson 1999).

Within a society that is becoming increasingly multicultural, it is vital for nurses to become culturally competent in order to meet the needs of a culturally diverse population. Cultural knowledge plays a primary role in influencing the quality of care that nurses provide on a daily basis. Although there is extensive literature on the importance of cultural competence in nursing, the majority of research is from the United States. There is limited Canadian research available on this significant topic. The purpose of this descriptive study was to assess the cultural competence level of hemodialysis nurses at a Canadian hospital.

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Research questions

1. What percentage of hemodialysis nurses are judged to be culturally competent based on their score on the Inventory for Assessing the Process of Cultural Competence Among Healthcare Professionals-Revised (IAPCC-R) tool?
2. What percentage of nurses believe that their education level influences their own cultural competence level?
3. What percentage of nurses believes that work experience influences their own cultural competence level?

Methods

Instrument

The IAPCC-R tool is based on Campinha Bacote's (1994) conceptual model of cultural competence, which measures five constructs: cultural awareness, cultural knowledge, cultural skill, cultural encounters, and cultural desire. Scores indicate whether a health care professional is operating at a level of cultural proficiency, cultural competence, cultural awareness or cultural incompetence. Higher scores depict a higher level of competence. It is a 25-item tool designed to measure an individual's process towards cultural competency. It is also a self-administered tool that uses a four-point Likert scale reflecting the response categories of strongly agree, agree, disagree, strongly disagree; very aware, aware, somewhat aware, not aware; very knowledgeable, knowledgeable, somewhat knowledgeable, not knowledgeable; very comfortable, comfortable, somewhat comfortable, not comfortable; and very involved, involved, somewhat involved, not involved. The completion time is approximately 10 to 15 minutes.

The scores that indicate cultural competency on the IAPCC-R tool are as follows: health care professionals who score 91 to 100 are considered to be culturally proficient; those who score between 75 and 90 are culturally competent; those who score between 51 and 74 are culturally aware; and those who score between 25 and 50 are culturally incompetent (Campinha-Bacote, 2003).

Several studies have been conducted to test the reliability and validity of the IAPCC-R tool (Campinha-Bacote, 1994, 1999; Doutrich & Storey, 2004; Tinsley, 2000; Wilson, 2002). Other studies have also used the IAPCC-R tool (Kardong-Endgren, 2007; Nokes, Nickitas, Keida, & Neville, 2005; Sargeant, Sedlak, & Martsolf, 2005). These studies were used to measure levels of self-reported cultural competence. The indications for the use of the IAPCC-R have been identified in education, clinical, and research settings. In educational settings, the tool has been used as a pre-test and post-test to assess the level of cultural competence before and after the completion of a transcultural health care course (Campinha-Bacote, 1999). The IAPCC-R has been used in clinical settings to measure the effectiveness of educational programs and workshops on the topic of cultural competence (Chipps, Simpson, & Brysiewicz, 2008; Cooper-Brathwaite, 2005). The IAPCC-R has also been utilized in research studies concerning health care providers' levels of cultural competence (Campinha-Bacote, 1999).

Study setting

The study setting was a hemodialysis unit in a tertiary academic and research health care organization in Canada. There were 107 hemodialysis nurses at the selected hospital. Inclusion criteria for the study included registered nurses working in the hemodialysis unit.

Data collection

Subjects were recruited for this study by advertising on the hospital intranet and in the monthly hospital newsletter. The nurses were instructed on the advertisement to contact the researcher on the hospital intranet to indicate their interest in the study. The first 58 nurses who voluntarily agreed to participate in the study through implied consent were recruited to participate. The researcher sought approval from both the D'Youville College Institutional Research Ethics Board, and the hospital research ethics board in order to conduct this research. Following approval from both organizations, the questionnaire was administered for pilot-testing to five nurses to provide the researcher with feedback regarding: (a) comprehensiveness of the questions; (b) the relevancy of the questions in relation to the purpose of the study; (c) if the questions were reflective of the themes to be analyzed; and (d) if the participants interpreted each question in an identical manner. The majority of nurses (four out of five) from the pilot study indicated that the IAPCC-R questionnaire was comprehensive, relevant to the purpose of the study, reflective of the themes to be analyzed, and interpreted in an identical manner.

In order to ensure human rights protection, neither the participants' names nor any other identification were used in order to maintain anonymity. The research assistant signed a confidentiality agreement that indicated that she would not reveal any characteristics about the subjects to protect the subjects' confidentiality. The research assistant provided a copy of the College of Nurses (2004) standard, "A Guide to Nurses for Providing Culturally Sensitive Care" for the nurses' review prior to completing the questionnaire. The rationale for distributing this standard was to provide the nurses with a background for providing culturally sensitive care in nursing, and ensure comprehension of the concepts used in this study.

Data analysis

Statistical analysis was performed using SPSS software (version 10.1). Descriptive statistics were calculated for the scores on the IAPCC-R tool. Each question was coded and frequencies of responses to each question were tabulated using SPSS. Percentages obtained from the mean or average score of the question were reported to describe the responses.

Results

A convenience sample of 58 nurses was obtained for this study. The mean age of the nurses was 45 years and the range was 35 to 55 years. The sample consisted of two males and 56 females: 74.1% were college graduates; 25.9% were university graduates. In regards to work experience: 22.8% of nurses had 11 to 15 years; 19.2% had 16 to 20 years; 17.5% had greater than 26 years; 14% had one to five years; 14% had six to 10 years; and 1.7% had less than one year.

Table One. Descriptive statistics of individual scores on IAPCC-R (N = 58)

Cultural Competence Level	<i>f</i>	%	<i>M</i>
Culturally Competent	9	15.5	
Culturally Aware	48	82.7	
Culturally Incompetent	1	1.7	
Total: Overall IAPCC Scores	58	100	65.5

Based on the scores on the IAPCC-R tool: 15.5% of the nurses were considered to be culturally competent; 82.7% of the nurses were culturally aware; and 1.7% were culturally incompetent. The mean score on the IAPCC-R was 65.5%. (see Table One), indicating the nurses, in general, would be considered culturally aware.

The majority of the hemodialysis nurses (52.6%) indicated that their educational level had an influence on their own cultural competence level, while 47.3% of hemodialysis nurses indicated that their education level did not influence their cultural competence level. The majority of hemodialysis nurses (86.2%) indicated that their work experience had an influence on their cultural competence level, while 13.8% of hemodialysis nurses indicated that their work experience did not have any influence on their cultural competence level.

Analysis of the nurses' responses to individual items on the IAPCC-R questionnaire (see Table Two) indicated that 79.3% of hemodialysis nurses felt they were "not knowledgeable" in the area of ethnic pharmacology; 13.8% felt they were knowledgeable and only 5.2% felt they were "very knowledgeable." More than half of the nurses (57.9%) felt they were "somewhat aware" of specific diseases that are common among different ethnic groups (see Table Two). Just less than half of nurses (48.3%) indicated they were "somewhat knowledgeable" in the area of biological variations among different ethnic groups; 36.2% of nurses indicated they were "not knowledgeable" in this area. A significant number (51.7%) of nurses indicated that they were "not aware" of at least two cultural assessment tools.

