

Volume 24, Issue 1 J

#### January-March 2014

### IN THIS ISSUE:

#### 12 Quality of life in end stage renal disease: A concept analysis

By Julie Émelie Boudreau, RN, MN, CNeph(C), and Anik Dubé, PhD(c), RN

### 21 CONTINUING EDUCATION SERIES

#### **Dosing chemotherapy agents in hemodialysis—A focus on multiple myeloma** *By Rachel Runnels, BScPhm student, Karen Cameron,*

BScPhm, ACPR, CGP, Pamela Ng, BScPhm, and Marisa Battistella, BScPhm, PharmD

#### 28 Satellite hemodialysis services for patients with end stage renal disease

By Kathy Organ, RN, BN, MN, and Sandra MacDonald, RN, BN, MN, PhD

### Ensure Safe Water while Saving Water

## BioPure HX2

Featuring

**End-to-End Automatic Heat Disinfection** Simplifies bacteria control, including the dialysis machine

Self-Modulating Valves & High Efficiency Motors Automatically adjusts flow and pressure for water conservation

**Double Pass Reverse Osmosis with Single Pass Redundancy** Ensures the highest water quality, while allowing for continual operation

Licensed with Health Canada & Capable of Producing Water for Hemodiafiltration

Manufactured in Canada

### Local Service Throughout Canada

Mar Cor Purification is the leading manufacturer and service provider of portable and central heat disinfection hemodialysis water systems in North America.

We have been manufacturing and servicing water treatment equipment for over 40 years and have an experienced team of technicians qualified to work on your water systems based out of our Burlington, ON and Montreal, QC offices.

K COR

PURIFICATION

A Cantel Medical Company

#### Competent, Consistent, & Compliant

Ontario Location

AR COF

MAR COP

**BioPure HX2** 

ISO 13485:2003 Certified • 800-268-5035 • www.mcpur.com

Montreal Location

Mar Cor Purification Mar Cor Purification 3250 Harvester Road- Unit 6 Burlington, ON L7N 3W9 Dorval, QC H9P 2S6

85 Lindsay Avenue

ISSUE ONE

## CANNT JOURNAL JOURNAL ACITN



### CONTENTS

#### 12 Quality of life in end stage renal disease: A concept analysis

By Julie Émelie Boudreau, RN, MN, CNeph(C), and Anik Dubé, PhD(c), RN

#### 21 CONTINUING EDUCATION SERIES Dosing chemotherapy agents in hemodialysis—A focus on multiple myeloma

By Rachel Runnels, BScPhm student, Karen Cameron, BScPhm, ACPR, CGP, Pamela Ng, BScPhm, and Marisa Battistella, BScPhm, PharmD

#### 28 Satellite hemodialysis services for patients with end stage renal disease By Kathy Organ, RN, BN, MN, and Sandra MacDonald, RN, BN, MN, PhD

**34** THE 5TH MODALITY: PSYCHONEPHROLOGY Gavril Hercz, MD, and Marta Novak, MD

#### IN EACH ISSUE:

- 4 Letter From the Editors: Janet Baker & Alison Thomas 5 Mot des corédactrices en chef: Janet Baker et Alison Thomas 6 Message From the President: Roberta Prettie 7 CANNT Representatives/Contacts; Représentants/contacts ACITN 7 Le mot de la présidente : Roberta Prettie 11 Notice board 11 Connect with CANNT! 35 CANNT Nominations **36** CANNT Membership 37 Demande d'adhésion
- **38** Guidelines for authors



The CANNT Journal is printed on recycled paper.

The CANNT Journal is the official publication of the Canadian Association of Nephrology Nurses and Technologists, P.O. Box 10. 59 Millmanor Place, Delaware, ON NOL 1E0, telephone: (519) 652-6767, fax: (519) 652-5015, email: cannt@cannt.ca. Published quarterly, the journal is received by all members of CANNT. Subscriptions are: Canada \$80.00 (plus HST), US. \$90.00, Outside N. America \$115.00. Back issues, when available, are \$7.50 (+HST) per issue and are available from the editors. Opinions expressed by writers in the CANNT Journal are not necessarily those held by the editors or CANNT. Contrasting views by our readership and membership are welcome. All letters, comments and articles are to be sent to the CANNT office, P.O Box 10, 59 Millmanor Place, Delaware, ON NOL 1EO.

1-877-720-2819 Website: www.cannt.ca

### Deadlines for submission to the CANNT Journal are:

Jan.–Mar.: Jan. 15, for publication Mar. 15; Apr.–Jun.: April 15, for publication Jun. 15; Jul.–Sep.: Jul. 15, for publication Sep. 15; Oct.–Dec.: Oct. 15, for publication Dec. 15.

The CANNT Journal is indexed in the Cumulative Index to Nursing and Allied Health Literature (CINAHL), the International Nursing Index (INI), MEDLINE, EBSCO, ProQuest and Thomson Gale.