Data were further analyzed by calculating the mean of means of the five cultural constructs: cultural awareness, cultural knowledge, cultural skill, cultural encounters, and cultural desire (Table Three). Scores on each construct were as follows: cultural awareness (2.73); cultural knowledge (2.18); cultural skill (2.54); cultural encounters (2.61); and cultural desire (3.07), indicating that the nurses were motivated to become more culturally competent.

Table Two. Significant IAPCC-R results

Item	f	%
Not knowledgeable in ethnic pharmacology	46	79.3
Somewhat aware of specific diseases among different ethnic groups	33	57.9
Somewhat knowledgeable in area of biological variations among different ethnic groups	48.3	28
Not aware of at least two cultural assessment tools	30	51.7

Table Three. Mean of Means (M) of the statements subsumed under the five constructs of the IAPCC-R tool

Constructs	Statements	M
1. Cultural Awareness	1,2,3,15,18	2.73
2. Cultural Knowledge	6,8,10,11,12	2.18
3. Cultural Skill	5,9,20,21,22	2.54
4. Cultural Encounters	14,16,17,23,25	2.61
5. Cultural Desire	4,7,13,19,24	3.07

Discussion

The key finding of this study was that the majority of the hemodialysis nurses in this study were culturally aware. However, they were not culturally competent according to their scores on the IAPCC-R tool. In this study, the mean score on the IAPCC-R tool was 65.5%. This result compares to two previous studies that also demonstrated that staff nurses (Salman et al., 2007) and nursing students (Nokes, Nickitas, Keida & Neville, 2005) scored in the range of being culturally aware.

The majority of nurses in this study felt that they were only "somewhat" aware of specific diseases among different ethnic groups. According to Campinha-Bacote (2003), the diseases that are common among various ethnic groups include: hepatitis A, tuberculosis, and diabetes mellitus in Chinese Americans; sickle cell anemia and Mediterranean fever in Arab Americans; and cancer, alcoholism, drug abuse and diabetes mellitus in Mexican Americans. South Asians in Ontario are also at high risk for developing Type II diabetes due to socioeconomic factors (Jafar et al., 2004; Prebtani, n.d.). Epidemiological studies indicate that the prevalence rate is two to three times higher in South Asians in comparison to Caucasian people (Jafar et al., 2004). Ontario may also have a higher rate of diabetes than other areas in developed countries due to its rapid rate of immigration from countries with more vulnerable populations, such as South Asia. It is important for nurses to be cognizant of different diseases that certain cultural groups are predisposed to in order to assist these clients in seeking appropriate health care. This background knowledge would also raise cultural awareness for nurses to effectively meet the needs of the clients to provide quality nursing care and improved patient outcomes.

Furthermore, the majority of nurses felt they were not highly knowledgeable in the area of biological variations among different ethnic groups. According to Campinha-Bacote (2003), health care professionals should have knowledge of how biological, physical, and physiological differences may influence the ability to perform an accurate nursing assessment. For example, a common finding may be inverted T waves shown on the precordial leads of the electrocardiogram normally present in African American males (Campinha-Bacote, 2003). Although this finding may be an unusual result in other cultural groups, it is normal among African Americans.

The results of this study also demonstrated that the majority of hemodialysis nurses felt that they lacked knowledge in the area of ethnic pharmacology. Although the topic of ethnic pharmacology is well documented in the nursing literature (Campinha-Bacote, 2003), the hemodialysis nurses had insufficient knowledge in this area according to the IAPCC-R tool. According to Campinha-Bacote (2003), ethnic pharmacology is the study of differences in drug metabolism between ethnic groups. Acquiring knowledge regarding ethnic pharmacology is an important issue in gaining cultural knowledge. Factors such as the client's diet and cultural beliefs may interfere with the treatment regimen provided by health care professionals. For example, some cultures use specific herbal remedies or alternative medicines to treat illness and promote health, but they may be unaware of the herb-drug interaction. The participants in this study may be unfamiliar with different herbal

remedies and how they may interact with conventional medications. Nurses do not receive formal training in ethnic pharmacology, but it would be beneficial to provide some education in this area to help increase cultural awareness.

According to further analysis of the cultural constructs (see Table Three), the nurses scored the lowest mean of 2.18 in the area of cultural knowledge, followed by cultural skill 2.54, cultural encounters 2.61, and highest in cultural desire 3.07. A mean score of 4.0 would indicate cultural proficiency in any area. These results showed that the nurses demonstrated cultural awareness and that they were motivated in the process of becoming culturally competent with the higher mean score in cultural desire. These results are interesting because, while they highlight an area that requires the most improvement (cultural knowledge), they also highlight that the nurses indeed have a passion for gaining new insight and knowledge in the area of cultural competence.

Recommendations for future research

This study could be replicated at several different health care facilities, or in different areas of practice, with a larger sample size, using a quasi-experimental design to compare cultural competency levels based on the IAPCC-R tool. Findings from such a study would likely be more representative and

more accurately reflect the general population of nurses in Canada. Also, the findings from this study would have been strengthened by utilization of a mix-methods approach, using both the IAPCC-R tool and also interview method to obtain more detailed information.

Conclusion

The purpose of this study was to assess the levels of cultural competence of hemodialysis nurses using the IAPCC-R tool. Significant findings of this study were that the nurses were culturally aware; required more cultural knowledge; and were highly motivated in the area of cultural desire. Thus, there is an opportunity for educators to improve hemodialysis nurses' level of cultural knowledge. As Canada's population becomes more culturally diverse, it is most important for nurses to gain cultural knowledge so that they can meet the needs of patients from diverse cultures.

Acknowledgement

I would like to dedicate this article to my late professor, Dr. Janet Ihlenfeld. Her diligence and compassion facilitated my transition into advanced practice nursing and will always be remembered. I would also like to thank all of the hemodialysis nurses who participated in my study.

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Bedside Matters...

Were you there?



I am at home recuperating instead of presenting at the annual conference being held right now (October 15) in Saint John. This leads me to think about the values of a conference like CANNT.

Have you experienced this kind of event? Like me, do you feel an intense pride in the professional piece of your life? At a national gathering of like-minded people, you can look around the room and feel the dedication to this specialty. Professionals are there because of personal stories of real patients and families. Each of us has a reason to share what we know and to improve the care that we offer.

What better way to nurture our cause and ourselves?

We can participate, ask professional questions, observe and network.

We plan ahead, invest some of our own time and money to meet together in a new setting, with vibrant people who have fresh ideas. The nephrology world is broadened in front of us and we can compare our own learnings with others across the nation.

Did you feel inspired by the new technique the techs in Saskatchewan are using? Did the RN who told her story of her choice and huge transition to hemodialysis from public health lead you to re-evaluate your perspective on the impact of your own approach to giving care?

Some of these lessons come from the podium, others from informal interactions with tablemates or talk at social gatherings. Maybe you discovered a mentor, a colleague with the same kind of goal or a style that you can emulate.

I still remember someone I met five years ago who expressed his unique personality and his goal for teaching everyone in B.C. about how to achieve a dignified end of life. I continue to feel like I am part of his team. The big team. The broader team. Beyond the borders within which we labour every week. A stretch toward new possibilities.

See you at the next conference.

Let your colleagues know how you shared conference information once you returned to your own unit. Please contact Lee Beliveau at l2b@telus.net to discuss ideas for submission.

By Lee Beliveau, RN, CNeph(C), staff nurse, hemodialysis unit, at Surrey Hospital, Surrey, British Columbia

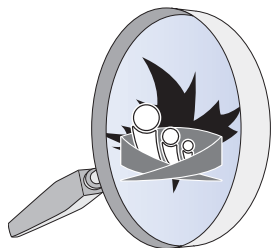
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Profiling...

New CANNT board members 2009–2010

Patty Quinan, President-elect

I began my career in nephrology in 1983, and my clinical experience includes inpatient nephrology, home dialysis and hemodialysis. Returning to university to obtain



bachelors and master's degrees in nursing has opened many opportunities for me. I am a Clinical Nurse Specialist for a large nephrology program at Humber River Regional Hospital, a community-based hospital in north-central Toronto. My responsibilities include coordinating comprehensive vascular access care for patients with kidney disease, providing teaching to patients, family members, nurses and physicians, and working in collaboration with a multidisciplinary team.

I am married to a wonderful and supportive man who encourages me to pursue my career and professional objectives. We have two daughters and one son, ages 21, 18 and 16. I enjoy playing cards, reading, watching old movies (popcorn is a must), long walks, and playing badminton.

My interest in becoming a board member of CANNT has developed over several years, through membership and active conference participation, presentations, and writing papers for the journal. This has enabled me to fulfill career and professional objectives by providing me with an opportunity to network with nephrology nurses and technologists from across Canada, and increase my awareness about the association. In my new role as president-elect of CANNT, I look forward to joining an association of members with the knowledge, expertise and commitment necessary to improve nephrology patient care.

During my three-year term on the CANNT board, I will have a unique opportunity to learn more about CANNT at an operational level, and work in collaboration with nurses, technologists and other members of the board of directors. As president of CANNT, my vision is to reach out to members, non-members, and potential sponsors by developing creative and innovative strategies to increase membership. I hope to inspire nephrology nurses and technologists to pursue further education, to become involved with their professional organizations, and to take advantage of educational and research opportunities.

I look forward to beginning my new role as president-elect of CANNT.

Cathy Ehrhardt, Atlantic Region Vice-President

I am very excited to be the vice-president Atlantic for CANNT, and look forward to the challenges and opportunities that will come my way over the next two years. I graduated



in 1981 from the Aberdeen Hospital School of Nursing and have spent my entire 28 years nursing in Saint John, New Brunswick. I joined the nephrology program in 1990. Having worked in hemodialysis, home teaching and transplant, I finally settled back into hemodialysis. I am currently a part-time staff nurse in hemodialysis, as well as the anemia coordinator.

I have been research coordinator for the nephrology program for the last 10 years and have coordinated numerous clinical trials with major sponsors such as Amgen, Ortho Biotech, AstraZeneca and DOPPS II, III, and now IV, as well as several local projects. I have taken a clinical leadership course and enjoy the

orientation and mentoring of new staff members. I sit on several committees within our dialysis unit, as well as within the hospital, such as I3, which is a new computer system for the entire hospital.

I was heavily involved in volunteering when my children were in school and sports but, now, as an "empty nester," it is time to take on new challenges such as being a member of the CANNT board. I have been a CANNT member off and on over the years and, this year, I was on the organizing committee for the CANNT national conference held in Saint John, New Brunswick.

Amélie Dumont, Quebec Vice-President

My name is Amélie Dumont. I am, at present, working at the McGill University Health Centre (Montreal General Hospital). I am the full-time nurse in the peritoneal dialysis clinic.



I come from a town named Rivière-du-Loup. I went to University of Quebec in Rimouski to complete a bachelor degree in nursing in 1998.

After university, I worked at Hôpital Hôtel-Dieu de Lévis (on the south shore of Quebec City) on the float team for a few months. Then, in October 1998, I took a position of Assistant Head Nurse at the Hôpital d'Argenteuil in Lachute, on a geriatric floor.

It was in April 1999 that my career in nephrology started at the Montreal General Hospital. First, I worked in the hemodialysis unit and shortly after, I moved to the home dialysis clinic. I taught patients for traditional home hemodialysis (three times per week) and peritoneal dialysis.

In 2005, I was part of the team that developed and started the nocturnal home hemodialysis program. Our first nocturnal patient started in May 2005.

Since June 2007, I have concentrated my activities in peritoneal dialysis. Empowering my patients by educating them to take charge of their own care makes me feel that I can help them to achieve a better quality of life. This is the best reward to me.

I was an active member of the Quebec Association of Nephrology nurses (REINQ: Regroupement visant l'excellence de la pratique infirmière en Néphrologie au Québec) for the past three years. I was helping to organize the bi-annual meetings for the PD presentations and workshops.

I did my Canadian Nurses Association (CNA) nephrology certification in April 2009. After the exam, I was looking for a new challenge. In June, I heard that CANNT was seeking a new vice-president for the province of Quebec. Debbie Maure (from the CANNT Office) offered me the position and it is with great pleasure that I accepted.

This role is a new experience, and I'm looking forward to being part of this wonderful team. One of my goals with this mandate is to be a link between the Quebec CANNT members and the association. I will be their voice when I'm meeting with the other board members. I also want to promote the association and its work for future members.

I would like to thank all the Quebec members who came to the symposium in Saint John.

Amélie Dumont, Vice-Présidente du Québec

Bonjour,

Je m'appelle Amélie Dumont. Je travaille depuis 10 ans comme infirmière clinicienne à temps complet à la clinique de dialyse péritonéale de l'Hôpital Général de Montréal (Centre Universitaire de Santé McGill).

En 1998, j'ai complété mon Baccalauréat en Sciences Infirmières à l'Université du Québec à Rimouski.

Après mes études, j'ai travaillé quelques mois à l'Hôtel-Dieu de Lévis pour l'équipe volante. En octobre 1998, j'ai accepté un poste d'Assistante Infirmière-Chef sur une unité de soins de longue durée à l'Hôpital d'Argenteuil, à Lachute.

C'est en avril 1999 que ma carrière en Néphrologie a débuté à l'Hôpital Général de Montréal. Tout d'abord, j'ai travaillé à l'unité d'hémodialyse pour ensuite, obtenir un poste à la clinique de dialyse à domicile. Mon rôle consistait à enseigner aux patients l'hémodialyse traditionnelle (3 fois/sem.) ainsi que la dialyse péritonéale à la maison.

En 2005, j'ai participé à l'élaboration du programme d'hémodialyse nocturne à domicile de l'Hôpital Général de Montréal. C'est en mai 2005 que notre tout premier patient a débuté ses traitements d'hémodialyse nocturne à la maison.

Depuis juin 2007, je concentre mes activités professionnelles en dialyse péritonéale. Je suis toujours aussi heureuse de voir mes patients prendre en charge leurs traitements de dialyse après avoir reçu leur formation. Cela leur permet de reprendre le contrôle de leur vie malgré leur insuffisance rénale et de retrouver leur autonomie. De pouvoir être témoin de ces réussites est une des plus belles récompenses que mon travail puisse me procurer.

Durant les trois dernières années, j'ai aussi fait partie du Regroupement visant l'excellence de la pratique infirmière en Néphrologie (REINQ). J'ai eu la chance de collaborer à l'élaboration de certains ateliers et autres présentations portant sur la dialyse péritonéale. Ce fût pour moi une expérience très enrichissante sur le plan professionnel.