ISSN 2291-644X (Online) ISSN 1498-5136 (Print)

The CANNT Journal is produced by Pappin Communications, The Victoria Centre, 84 Isabella St., Unit 2, Pembroke, Ontario K8A 5S5

#### **Co-Editors**

Janet Baker, RN, BN, CNeph(C) Toronto, Ontario Alison Thomas, RN(EC), MN, CNeph(C) Toronto. Ontario

#### Editorial Board

Marisa Battistella, BScPhm, PharmD, ACPR Toronto, Ontario Rejean Quesnelle, AScT Oakville, Ontario Eleanor Ravenscroft, RN, PhD, CNeph(C) Calgary, Alberta Rosalie Starzomski, RN, PhD Vancouver, British Columbia Colleen Wile, RN, CNeph(C) Halifax, Nova Scotia

Managing Editor Heather Coughlin Pembroke, Ontario

Layout and Design Sherri Keller Pembroke, Ontario

Advertising Sales Heather Coughlin Pappin Communications 84 Isabella St., Unit 2, Pembroke, ON K8A 5S5 T: (613) 735-0952; F: (613) 735-7983 email: heather@pappin.com rate card: www.pappin.com

### World Kidney Day 2014— Kidneys age, just like you





**Janet Baker** 

Alison Thomas

World Kidney Day is March 13, 2014. The focus this year is on Chronic Kidney Disease and aging. As nephrology nurses and technologists, you are well aware of the importance of early detection to slowing the progression of CKD, and the substantial impact of CKD and renal replacement therapies on daily living. Founded through the collaborative efforts of the International Society of Nephrology (ISN) and the International Federation of Kidney Foundations (IFKF), World Kidney Day started in 2006 and has been celebrated on the second Thursday in March annually. The theme is changed every year and focuses on a different aspect of kidney education or awareness. As described on the website (www.worldkidneyday.org), the mission of World Kidney Day is as follows:

"...to raise awareness of the importance of our kidneys to our overall health and to reduce the frequency and impact of kidney disease and its associated health problems worldwide."

What can nephrology nurses and technologists do on World Kidney Day? How can you help to raise awareness of Chronic Kidney Disease and its associated challenges? There are plenty of ideas on the website—including a map of the world that illustrates event locations and details. There is also a page that provides event tips. Ideas include hanging posters or flyers in your organization, hosting a walk or other event, or even just posting about World Kidney Day on your Facebook page or Twitter account. Think about participating-even in a small way, you can make a difference.

In this issue, amongst the usual columns and articles, we have included the Call for Abstracts for CANNT 2014 – Pursuing the Power Within – to be held October 23–25 in Niagara Falls, Ontario. We encourage you to consider submitting an abstract that showcases some of your local efforts to better the lives of your patients living with CKD. The planning committee is working hard to make this an excellent learning and networking opportunity. We hope to see you there!

### PLEASE SEND ALL SUBMISSIONS, QUESTIONS OR COMMENTS TO:

Alison Thomas and Janet Baker, Co-Editors, CANNT Journal, email:

Janet Baker: jbaker@haltonhealthcare.on.ca Alison Thomas: athomas6@cogeco.ca

### Journée mondiale du rein 2014—Les reins vieillissent, tout comme vous



**Janet Baker** 



**Alison Thomas** 

Le 13 mars 2014 sera la Journée mondiale du rein. Cette année, l'accent sera mis sur la néphropathie chronique et le vieillissement. En tant qu'infirmières, infirmiers et technologues en néphrologie, vous êtes tous conscients de l'importance de la détection précoce pour ralentir l'évolution de la néphropathie chronique et des lourdes répercussions de l'insuffisance rénale et des traitements de substitution de la fonction rénale sur la vie quotidienne. Fruit d'une collaboration entre la Société internationale de néphrologie et la Fédération internationale des fondations du rein (International Federation of Kidney Foundations-IFKF), la Journée mondiale du rein a été lancée en 2006 et est depuis célébrée annuellement le deuxième jeudi du mois de mars. Le thème de la Journée porte chaque année sur un aspect différent de la néphrologie à des fins d'éducation et de sensibilisation. La mission de la Journée mondiale du rein est énoncée sur son site Web (www.worldkidneyday.org):

« Sensibiliser la population à l'importance de la fonction rénale pour la santé et réduire la fréquence et les répercussions des maladies rénales et de leurs complications partout dans le monde. » [TRADUCTION]

Que peuvent faire les infirmières, infirmiers et technologues en néphrologie à l'occasion de la Journée mondiale du rein? Comment pourrez-vous sensibiliser la population à la néphropathie chronique et aux défis qu'elle pose? Le site Web regorge d'idées, proposant même une carte du monde donnant tous les renseignements utiles concernant les différents événements soulignant la Journée mondiale du rein. Il comprend également une page où l'on trouve de nombreuses suggestions d'activités: poser des affiches ou distribuer des dépliants dans votre organisation, organiser une marche ou une autre activité du même genre ou tout simplement écrire un mot sur la Jounée du rein sur votre page Facebook ou sur Twitter. N'hésitez pas à participer—même une toute petite contribution peut faire une *réelle* différence.

Dans ce numéro, en plus des chroniques et articles habituels, vous trouverez l'invitation à présenter des communications pour le symposium annuel de l'ACITN de 2014, qui se tiendra du 23 au 25 octobre à Niagara Falls en Ontario, sous le thème «Pursuing the Power Within» (Miser sur sa force intérieure). Nous vous encourageons à soumettre un texte décrivant des initiatives prises dans votre région afin d'améliorer la qualité de vie des patients atteints de néphropathie chronique. Le comité de planification travaille ardemment pour faire de cette rencontre une excellente occasion d'apprendre et de réseauter. Nous espérons vous y retrouver!