En avril 2009, j'ai obtenu ma certification canadienne en Néphrologie de l'AIIC. Suite à l'examen, j'étais à la recherche de nouveaux défis. C'est en juin dernier que j'ai accepté le poste de Vice-Présidente du Québec à l'ACITN. C'est avec beaucoup d'enthousiasme que je me joins à cette équipe.

J'aimerais beaucoup que mon rôle puisse faciliter la communication entre les membres du Québec et notre association. Je vous invite donc à communiquer avec moi pour partager vos réalisations, projets, commentaires et autres sujets d'intérêts à tous nos membres à travers le Canada!

J'aimerais saluer et remercier tous les membres qui ont participé à notre dernier Symposium qui a eu lieu à Saint-Jean N.B. (du 15-18 octobre 2009). J'ai été très heureuse de faire votre connaissance durant le congrès.

Bev Watson, Website Coordinator/Treasurer

It is my honour to serve on the CANNT board as the incoming website coordinator/treasurer.



My nursing career began in 1979, with a diploma and "cap pin" from Toronto East General Hospital [that old?!]. After specializing in peri-operative nursing for more than 12 years, a renal nursing course sparked my interest in nephrology. Thus began my ongoing journey into the complex and challenging world of nephrology nursing. I have worked in many areas of nephrology and in various capacities. I have been both student and teacher of numerous nephrology courses and, since 1997, I have proudly maintained my CNeph(C) designation. Throughout the years, my membership with CANNT has served as an invaluable source of educational and networking opportunities.

I received my BScN in 2004, and in 2008 graduated from the University of Toronto, Master of Nursing/Acute Care Nurse Practitioner program. In September of 2008, I obtained my Registered Nurse Extended Class licence to practise as a Nurse Practitioner. I currently work as Clinical Coordinator of the Sheppard Centre Self-Care Dialysis Unit, University Health Network, Toronto, Ontario. This unique unit accepts hemodialysis patients from nephrology programs across Toronto and provides me the opportunity to work in close liaison with renal health teams from the various hospitals, all towards a common goal of improving individual patient care and outcomes.

I am passionate about life-long learning and nephrology nursing. I hope to use my experience and enthusiasm to further the excellent work of the CANNT, and to encourage all nephrology nurses to become involved. There is so much we can learn from each other!

I welcome this opportunity, and look forward to receiving your comments and suggestions on how I might best serve your interests on the CANNT board.

False elevations in blood glucose readings with use of icodextrin (Extraneal) peritoneal dialysis solution



Case presentation

Mr. BP is a 67-year-old male who started peritoneal dialysis (PD) three weeks ago and is coming into the PD clinic to see the multi-disciplinary team.

His past medical history includes: Type 2 diabetes mellitus for the past eight years, a myocardial infarction three years ago and benign prostatic hypertrophy.

His current insulin regimen is:

- Insulin glargine (Lantus) 20 units at bedtime
- Insulin lispro (Humalog) 6 units with meals

His CCPD prescription is:

- Total volume: 11,000 mL
- Total time: 9 hrs
- Fill volume: 1,900 mL
- Last fill: 1000 mL icodextrin

Mr. BP presents at the clinic complaining that his blood sugar levels have been higher than normal since he started peritoneal dialysis. His current A1C is 6.8%. His blood glucose meter readings have been between 10 mmol/L and 15 mmol/L and he has been increasing his dose of fast-acting insulin to accommodate for this, which has resulted in one or two hypoglycemic episodes. He is wondering if he should increase his long-

acting insulin instead and questions if the dialysis sugar solutions are the cause of his poor diabetes control.

Icodextrin

Icodextrin is a starch-derived polymer indicated for a single daily peritoneal dialysis exchange. It is typically used in the long (8- to 16-hour) dwell during continuous ambulatory peritoneal dialysis (CAPD) or automated peritoneal dialysis (APD) (Baxter, n.d.). Since this solution is commonly used, nephrology health care practitioners and patients must be aware of its potential drug-lab interaction with blood glucose meters. Icodextrin PD solutions can falsely elevate blood glucose levels and lead to erroneous administration of insulin, which may result in hypoglycaemia complications (Health Canada, 2008). As a result, warnings have been issued by Health Canada and the manufacturer of blood glucose meters and icodextrin PD solutions.

The drug-lab interaction with blood glucose meters occurs as a result of the absorption and subsequent metabolism of icodextrin. Approximately 40% of icodextrin is absorbed during a 12-hour dwell via the lymphatic system and then moves into the blood stream (Baxter, n.d.). Within the blood circulation, amylases break down the icodextrin into

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oligosaccharides including maltose (Riley, Chess, Donovan, & Williams, 2003). The maltose by-product can contribute to the blood glucose measurements of non-glucose-specific blood glucose meters resulting in falsely elevated blood glucose measurements (Schleis, 2007). Glucose meters that use strips containing glucose dehydrogenase pyrroloquinolinequinone (GDH-PQQ) or glucose dye oxidoreductase as the enzymatic assay are susceptible to this interaction (Health Canada, 2008). On average, the use of icodextrin can increase blood glucose readings by approximately 3.6 ± 1.4 mmol/L in these blood glucose meters, but the reading may be higher

(Schleis, 2007). However, no conversion factor can be used because the over-estimation varies widely.

Blood glucose meters

The safest way for patients using icodextrin dialysis solution to monitor their blood glucose is with a blood glucose meter that uses a glucose-specific assay. The following assays are glucose specific (Health Canada, 2008).

- Dehydrogenase-nicotinamide adenine dinucleotide
- Glucose dehydrogenase flavin adenine dinucleotide
- Glucose oxidase
- Glucose hexokinase

Table One. Blood glucose meters that may falsely elevate blood glucose readings and therefore should NOT be used in patients receiving icodextrin (Extraneal) peritoneal PD solution

Company	Blood glucose meter
Abbott	All FreeStyle: FreeStyle® FreeStyle Freedom® FreeStyle Flash® FreeStyle Lite® FreeStyle Freedom Lite®
Roche	ACCU-CHEK Compact Plus ACCU-CHEK Aviva ACCU-CHEK Aviva Nano

Table Two. Blood glucose meters that will not falsely elevate blood glucose readings and therefore CAN be used in patients receiving icodextrin (Extraneal) peritoneal PD solution

Company	Blood glucose meter
Abbott	Precision Xtra®
Bayer	Contour® Breeze II®
LifeScan	All LifeScan Meters: OneTouch® Select™ OneTouch® Ultra® InDuo® System OneTouch® Basic® OneTouch® SureStep® OneTouch® FastTake® OneTouch® Profile® OneTouch® UltraMini OneTouch® Ultra 2 OneTouch® UltraSmart OneTouch® UltraLink
Roche	ACCU-trend GC
Tremblay Harrison	Oracle®

To assist renal nurses with blood glucose meter selection for patients who use icodextrin PD solution, Table One provides details on some of the currently available blood glucose meters that should not be used. Table Two provides details on some of the currently available blood glucose meters that can be used. Information was obtained via verbal correspondence with each respective company on October 8, 2009.

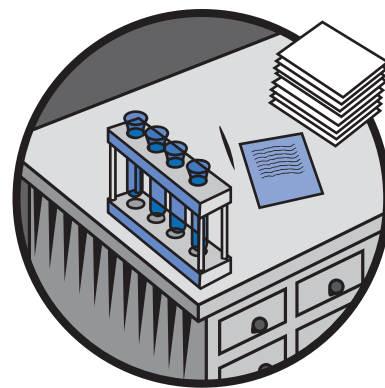
Mr. BP observed that his blood glucose levels had increased after starting dialysis. It is important for the health care team to assess his current blood glucose meter before responding to his blood glucose levels. Raising his insulin doses due to falsely elevated blood glucose levels places him at increased risk of hypoglycaemic reactions including hypoglycaemic coma.

When initiating icodextrin solution for diabetic PD patients, it is imperative for nephrology health care practitioners to review the type of blood glucose meter the patient is using at home and to ensure that it is compatible with icodextrin PD solutions. This will assist in decreasing the erroneous administration of insulin and potentially dangerous hypoglycaemic events.

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Advance care planning and pain management in chronic kidney disease



Advance care planning

Davison, S.N. (2009). Advance care planning in patients with end-stage renal disease. *Progress in Palliative Care*, 17(4), 170–178.

Reviewed by Kalli Stilos, RN, MScN, CHPCN(C), Advanced Practice Nurse, Palliative Care Consult Team, Sunnybrook Health Science Centre, Toronto, ON

The author's purpose for this review article was "to explore advance care planning (ACP) within the context of end stage renal disease (ESRD) and discuss new research that helps define how to initiate and facilitate effective ACP for patients with ESRD" (p. 170). Sara Davison is a nephrologist and Assistant Professor of Medicine, Division of Nephrology and Immunology, University of Alberta, Edmonton, Alberta. She draws our attention to North American statistics, which outline that more than 83,000 chronically dialyzed patients die every year and that roughly 15% to 25% of them die due to their decision to withdraw dialysis.

Patients with chronic kidney disease decline slowly over time or suddenly without warning. Patients, along with their families and health care providers, seldom have a clear transition point to recognize when the patient is dying. Many times death and dying issues are delayed until late in one's disease trajectory, at a point where they are unable to make decisions about their personal and medical treatments.

ACP is the process "of ongoing discussion, reflection, understanding and communication between a patient, their family and health care staff, for the purpose of clarifying values, treatment preferences, and goals for end-of-life care" (p. 170). It is embedded in the ethical principle of autonomy and the legal principle of consent. Should the patient not be able to express their wishes ACP gives patients an opportunity to communicate the care they want to receive, along with designating a substitute decision-maker to make medical decisions. The effectiveness of ACP depends on the information provided in the advance directive, along with the communication between the patient and his/her family and health care provider. However, ACP has been unsuccessful in improving the dialogue between the physician and patient, and the substitute decision-makers' knowledge of the patients' values/goals of care at end of life. Therefore, it's important that there are ongoing dialogues between the parties during the illness, so there is a better understanding of the patient's wishes around the death and dying process.

The article highlights the current trends of advance care planning in chronic kidney disease patients. Only 6% to 15% of dialysis patients complete advance directives. Considering the large range, dialysis patients are uninformed that cardiopulmonary resuscitation (CPR) is less likely to improve their odds of survival and that there is a low percentage of patients who choose "do not resuscitate". Patients who have had

experience with dialysis for longer than four years and CPR are more likely to refuse CPR.

Advanced directives discussions, in general, do not include withdrawal of dialysis. The challenge lies in the fact that dialysis patients typically don't see themselves as having a life-threatening illness and believe they will live indefinitely, as long as they are being dialyzed. It is these perceptions that divert the patients from having ACP discussions with their families and nephrologists. They cannot envision a time when they would have to discontinue life-sustaining measures.

When the time comes to discontinue dialysis, patients often lack the ability to make their own decisions, leaving the family and physician in the dark about their end-of-life wishes. Of clinical relevance is the statistic that "85% of patients older than 65 who choose to forgo life-sustaining treatments maintain that choice two years later and patients with a living will are less likely to change their wishes (14% versus 41%)."

In the article, Davison (2009) reports that the literature around end-of-life discussions does not provide physicians with adequate information they need to guide care at end of life. Patient-physician discussions are usually focused on the negative aspects of life-sustaining treatments, rather than positive desired outcomes. Physicians generally fall short in mentioning the following: forgoing dialysis as a positive treatment option, prognosis, spirituality, religion and details around the dying process. Lastly, patients' values are usually neglected and physicians do not ask them about which

treatment options they want to forgo now versus later when their health deteriorates.

Davison goes on to mention two studies (Davison, Jhangri, Holley & Moss, 2006; Davison & Torgunrud, 2007) looking at end stage renal disease patients' perspectives of the important elements of ACP discussions and their preferences regarding how ACP should be facilitated by the health care team. Some of the key elements that renal patients reported facilitated effective ACP included initiating ACP discussions early, as part of the educational process when patients are offered dialysis options and are able to make their own decisions. Patients want the time to reflect on end-of-life options. It is noted that ESRD patients who are healthier and candidates for kidney transplants are less interested in ACP discussions. Since there is no clear evidence to support when ACP should be initiated, it is suggested that nephrologists should consider discussing ACP if they suspect a patient has less than a year to live. Furthermore, ESRD patients want honest discussions about their illness and prognosis and how the medical treatments will affect their day-to-day life, as well as their families and the likelihood of the medical intervention helping them achieve their personal goals. Despite the fact that ACP is primarily a physician's role to initiate, ESRD patients tend to involve their family members in the ACP process. As high as 50% of patients talk to their family members compared to 6% to their physician, indicating the key role family plays in the decision-making process. Physicians also play an important role in ACP. ESRD patients recognize the healing effect empathetic listening has and view facilitated ACP as an opportunity to build therapeutic relationships with their health care providers. Some patients may need more time and help from their physician in reflecting on end-of-life issues, clearly, calling for physicians to have strong interview skills around empathy and reflective listening. Lastly, the ACP process needs to be documented, so that patient goals and treatment decisions are transferable across health care settings.

The author stresses that health care professionals need to be aware that end-of-life care varies across cultures and

ethical principles such as autonomy, decision-making models, communication of bad news, and attitudes toward ACP and end-of-life-care. Understanding these factors will only enhance their ability to begin ACP discussions. Once the patients' and families' cultural views are explored and acknowledged, then health care professionals can begin the ACP process with sensitivity to their individual perspectives.

Davison goes on to conclude the review article with the positive outcomes of advance care planning in the chronic kidney disease populations. Qualitative findings have found "that ACP allows patients to prepare for death, strengthen relationships with loved ones, achieve a sense of control, and relieve burdens placed on others" (p. 176). Similar positive outcomes were linked with ACP on end-of-life care with other patient groups. A systematic, community-wide "Respecting Choices" program integrated advance directive education and ACP. It enhanced the decision-making process between patient and caregivers and it improved patient satisfaction with end-of life decision making. In addition, these patients had an increased likelihood of forgoing life-sustaining medical interventions if a new health issue occurred, and were less likely to tolerate poor health at two-month follow-up. The implementation of the CHOICES ACP and palliative care program was associated with increased hospice length of stay, less time spent in hospital and more deaths occurring at home.