Le Journal ACITN est la publication officielle de l'Association canadienne des infirmiers/ infirmières et technologues en néphrologie, a/s P.O. Box 10, 59 Millmanor Place, Delaware, ON NOL 1EO, téléphone : (519) 652-6767, télécopieur : (519) 652-5015, Courriel : cannt@cannt.ca. Publié guatre fois par année, ce journal est envoyé à tous les membres de l'Association. L'abonnement annuel est: Canada, 80\$ (+TVH), E.-U., 90\$, hors du Canada et E.-U., 115 \$. Les publications antérieures, lorsque disponsibles, coûtent 7,50 \$ (+TVH) chacune. Les opinions émises par les auteurs dans ce journal ne sont pas nécessairement partagées par l'Association ni par le corédactrices en chef. Nous invitons les lecteurs à nous faire part de leurs opinions. Toute correspondance devra être envoyée à l'ACITN, P.O. Box 10, 59 Millmanor Place, Delaware, ON NOL 1EO.

#### 1-877-720-2819 Site web: www.cannt.ca

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

Janv.-mars : le 15 janv., pour publication le 15 mars Avril-juin : le 15 avril, pour publication le 15 juin Juil.-sept. : le 15 juil., pour publication le 15 sept. Oct.-déc. : le 15 oct., pour publication le 15 déc.

Le journal CANNT est maintenant répertorié dans le « Cumulative Index to Nursing and Allied Health Literature (CINAHL)», « International Nursing Index » (INI), « MEDLINE », « EBSCO », « ProQuest » et « Thomson Gale ».

ISSN 2291-644X (En ligne) ISSN 1498-5136 (Dans la presse)

Le journal CANNT est préparé par Pappin Communications The Victoria Centre, 84 rue Isabella, suite 2, Pembroke, Ontario K8A 5S5.

Rédactrices en chef Janet Baker, RN, BN, CNeph(C) Toronto, Ontario Alison Thomas, RN(EC), MN, CNeph(C)

Toronto, Ontario

Conseil de rédaction Marisa Battistella, BScPhm, PharmD, ACPR Toronto, Ontario Rejean Quesnelle, AScT Oakville, Ontario Eleanor Ravenscroft, RN, PhD, CNeph(C) Calgary, Alberta

Rosalie Starzomski, RN, PhD Vancouver, British Columbia Colleen Wile, RN, CNeph(C)

Halifax, Nova Scotia

Éditeur Heather Coughlin, Pembroke, Ontario

**Conception et design** Sherri Keller, Pembroke, Ontario

#### Publicité

Heather Coughlin Pappin Communications 84 Isabella St., Unit 2, Pembroke, ON K8A 5S5 T: (613) 735-0952; F: (613) 735-7983 email: heather@pappin.com rate card: www.pappin.com

#### 2013–2014 CANNT BOARD OF DIRECTORS/ CONSEIL D'ADMINISTRATION DE L'ACITN 2013–2014

President/Président: Roberta Prettie, RN, CNeph(C) T: 204-482-9482 email/courriel: rmprettie@mymts.net

President-Elect/Présidente-Élue : Anne Moulton, RN, BScN, MN, CNeph(C) T: 905-522-1155 x33916

Past President/Présidente sortante : Colleen Wile, RN, BScN, CNeph(C) T: 902-473-5868 F: 902-473-4168 email/courriel : colleend.wile@cdha.nshealth.ca

Website Coordinator, Treasurer/ Trésorière coordonatrice du site internet: Melanie Wiggins, RN, CNeph(C) T: 705-325-0568 email/courriel: dmhdwiggins@rogers.com

Vice-President of Technologists/ Vice-Président des Technologues : Reg Quesnelle, AScT T: 905-845-2571 x6857 email/courriel : regq101@gmail.com

Atlantic Region Vice-President/ Vice-Présidente de l'Atlantique : Karen MacDonald, RN, CNeph(C) T: 902-567-8067 email/courriel : macdonaldkar@cdha.nshealth.ca

Quebec Vice-President/ Vice-Présidente du Québec : Nancy Filteau, RN, CNeph(C), BScN, MSc(A) T: 514-934-1934 x35098 email/courriel : rochbeauchemin@hotmail.com

Ontario Region Vice-President/ Vice-Présidente de l'Ontario : Krista Lovering T: 705-454-3893 email/courriel : kelovering@osmh.on.ca

Western Region Vice-President/ Vice-Présidente de l'Ouest : Heather Dean, RN, CNeph(C) T: 403-943-9400 email/courriel : heather.dean@ albertahealthservices.ca

Journal Editors/ Les rédactrices en chef: Janet Baker, RN, BN, CNeph(C) T: 905-845-2571 x6483 email/courriel: jbaker@haltonhealthcare.on.ca

Alison Thomas, RN(EC), MN, CNeph(C) T: 416-864-6060 x6979; F: 416-864-5608 email/courriel: thomasal@smh.ca

### The year ahead



The beginning of a new year is a time for resolutions and goal setting. These goals may be of a personal nature (eating healthier), or a professional

nature (furthering your education). Whatever your goals may be for 2014, I wish you success!

If one of your goals includes preparing to write the CNA Certification Examination in Nephrology Nursing on April 5, I wish you the best of luck. Your interest in furthering your knowledge shows your dedication to your profession and to patient care. I challenge you to share what you are learning throughout this process, and to encourage your colleagues to consider writing the exam in 2015. To assist with the cost of the exam, consider applying for the CANNT Certification Bursary-one of the many benefits of CANNT membership. Information on awards and bursaries available to CANNT members can be found on the website at www. cannt.ca. The deadline for applications is May 1, 2014.

CANNT's 2014 Annual Symposium—Pursuing the Power Within—will be held in Niagara Falls, Ontario, on October 23–25, 2014, and planning is well underway. The Call for Abstracts can be found in this issue of the journal or on the CANNT website. The deadline for abstract submission is March 1, 2014. Information to assist with abstract preparation is available at **www. cannt.ca** and can be found under the "Education" tab.