Though the article was published in the *Progress in Palliative Care Journal*, the role of palliative care in ACP, as it pertains to ESRD patients, was not discussed. Palliative care is not limited to patients at the end of their illness, but it aims at looking at the whole person and to improve the quality of living and dying (CHPCA, 2009). Palliative care services offer symptom management, advanced care planning, psychosocial and spiritual support and assistance with decision-making related to end-of-life issues. End stage renal disease patients are perfect candidates to benefit from such a service given their illness is both chronic and life threatening. Offering active treatment and palliative care concurrently would mean the "use of palliative care strategies begin at the time

of diagnosis of an incurable illness and increases as the patient nears death" (Jablonski, 2007, p. 51). Since nephrologists do report a lack of preparedness for end-of-life decision-making (Davison, Jhangri, Holley & Moss, 2006), it only affirms the role that palliative care can play in providing better quality care at end of life for ESRD patients and their families.

Although the review article discussed ACP as it pertains specifically to the physician-patient relationship, advance care planning is also within the domain of nephrology nurses. ESRD patients rely on health care professionals to guide them through the ACP process and that includes nephrology nurses. Nurses often build trusting and long relationships with their chronic kidney disease patients. They become familiar with family dynamics and patient-family values, recognize patients' concerns, goals of care, cultural and end-of-life preferences. Nephrology nurses have a broad view of the goals of ACP and are in a position to understand and explore what is important to patients and their families to improve end-of-life care.

This review article reminds us that we need to continue the ACP process with our patients and their families in a timely, compassionate, and culturally sensitive way. Only then can we improve the quality of living and dying for the end stage renal disease population.

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Pain management in chronic kidney disease

Davison, S.N. & Ferro, C.J. (2009). Management of pain in chronic kidney disease. *Progress in Palliative Care* 17(4), 186–195.

Reviewed by Patricia Daines, RN, MN, CHPCN(C), Advanced Practice Nurse, Palliative Care Consult Team, Sunnybrook Health Sciences Centre, Toronto, ON

The increasing prevalence of patients with chronic kidney disease (CKD) is a significant concern for health care providers when it comes to providing effective pain management (Williams & Manias, 2007). Although the body of research on the topic of pain in general is dense, research on pain in patients with CKD is limited. In this review article, Davison and Ferro (2009) report on the growing body of literature concerning pain in patients with CKD, and examine evidence-based pain management strategies. Both Davison and Ferro have published earlier work on the topic of pain in patients with renal disease. Davison is a well-known nephrologist from Alberta, who has contributed extensively in the areas of pain and symptom management, and palliative care for patients with end stage kidney disease. The article is published in *Progress in Palliative Care*, a journal that targets an international, interprofessional audience with an interest in issues relevant to all aspects of end stage disease. The information presented will be of great interest to anyone working in nephrology.

A strong first point in the article articulates the tremendous psychological burden of pain on quality of life for these patients. For example, dialysis patients with chronic pain are two to three times more likely to experience insomnia and depression than patients without chronic pain. Symptom burden accounts for 39% of the impairment of their mental health-related quality of life. This is a powerful reminder that ongoing pain does not just have physical consequences. At a time when health care providers are becoming more attuned to what patients with chronic

disease have to say about their quality of life, this is timely and relevant information.

Understanding the experience of pain in patients with CKD involves recognizing several complex issues that the authors highlight. To begin with, there are many potential causes of pain that are unique to patients with CKD and these patients frequently have more than one cause. Pain may be due to the primary renal disease itself, such as polycystic kidney disease; pain may emerge as a consequence of renal failure (e.g., renal bone disease); pain may also result from treatment of renal failure (e.g., ischemic neuropathies from arteriovenous fistulae); patients on peritoneal dialysis may also suffer from back pain due to abdominal distention and patients on hemodialysis may experience cramps or headaches during dialysis. In addition, most patients with CKD have several comorbidities contributing to painful conditions, such as diabetic neuropathies and ischemia due to peripheral vascular disease.

Barriers to adequate relief of pain constitute another key issue for patients with CKD. The authors outline general, well-recognized barriers (e.g., inadequate pain assessment; reluctance of patients to report pain; fear of addiction; lack of staff training in basic principles of pain management) and some that are specific to the experience of CKD. These include a lack of recognition on the part of nephrology staff as to the prevalence, severity, and impact of pain in CKD; lack of research, especially with respect to the patterns and types of pain seen in CKD; the altered pharmacokinetics and pharmacodynamics of analgesia in CKD; the fact that patients with CKD are often on multiple drugs (for comorbid conditions), which increases the risk of adverse drug interactions; and that pain assessment and management have not been a focus of education and training in renal medicine.

The majority of the review article focuses on pain management strategies based on the World Health Organization (WHO) analgesic ladder, a step-wise approach to therapy. Although the WHO analgesic ladder was originally designed with management of cancer pain in mind, it is widely used for non-malignant pain management. In a study evaluating the efficacy of using the

WHO ladder in the setting of end stage renal disease, Barakzoy and Moss (2006) reported effective pain management in >90% of hemodialysis patients. Davison and Ferro (2009) utilize the WHO ladder as a template to introduce each analgesic, from mildest to strongest, incorporating non-opioid drugs, opioid drugs, and adjuvants in the discussion. In addition, they offer some information about cannabinoids and topical analgesics. For each drug, they include the best evidence available as it relates to use in patients with renal impairment. Where there is a lack of strong research evidence, they draw from their own clinical experience to inform and guide readers. In discussing the use of hydromorphone (immediate release form), for example, which is one of the most frequently used strong opioids in patients with CKD, they support its use (better tolerability) over morphine for dialysis patients requiring analgesia.

This article highlights the complexity of pain in patients with CKD and the challenges often encountered in its management. The authors use the best evidence available to equip health care providers with knowledge that is both comprehensive and practical. Use of the WHO ladder as a template to present a stepwise approach to analgesia will be of particular interest to those who work directly with patients and often express concerns about the adverse effects of pain medications in the setting of renal compromise.

The authors point to the fact that pain in patients with CKD often goes unrecognized. This review serves to remind us of the tremendous impact that pain can have, as well as our duty to better understand and manage it.

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Renagel® Tablets

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INDICATIONS AND CLINICAL USE

RENAGEL (sevelamer hydrochloride) is indicated for: the control of hyperphosphatemia in patients with end-stage renal disease (ESRD) undergoing dialysis.

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RENAGEL (sevelamer hydrochloride) is contraindicated in the following situations:

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- patients with bowel obstruction
- patients hypersensitive to sevelamer hydrochloride or one of the other ingredients in the product (colloidal silicon dioxide, stearic acid).

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General

RENAGEL (sevelamer hydrochloride) tablets should be swallowed intact and should not be crushed, chewed, or broken into pieces.

Patients with renal insufficiency may develop hypocalcemia. As RENAGEL does not contain calcium, serum calcium levels should be monitored and elemental calcium should be supplemented whenever considered necessary. In cases of hypocalcemia, patients should be given an evening calcium supplement. Approximately 1000 mg elemental calcium is recommended.

Caution should be exercised to avoid hypophosphatemia, a serum phosphorus of < 0.8 mmol/L (see DOSAGE AND ADMINISTRATION).

The safety and efficacy of RENAGEL in patients with renal disease who are not undergoing dialysis has not been studied.

Gastrointestinal

The safety and efficacy of RENAGEL in patients with dysphagia, swallowing disorders, severe gastrointestinal (GI) motility disorders, or major GI tract surgery have not been established. Caution should be exercised when RENAGEL is used in patients with these GI disorders.

Special Populations

Pregnant Women: The safety of RENAGEL has not been established in pregnant women. In preclinical studies, there was no evidence that RENAGEL induced embryolethality, fetotoxicity or teratogenicity at the doses tested (up to 1 g/kg/day in rabbits; up to 4.5 g/kg/day in rats). RENAGEL should only be given to pregnant women if the benefits outweigh the risks.

Nursing Women: There have been no adequate, well-controlled studies in lactating, or nursing women.

Pediatrics: The safety and efficacy of RENAGEL has not been established in pediatric patients. The minimum age of patients treated with RENAGEL in clinical trials was 18 years old.

Geriatrics: No special considerations are needed for elderly patients.

Monitoring and Laboratory Tests

Serum phosphorus and serum calcium should be monitored every 1 to 3 weeks until the target phosphorus level is reached. The dose of RENAGEL should be adjusted based on serum phosphorus concentration and titrated to a target serum phosphorus of ≤ 1.8 mmol/L.

RENAGEL does not contain calcium or alkali supplementation; serum calcium, bicarbonate, and chloride levels should be monitored.

ADVERSE REACTIONS

Clinical Trial Adverse Drug Reactions

Because clinical trials are conducted under very specific conditions the adverse reaction rates observed in the clinical trials may not reflect the rates observed in practice and should not be compared to the rates in the clinical trials of another drug. Adverse drug reaction information from clinical trials is useful for identifying drug-related adverse events and for approximating rates.

In a combined safety database comprised of 483 patients with end-stage renal disease undergoing hemodialysis, adverse events reported at an incidence $\geq 10\%$ are provided in Table 1. From this database, adverse events are also presented separately from a single long-term randomized clinical study for RENAGEL and calcium. The adverse events presented in the table below are not necessarily attributed to RENAGEL treatment. The incidence of these events was not dose related.

Table 1: Adverse Events in Patients with End-Stage Renal Disease undergoing Hemodialysis

System Organ Class Event	Total AEs reported.	52 weeks Study of RENAGEL vs. calcium (calcium acetate and calcium carbonate)	
	RENAGEL N = 483 %	RENAGEL N = 99 %	calcium N = 101 %
Gastrointestinal Disorders			
Vomiting	24.4	22.2	21.8
Nausea	25.3	20.2	19.8
Diarrhea	21.1	19.2	22.8
Dyspepsia	15.7	16.2	6.9
Constipation	13.3	8.1	11.9
Infections and Infestations			
Nasopharyngitis	13.9	14.1	7.9
Bronchitis	5.4	11.1	12.9
Upper Respiratory Tract Infection	7.0	5.1	10.9
Musculoskeletal, Connective Tissue and Bone Disorders			
Pain in Limb	13.7	13.1	14.9
Arthralgia	11.4	12.1	17.8
Back Pain	6.0	4.0	17.8
Skin Disorders			
Pruritus	10.4	13.1	9.9
Respiratory, Thoracic and Mediastinal Disorders			
Dyspnea	15.7	10.1	16.8
Cough	11.6	7.1	12.9
Vascular Disorders			
Hypertension	9.3	10.1	5.9
Nervous System Disorders			
Headache	18.4	9.1	15.8

General Disorders and Site Administration Disorders			
Dialysis Access Complication	4.3	6.1	10.9
Pyrexia	8.7	5.1	10.9

In one hundred and forty three patients with end-stage renal disease undergoing peritoneal dialysis with treatment duration of 12 weeks, adverse events reported at an incidence $\geq 10\%$ are provided in Table 2 below. The adverse events presented in the table below are not necessarily attributed to RENAGEL treatment. The incidence of these events was not dose related.

Table 2: Adverse Events in Patients with End-Stage Renal Disease Undergoing Peritoneal Dialysis

System Organ Class Event	RENAGEL (N=97) %	calcium (N=46) %
Gastrointestinal disorders		
Dyspepsia	17.5	8.7
Vomiting	11.3	4.3
Peritonitis	11.3	4.3

The most frequently occurring serious adverse event with RENAGEL use was peritonitis at 8.2%, compared to 4.3 % with calcium. Patients receiving dialysis are subject to certain risks for infection specific to the dialysis modality. Peritonitis is a known complication in patients receiving peritoneal dialysis (PD). Therefore, patients on PD should be closely monitored to ensure the reliable use of appropriate aseptic technique with the prompt recognition and management of any signs and symptoms associated with peritonitis.

Less common clinical trial adverse events

The following adverse events have been observed with RENAGEL use with an incidence of <10%, but greater than calcium and without attribution to causality, including: abdominal distension, constipation, diarrhea, nausea, chest pain, fatigue, pyrexia, catheter site infection, anorexia, headache, cough and pruritis.

Some patients experienced adverse events related to hypercalcemia in the calcium group but not in the RENAGEL group.

Post-Market Adverse Drug Reactions

During post-marketing experience with RENAGEL, the following have been reported without attribution to causality: pruritis, rash, and abdominal pain.

OVERDOSAGE

Since RENAGEL (sevelamer hydrochloride) is not absorbed, the risk of systemic toxicity is minimal. RENAGEL has been given to healthy volunteers at doses up to 14 grams per day for 8 days with no adverse effects. The maximum average daily dose of RENAGEL that has been given to hemodialysis patients is 13 grams.

DOSAGE AND ADMINISTRATION

Dosing Considerations

- The tablets should not be bitten, chewed or broken apart prior to dosing.
- RENAGEL (sevelamer hydrochloride) should be taken immediately prior to or with meals, since its action is to bind ingested phosphate (see ACTION AND CLINICAL PHARMACOLOGY, Mechanism of Action)
- When administering any other medication where a reduction in the bioavailability of that medication would have a clinically significant effect on safety or efficacy, the physician should consider monitoring blood levels or dosing that medicine apart from RENAGEL to prevent GI binding (at least one hour before or three hours after RENAGEL).

Recommended Dose and Dosage Adjustment

The recommended dosing to be used when initiating RENAGEL in patients not using another phosphate binder are outlined below:

When switching from calcium-based phosphate binders to RENAGEL,

Starting Dose	
Initial Serum Phosphorus	RENAGEL Tablets 800mg
> 1.8 and < 2.4 mmol/L	3 tablets per day (2.4 grams)
≥ 2.4 mmol/L	6 tablets per day (4.8 grams)

an equivalent starting dose on a mg/weight basis of RENAGEL should be prescribed. Dosage adjustments, when necessary should be recommended every 1 to 3 weeks by increasing one tablet per meal (3 per day) until the target serum phosphorus levels are met.

The total daily dose should be divided according to meal portions during the day.

Average Maintenance Dose: Dosage should be adjusted based upon the target serum phosphorus levels. The dose may be increased or decreased by one tablet per meal at two week intervals as necessary. The average final dose in the chronic phase of a 52 week Phase 3 clinical trial designed to lower serum phosphorus to 1.6 mmol/L or less was approximately 7.1 grams, (approximately nine 800 mg tablets per day equivalent to three 800 mg tablets per meal). The maximum average daily RENAGEL dose studied was 13 grams.

Missed Dose

- If a dose is forgotten, it should be skipped. Double dosing is not advisable.

DOSAGE FORMS, COMPOSITION AND PACKAGING

RENAGEL (sevelamer hydrochloride) tablets are film-coated compressed tablets containing 800 mg of sevelamer hydrochloride. RENAGEL contains the following excipients: colloidal silicon dioxide and stearic acid. The RENAGEL tablet coating contains hypromellose and diacetylated monoglyceride. The printing ink contains iron oxide black (E172), propylene glycol, isopropyl alcohol and hypromellose (hydroxypropyl methylcellulose).