CANNT's mission statement is "To provide leadership and promote the best nephrology care and practice through education, research, and communication." In order to achieve our mission, CANNT requires membership involvement. We urge you to promote the value of membership to your colleagues and to get involved with CANNT.

Finally, here is something to think about as you read through this issue of the journal:

"When someone shares something of value with you and you benefit from it, you have a moral obligation to share it with others." (Chinese proverb)

If you see something you think is worthy, how will *you* share it with others?

Roberta Prettie, CANNT President

### L'année devant nous



Avec la nouvelle année vient le temps des résolutions et des objectifs que l'on désire atteindre. Que vos buts soient de nature personnelle (mieux manger) ou oursuivre sa forma-

professionnelle (poursuivre sa formation), je vous souhaite de les atteindre en 2014!

Si l'un de vos objectifs est de vous préparer à passer l'examen de certification en Soins infirmiers en néphrologie de l'Association des infirmières et infirmiers du Canada, qui aura lieu le 5 avril 2014, je vous souhaite la meilleure des chances. Votre désir de vous perfectionner est le reflet de votre engagement envers votre profession et de votre dévouement à l'endroit des patients. Je vous incite vivement à parler à vos collègues de votre expérience tout au long du processus afin de les encourager à s'inscrire à l'examen en 2015. Je vous rappelle que, pour payer les frais d'inscription à l'examen, vous pouvez présenter une demande de bourse en vue de l'obtention de la certification de l'Association canadienne des infirmières et infirmiers et des technologues de néphrologie (ACITN). C'est là l'un des nombreux avantages de faire partie de l'ACITN. Vous trouverez de l'information sur les bourses et les prix auxquels les membres de l'ACITN sont admissibles sur le site Web de l'Association **www.ACITN.ca**. La date limite pour présenter une demande est le 1<sup>er</sup> mai 2014.

La planification du symposium annuel de l'ACITN de 2014 va bon train; la rencontre se tiendra du 23 au 25 octobre à Niagara Falls en Ontario, sous le thème «Pursuing the Power Within» (Miser sur sa force intérieure). L'invitation à présenter des communications figure dans le présent numéro du Journal et sur le site de l'ACITN. L'échéance pour l'appel de communications est le 1er mars 2014. Vous trouverez les renseignements nécessaires pour la préparation des manuscrits sur **www.ACITN.ca**, sous l'onglet «Education».

La mission de l'ACITN est de « fournir le leadership dans la prestation des meilleurs soins infirmiers et de la meilleure pratique infirmière en néphrologie par l'éducation, la recherche et la communication ». La réalisation de cette mission repose sur l'engagement des membres de l'ACITN. Je vous invite donc à faire valoir l'importance de notre association auprès de vos collègues et à participer aux activités de l'ACITN.

Pour terminer, voici une pensée qui pourra vous inspirer durant votre lecture du présent numéro du Journal:

«Lorsque quelqu'un partage avec vous quelque chose de précieux et que vous en tirez profit, vous avez l'obligation morale de faire de même avec un autre.» (proverbe chinois)

Si vous trouvez quelque chose d'une grande valeur, comment le partagerez-*vous* avec les autres?

#### Roberta Prettie, présidente de l'ACITN

#### CANNT REPRESENTATIVES/ CONTACTS; REPRÉSENTANTS/ CONTACTS ACITN

CNA Liaison/Liaison pour AIIC: Colleen Wile, RN, BScN, CNeph(C) T: 902-473-5868; F: 902-473-4168 email/courriel: colleend.wile@cdha.nshealth.ca

Kidney Foundation of Canada, MAC

Representative/Fondation du rein—Comité de médical consultatif : Roberta Prettie, RN, CNeph(C) T: 204-482-9482 email/courriel : rmprettie@mymts.net

Bursary Committee/ Comité des Bourses : Roberta Prettie, RN, CNeph(C) T: 204-482-9482 email/courriel : rmprettie@mymts.net

CANNT Administrative Office/ Bureau National de l'ACITN : PO Box 10, 59 Millmanor Place Delaware, ON NOL 1E0 New phone: 519-652-6767 Same Toll Free: 877-720-2819 New fax: 519-652-5015 General email: cannt@cannt.ca

Contacts: Sharon Lapointe, Manager, Member Services sharon@cannt.ca

Susan Mason Manager, Website and Social Media susan@cannt.ca

Heather Reid National Administrator/Board heather@cannt.ca

2014 Symposium: October 23–25, 2014 Congrès 2014: 23–25 octobre 2014 Niagara Falls, Ontario Heather E. Reid, ARCT, MSc Principal Planner & Owner Innovative Conferences & Communications PO Box 319, 59 Millmanor Place Delaware, ON NOL 1E0 T: 519-652-0364 F: 519-652-5015 Email: hreid@innovcc.ca Website: www.innovcc.ca

Journal advertising contact/Personne contact pour la publicité du Journal : Heather Coughlin Pappin Communications, 84 Isabella Street, Pembroke, ON K8A5S5 T: 613-735-0952; F: 613-735-7983 email/courriel : heather@pappin.com rate card: www.pappin.com CANADIAN ASSOCIATION OF NEPHROLOGY NURSES AND TECHNOLOGISTS

Pursuíng the Power Within

October 23 - 25, 2014

Scotiabank Convention Centre Niagara Falls, Ontario



#### Barb Bancroft RN, MSN, PNP | A WIDELY ACCLAIMED NATIONAL SPEAKER

Barb is noted for her humorous, entertaining and information packed seminars. She is an author of books – her latest, *Kiss My Asparagus, An Essential Guide* to Nutrition's Role in Health and Disease. Many people can conduct health seminars, or write books on health, but very few can make them both thoroughly informative and entertaining. Barb Bancroft makes complex health topics easily understandable, appealing and hilarious.

Barb has provided more than 2,200 educational and motivational seminars on clinical topics and health maintenance topics to healthcare professionals and corporations throughout the U.S. and Canada. She has been the keynote/plenary speaker for corporate groups such as Smith Barney/Citicorp and the Million Dollar Round Table. She has provided keynote/plenary speeches for healthcare associations including the Association for Practitioners for Infection Control, The National Association of Biology Teachers, The Emergency Nurses' Association, the American Academy of Nurse Practitioners, the Pacific Coast Dental Association, and the Washington State Dental Association.

Barb has held graduate faculty positions at the University of Virginia and the University of Arkansas. She has provided courses on Advanced Pathophysiology, Pharmacology and Physical Assessment to both graduate and undergraduate students. She is currently the Executive Director and President of CPP Associates, Inc., a continuing education firm for corporations and healthcare professionals based in Chicago, Illinois.

#### Mike Lipkin | WORLD-RENOWNED MOTIVATOR AND COMMUNICATOR

Mike Lipkin brings out the best in leaders and employees around the world. The founder and president of Environics/Lipkin, and the author of numerous bestselling motivational books, he combines Environics' trademark "social values research" with his personal expertise to provide people with the confidence and insight to take powerful action and achieve pre-eminence in their lives.

Lipkin is a former brand manager at Colgate Palmolive, board member at Grey Advertising, and account director at Olgivy & Mather – one of the world's leading advertising agencies. Environics/Lipkin has quickly become one of Canada's largest and most sophisticated polling companies.

Lipkin's motivational titles include Your Personal Best: The 12 Personal Best Practices to Help You Live at Your Highest Level; Luck Favours the Brave: How the Five Social Super Trends Can Make You Very, Very Successful; On Fire: The Art of Personal Consistency; Keeper of The Flame: How to Inspire Others on the Cusp of Change; and his most recent title, One Life, One Meeting: How to Achieve Pre-eminence, One Conversation at a Time.

#### Barb Fry RN, BN, M. Ad Ed. | WORKPLACE RELATIONSHIP STRATEGIES

Barb is a registered nurse, business owner, adult educator, workplace relationship consultant, and author. She is a strong advocate for professionalism in nursing practice, quality of work life and nurse manager leadership development. She is a frequent keynote presenter using humour to address topics on professionalism in practice, nursing leadership, managing bullying in the workplace, inter-generational relationships, and facilitating change. Barb was the closing keynote for the Canadian Nurses Association's 100th Anniversary. She published Fast Facts for Clinical Nurse Managers: Managing a Changing Workplace in a Nutshell. New York: Springer and Intergenerational Diversity: Bridging the Gap, Transforming Relationships for the Canadian Federation of Nurses' Unions. She contributed to the Canadian Nurse magazine in the Ask the Expert column on workplace relationships. In 2012-2013, her concerns about the current and future state of professional nursing practice has led to her writing a four-part series for the Canadian Nurse on the issues of scope of practice, leadership, and the art of nursing. She continues to consult and work with the College of Registered Nurses of Nova Scotia in designing and delivering a leadership program for nurse managers and other clinical leaders.

Although Barb's primary focus is on healthcare and nursing in particular, Barb frequently presents and works with organizations in both the private and corporate sector to promote and create healthy workplace relationships and cultures.

Call for Abstracts

CANNT 2014 Get all the details at ... www.cannt.ca



CANNT 2014 October 23–25

Scotiabank Convention Centre • Niagara Falls, Ontario

#### **LEADING-EDGE TOPICS IN:**

| Modes of Dialysis | Technology                    | Vascular Access       |
|-------------------|-------------------------------|-----------------------|
| Pathophysiology   | Chronic Kidney Disease        | Nutrition             |
| Pediatrics        | Psychosocial                  | Ethics                |
| Pharmacology      | Advance Directives            | Professional Practice |
| Education         | Professional Development      | Research              |
| Leadership        | Infection Control             | Transitional Care     |
| Transplantation   | Health Care & The Environment | Immunology            |

#### ABSTRACT SUBMISSION GUIDELINES:

#### Deadline: March 1, 2014

All abstracts must be submitted via e-mail (susanm@innovcc.ca) as an attachment in Word.

#### 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
- 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

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

Call for Abstracts

Abstracts are currently being accepted for ORAL and POSTER presentations for CANNT 2014 – PURSUING THE POWER WITHIN! This annual, national meeting of the Canadian Association of Nephrology Nurses and Technologists will be held October 23–25, 2014 in Niagara Falls, Ontario. The conference venue is the beautiful Scotiabank Convention Centre – newly opened in 2011. In keeping with CANNT 2014's theme, abstract submissions should not only explore the latest trends and techniques, and best practices in nephrology care, but also highlight projects and stories that celebrate originality, teamwork, resilience and change. Abstracts appropriate for the novice through to the advanced practice professional are invited. Topics of interest may include clinical research, innovative projects and solutions, ethics, case presentations and clinical reviews. All abstracts must be evidence-based. Please consult the list of leading-edge topics for possible areas of interest.