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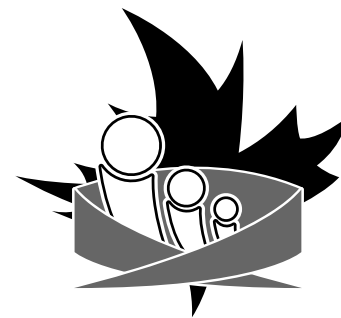
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Province _____ Postal Code _____

Telephone (H) (____) ____ - _____

(W) (____) ____ - _____

Fax (____) ____ - _____

E-mail _____

Employer _____

Employer Address _____

City _____

Province _____ Postal Code _____

Mailing Address Preferred ☐ Home ☐ Work

Do you consent to the use of your name and address on mailing lists that CANNT has considered pertinent and appropriate? ☐ Yes ☐ No

☐ New Member or ☐ Renewal

CANNT # (if renewal) _____

Person who recommended
joining CANNT: _____

Membership Fee (GST #100759869)

Membership fee is tax deductible.

☐ One Year: \$70.00 + 3.50 GST = \$73.50

☐ Two Years: \$130.00 + 6.50 GST = \$136.50

☐ Student Rate: \$35.00 + 1.75 GST = \$36.75*

**Proof of full-time enrolment must accompany application.*

I enclose \$ _____
made payable to Canadian Association
of Nephrology Nurses and Technologists.

Method of payment:

☐ Cheque ☐ Money order ☐ Visa ☐ Mastercard

Cardholder Name: _____

Visa Number: _____

Expiry Date: _____

Signature: _____

☐ I have attained CNeph(C)/cdt designation
Year of designation _____

Professional registration # _____

Date last renewed: _____

☐ I am a member of CNA

Ontario applicants only
Do you belong to RNAO?

☐ Yes ☐ No

Professional Status

☐ Registered Nurse

☐ Registered Practical
Nurse/Registered
Nursing Assistant/
Licensed Practical Nurse

☐ Technician

☐ Technologist

☐ Other (Specify) _____

Number of Years in Nephrology _____

Area of Responsibility

☐ Direct Patient Care

☐ Administration

☐ Technical

☐ Teaching

☐ Research

☐ Other (Specify)

Work Environment

☐ Acute Care

☐ Self-Care Unit

☐ Independent Health Care

☐ Private Sector

What is Your Highest Level of Education?

Nursing

☐ Diploma

☐ Baccalaureate

☐ Master's

☐ Doctorate

Non-Nursing

☐ Diploma

☐ Baccalaureate

☐ Master's

☐ Doctorate

I am At Present Studying Toward:

Nursing

☐ Specialty Certificate

☐ Baccalaureate

☐ Master's

☐ Doctorate

Non-Nursing

☐ Specialty Certificate

☐ Baccalaureate

☐ Master's

☐ Doctorate

Primary Area of Practice

☐ Progressive renal insufficiency (pre-dialysis)

☐ Transplantation

☐ Hemodialysis

☐ Peritoneal

☐ Pediatrics

☐ Other (Specify) _____

Return to CANNT

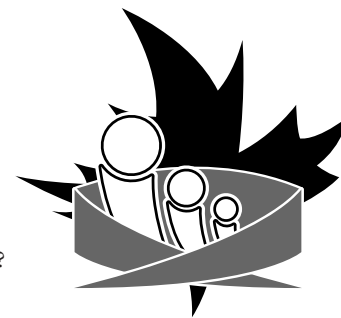
Mailing Address:

Debbie Maure, CANNT,

Suite #322, 336 Yonge St., Barrie, Ontario, L4N 4C8

Telephone (705) 720-2819 Fax (705) 720-1451

Demande d'adhésion



Prénom _____

Nom de famille _____

Adresse à domicile _____

Ville _____

Province _____ Code postal _____

Téléphone (D) (____) ____ - _____

(T) (____) ____ - _____

Télécopieur (____) ____ - _____

Courrier électronique _____

Employeur _____

Adresse de l'employeur _____

Ville _____

Province _____ Code postal _____

Adresse de correspondance ☐ domicile ☐ travail

Acceptez-vous que l'ACITN ajoute votre nom et votre adresse sur des listes d'envois qu'elle juge pertinentes et appropriées? ☐ Oui ☐ Non

☐ Nouveau membre ou ☐ Renouvellement

Numéro de l'ACITN # (si renouvellement) _____

Nom de la personne qui vous a recommandé de joindre l'ACITN: _____

Frais d'adhésion (TPS #100759869)

Les frais d'adhésion sont déductibles d'impôts.

☐ Un an: 70,00 \$ + 3,50 TPS = 73,50 \$

☐ Deux ans: 130,00 \$ + 6,50 TPS = 136,50 \$

☐ Tarif étudiant: 35,00 \$ + 1,75 TPS = 36,75 \$*

**La demande doit inclure une preuve d'inscription à plein temps*

Je joins \$ _____

payable à l'ACITN.

Mode de paiement:

☐ Chèque ☐ Mandat de poste ou chèque visé

☐ Visa ☐ Mastercard

Nom du titulaire de la carte: _____

Numéro de la carte: _____

Date d'expiration: _____

Signature: _____

☐ J'ai obtenu la désignation CNeph(C)/cdt
Année de désignation _____

Numéro d'enregistrement professionnel _____

Date du dernier renouvellement: _____

☐ Je suis membre de l'ACI

Demandeurs de l'Ontario seulement

Faites vous partie de l'AOIA?

☐ Oui ☐ Non

Statut professionnel

☐ Infirmière(ier) autorisée(sé)

☐ Infirmière(ier) auxiliaire

autorisée(sé) /

infirmière(ier) auxiliaire

☐ Technicienne / technicien

☐ Technologue

☐ Autre (spécifier) _____

Années d'expérience en néphrologie _____

Domaine de responsabilité

☐ Soins directs

☐ Enseignement

☐ Administration

☐ Recherche

☐ Technologie

☐ Autre (spécifier)

Milieu de travail

☐ Soins actifs

☐ Services de santé indépendants

☐ Unité d'autosoins

☐ Secteur privé

Plus haut niveau d'instruction?

Infirmière(ier)

Autres

☐ Diplôme

☐ Diplôme

☐ Baccalauréat

☐ Baccalauréat

☐ Maîtrise

☐ Maîtrise

☐ Doctorat

☐ Doctorat

Je poursuis présentement des études:

Domaine Infirmière(ier)

Autre domaine

☐ Certificat

☐ Certificat

☐ Baccalauréat

☐ Baccalauréat

☐ Maîtrise

☐ Maîtrise

☐ Doctorat

☐ Doctorat

Secteur de pratique spécialisé

☐ Insuffisance rénale progressive (pré-dialyse)

☐ Transplantation

☐ Hémodialyse

☐ Péritonéale

☐ Pédiatrie

☐ Autre (spécifier) _____

Poster à ACITN

Adresse postale :

Debbie Maure, ACITN,

336 Yonge St., pièce 322, Barrie (Ontario) L4N 4C8

Téléphone (705) 720-2819 Télécopieur (705) 720-1451