#### **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 & work telephone numbers
- · identify preferred audiovisual requirements (PC Viewer for Powerpoint or Slides)

#### **IMPORTANT NOTES:**

Only COMPLETE submissions received by MARCH 1, 2014 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 March 28, 2014.

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, and associated authors, should make full disclosure of corporate employment and/or funding sources.

Abstracts not in the required format will be returned to the author for revision. The language of abstract submission will be the language of presentation, if selected.

#### FORWARD ABSTRACTS TO:

MAIL: CANNT 2014 ABSTRACTS Innovative Conferences & Communications

> P.O. Box 319 59 Millmanor Place Delaware, Ontario, Canada NOL 1E0

E-MAIL: susanm@innovcc.ca (with file attached)

### **NOTICE BOARD**

- Ottawa Supper Clubs—contact Janet Graham, Nephrology Unit, Ottawa Hospital, jgraham@ ottawahospital.on.ca
- March 13, 2014. World Kidney Day, www. worldkidneyday.org/
- April 5, 2014. Exam date for CNeph(C) certification exam. Contact Canadian Nurses Association Certification program. Email: certification@ cnaaiic.ca; Website: www.cna-aicc.ca; Toll free phone number: 1-800-361-8404
- April 13–16, 2014. 45th American Nephrology Nurses Association Symposium. Anaheim, California. Website: www.annanurse.org
- September 17, 2014. Nephrology Health Care Professionals Day.
- October 23–25, 2014. CANNT 47th National Symposium. Niagara Falls, Ontario. Conference Planner: Heather Reid: e-mail: hreid@innovcc.ca; Website: www.cannt.ca



# **Connect with CANNT!**





519-652-5015



Canadian-Association-Of-Nephrology-Nurses-And-Technologists





SHARON LAPOINTE Membership Coordinator sharon@cannt.ca



CANNT National Office, PO Box 10, 59 Millmanor Place, Delaware, ON NOL 1E0



SUSAN MASON Website and Social Media susan@cannt.ca





HEATHER REID National Administrator heather@cannt.ca

### Quality of life in end stage renal disease: A concept analysis

By Julie Émelie Boudreau, RN, MN, CNeph(C), and Anik Dubé, PhD(c), RN

Copyright © 2014 Canadian Association of Nephrology Nurses and Technologists

#### ABSTRACT

**Aim:** This concept analysis examines quality of life (QOL) in the context of end stage renal disease (ESRD).

**Background:** Quality of life is a multidimensional concept historically used by governmental bodies to measure society's satisfaction of economic and social outcomes. However, health care researchers have demonstrated that the concept of QOL relates to a deeper meaning of an individual's experience of life and health.

**Design:** Walker and Avant's (2010) framework of concept analysis was chosen to provide conceptual clarity for nephrology nurses and allied health care professionals.

**Data sources:** The CINHAL, EBSCO, ERIC, Medline, PsycINFO, and PubMed databases were searched for the period of 1998–2013 for literature published in English and French with a focus of peer-reviewed journals from disciplines of health sciences and psychology.

**Results:** Consequent to this concept analysis, QOL has been defined by three defining attributes, such as the ability to engage in vigorous activities, the ability to perform activities of daily living (ADL), and the ability to engage in family, social, and occupational roles.

**Conclusion:** These findings enable a clear and functional definition of the concept of QOL in the context of ESRD, therefore facilitating the ability of nephrology nurses and allied health care professionals to assess clients' needs and improve their health care outcomes through their lived experience.

**Key words:** quality of life, end stage renal disease, client's perspective, and chronic kidney disease

#### INTRODUCTION

End stage renal disease is defined as a progressive loss of renal function that becomes a life-threatening and debilitating chronic illness impacting the daily life of affected clients,

Julie Émelie Boudreau, RN, MN, CNeph(C), Instructor, School of Nursing, Université de Moncton, Moncton, NB

Anik Dubé, PhD(c), RN, Assistant Professor, Université de Moncton, Moncton, NB

Address correspondence to: Julie Émelie Boudreau, RN, MN, CNeph(C), Université de Moncton, Pavillon Jacqueline Bouchard 042, 51 avenue Antoinine Maillet, Moncton, NB E1A 3E9. E-mail: **julie.e.boudreau@umoncton.ca** 

Submitted for publication: April 13, 2013.

Accepted for publication in revised form: January 20, 2014.

family members, and friends (Yong et al., 2009; White & Grenyer, 1999). The number of individuals living with ESRD is steadily increasing. Studies have predicted a substantial increase of this population in the near future (CIHI, 2011, 2006; CNA, 2008; Constantini, 2006). As a result, there is a great need for a standardized understanding and operation-alized definition of QOL (Loos, Briançon, Frimat, Hanesse, & Kessler, 2003; Morsch, Gonçalves, & Barros, 2006). Clients living with ESRD have significantly poorer outcomes than the general population. Hence, a client-centred approach is ideal to improve health care outcomes (Riaño-Galán et al., 2009; Son, You, & Song, 2012; Timmers et al., 2008). The burden of the illness combined with the necessary Renal Replacement Therapy (RRT) in the form of dialysis or transplantation can have a negative impact on quality of life (QOL).

Quality of life (QOL) can be defined as an individual's perception of self within the context of their culture and value system in relation to their goals, expectations, standards, and concerns of daily life (Finkelstein, Wuerth, & Finkelstein, 2009; World Health Organization Quality of Life Group, 1993) and is also a multidimensional concept historically used by government bodies to measure society's economic and social outcomes (Tobita & Hyde, 2007). Clinical experience has shown that QOL is greater than a person's socio-economic status alone; rather it also encompasses one's personal experience and meaning of life and health. Quality of life is becoming an important measure of health care outcomes that nurses can use to improve the quality of care they provide to clients living with end stage renal disease (ESRD) (Niu & Li, 2005).

Nephrology nurses work with clients through all RRT settings, including peritoneal dialysis (PD), hemodialysis (HD), kidney transplantation, and conservative or palliative care (Al-Arabi, 2006; Ferri & Pruchno, 2009; Noble, 2008) and, therefore, have a unique opportunity to impact their QOL. Nephrology nursing utilizes the nursing process to elicit positive outcomes through physical assessment, the development of care plans, the implementation of nursing interventions and finally the evaluation of health care outcomes (American Nephrology Nurses Association, 2005; Canadian Association of Nephrology Nurses and Technologists, 2008). Understanding clients' perceptions of their QOL facilitates the development of individualized care plans and the implementation of effective nursing interventions.

Concepts are mental representations of a phenomenon or an idea in our thoughts of an action or a thing that accurately represents these occurrences within the nursing profession. The conceptualization of concepts and their use in describing nursing practice is a stepping-stone towards the standardization of nursing language. Moreover, concepts can be described as efforts to categorize information into meaningful mental constructs when applied to a phenomenon that occurs within the field of health care. A concept analysis is a rigorous and precise process of operationalizing the defining characteristics and attributes of a phenomenon into a communicable understanding, and is undertaken using a structured framework (Walker & Avant, 2010).

This concept analysis describes QOL in clients living with ESRD in an effort to improve nursing interventions, increase client satisfaction, and improve adhesion to therapeutic regimens (Cleary & Drennan, 2005; Kastrouni, Sarantopoulou, Aperis, & Alivanis, 2010).

#### LITERATURE REVIEW

The first step to a concept analysis is a literature review. This review was conducted focusing on a client's perspective of QOL when living with ESRD. The following databases were consulted for relevant articles: CINAHL, EBSCO, ERIC, Medline, PsycINFO, and PubMed. Key words used for database searches were: quality of life, end stage renal disease, client's perspective, and chronic kidney disease. The articles were published by various health care professionals involved in client care in the context of ESRD, including nephrologists, occupational therapists, physiotherapists, psychologists, social workers, and nurses. Articles reviewed were from developed countries, including: Australia, Canada, China, Greece, India, Jordan, South Korea, Spain, Sweden, and the United States.

#### **INCLUSION CRITERIA**

Both qualitative and quantitative articles were selected for review and were published between 1998 and 2013. Articles were selected if they were able to describe QOL from the clients' perspective within the context of ESRD and discuss the impacts of ESRD on clients' lifestyles. Studies discussing the implementation of instruments of measure to evaluate QOL in clinical settings were included in order to understand the factors and interventions that affected reported QOL. Studies that outlined clients' perspectives regarding RRT were sought out as well. The population of focus ranged from the pediatric age group to older adults living with ESRD in order to generate broad insight into the QOL in ESRD. Research articles that did not meet the inclusion criteria were excluded; consequently, 26 articles were chosen for this concept analysis. A summary of relevant articles is outlined in Appendix A.

#### METHOD

Walker and Avant's (2010) framework for concept analysis was selected for this analysis due to its ability to guide novice nurse researchers towards the development of theoretical concepts. This eight-step process is a structured and concise approach to operationalizing the concept of interest, and includes the following steps: (Walker & Avant, 2010, p. 160):

- 1. Selection of a concept
- 2. Determination of analysis purpose
- 3. Determination of all possible uses of the concept
- 4. Creation of defining attributes
- 5. Identification of a model case

- 6. Identification of contrary and borderline cases
- 7. Identification of antecedents and consequences
- 8. Definition of empirical referents.

This process seeks to convey an understanding of the phenomena that exist in nursing and uses a practical application to the review of a concept that enhances client outcomes (Walker & Avant, 2010). The philosophical underpinning of Walker and Avant's (2010) method of concept analysis is grounded in a philosophical tradition that uses a systematic scientific approach for generating empirical data from the researcher's observations (Rodgers, 2005). Through this process, the researcher carries out the iterative process that aims for validity and reliability through the review of the literature. This leads to the collection of objective and empirical data that yields practical applications for nursing. The result is an operationalized definition of the concept under study, in this case, QOL in the context of ESRD.

#### CONCEPT SELECTION

The term QOL describes an individual's perception of self, as it relates to how they function in everyday life in their environment including elements of: physical and mental health, education, recreation and leisure time, and social belonging (Bele, Bodhare, Mudgalkar, Saraf, & Valsangkar, 2012; Noble, 2008). While the ESRD client's perception of QOL is a significant factor in the decision-making process for RRT (Al-Arabi, 2006; Kastrouni et al., 2010), interpretation of the concept of QOL has traditionally proved difficult since there is lack of conceptual clarity regarding its meaning (Kring & Crane, 2009).

Research regarding QOL in the context of ESRD has produced many instruments of measure to assess objective and subjective health indicators. Therefore, conceptualization of QOL within the context of ESRD enables nurses to understand how the client is coping. Nurses can use their expertise to assess QOL using health indicators that focus on a client's specific individual needs.

#### AIMS OF ANALYSIS

Using a concept analysis approach to develop a common understanding of QOL amongst health care providers enables a focus on the particular needs of clients. As a result, health care providers can work with clients in the development of individually tailored care plans, thereby implementing coordinated care that supports them along the continuum of renal dysfunction (Bele et al., 2012; Kastrouni et al., 2010; Noble, 2008). Nurses play a pivotal role within the interdisciplinary team in assessment of client needs and provision of individualized care, in addition to involving appropriate team members to assist clients in meeting their individual needs.

#### **RESULTS: DEFINING ATTRIBUTES**

The iterative process, done while consulting the 26 articles meeting the inclusion criteria, yielded three defining attributes for the concept under study. Characteristics most frequently associated with the concept of QOL in the context of ESRD provided the broadest insight into the individual's experience of these phenomena (Walker & Avant, 2010). Defining attributes enable a clear understanding of the concept. For example, if a client displays attributes that define QOL in the context of ESRD, then self-perception of their QOL is fulfilled (Al-Arabi, 2006; Cleary & Drennan, 2005). With this understanding, then, the defining attributes of this concept can be used by nurses to assess QOL in clients living with ESRD. Consequent to this concept analysis it concluded that QOL has been defined by the following three attributes:

- The ability to engage in vigorous activities
- The ability to perform activities of daily living (ADL)
- The ability to engage in family, social, and occupational roles.

The attributes identified above and their role in the definition of QOL can be illustrated through the use of a model case, as outlined below.

#### MODEL CASE: JOE PIERCE

Joe is 45 years old, married, has two adult sons, and works in an accounting firm. He follows his prescribed treatment plan of diet and medications in order to preserve his kidney function. He has an elevated serum creatinine and a decreased GFR of less than 15 mL/min/1.73m<sup>2</sup>. Therefore, Joe requires RRT to maintain life. The interdisciplinary team has provided Joe and his family with education and support to assist with his decision-making around RRT options. After much thought and discussion with family and friends, Joe identified PD as the modality that would best suit his lifestyle. The team coordinated his PD care with attention to spiritual care, nutritional needs, and PD training, initiation, and follow-up.

Joe perceived PD to best suit his needs since it enabled him to pursue his occupation as an accountant and share the responsibilities of household chores. Using the education provided by the dietitian and the support from the nurses at the clinic Joe was able to prepare meals to meet his daily calorie and protein requirements. He was also able to attend a weekly movie night with his children and attend church functions on Sundays. At clinic appointments, Joe demonstrated correct dressing change, PD catheter site care, and PD exchange techniques.

This example of a model case illustrates Joe's ability to preserve his QOL while undergoing RRT. By engaging in the three defining attributes of QOL that were identified through the process of concept analysis, Joe demonstrated his ability to maintain QOL that he perceived as satisfactory while on PD (Walker & Avant, 2010). Joe did this by engaging in vigorous activities (e.g., performing household chores), performing his ADLs (e.g., self-care of access site, performance of PD exchanges, and preparing meals) and engaging in family, social, and occupational roles (attending weekly movie night, Sunday church, and maintaining his employment). Therefore, maintenance of Joe's QOL facilitated his ability to manage his health and provide safe and effective self-care (Goldstein et al., 2009; Kolewaski et al., 2005; Tyrrell, Paturel, Cadec, Capezzali, & Poussin, 2005).

#### **CONTRARY CASE: JOEY HICKS**

The purpose of a contrary case is to provide an example of the concept under study where none of the defining attributes are present, as follows:

Joey is 26 years old and the father of a newborn daughter. He is employed as a plumber, but is also an avid baseball player during his time off. After his games he often goes to a local bar to celebrate with his teammates. More recently, he has been going to the bar more often after work and sporting events. Joey has been feeling stressed by his new role as a father and the subsequent commitment towards his girlfriend. Joey drinks alcohol in the evenings to help him relax. His girlfriend recently confronted him with her concerns about his alcohol consumption. Joey does not perceive his drinking as problematic, despite the fact that on a few occasions he almost dropped his daughter due to his inebriated state. His girlfriend has recently moved out of the family home citing an inability to cope with Joey's behaviour and excessive alcohol consumption.

Joey realizes he does not possess the skills to engage his girlfriend and daughter in meaningful relationships. His attendance at work was unpredictable and marked by tardiness. The smell of alcohol was often detectable on his breath, and he consequently lost his job. Joey believed he could not ask his friends for advice and was belligerent towards them when he was inebriated. He was also asked to leave his baseball league and has become isolated and lonely. Joey has also experienced difficulties taking care of himself and his home due to his persistent drinking.

Joey's story provides an example of the concept that is completely the opposite from the model case (a contrary case). All defining attributes of the concept under study were absent in this example. Joey's alcohol consumption has affected his QOL, as illustrated by his inability to engage in vigorous activities (e.g., playing baseball, carrying out household chores), and social roles with his family and friends. He was unable to carry out his ADLs (e.g., self-care) and perform his occupational role, as a plumber. Finally, Joey's alcohol consumption of more than two units of alcohol a day and binge drinking adversely increased his health risks (Butt et al., 2011).

#### **IDENTIFIED ANTECEDENTS**

An antecedent is the perceived social context where the concept of QOL is generally used. In the area of nephrology nursing, the concept of QOL in the context of ESRD is introduced to the care of clients when they are first diagnosed with chronic kidney disease (CKD). Within the context of ESRD, QOL is the individual's subjective definition of well-being in relation to the impact of the burden of disease on their physical, social, and psychological health (Finkelstein et al., 2009; Perlman et al., 2005; Porter et al., 2012). This is evident throughout all five stages of CKD—including the fifth and final stage that necessitates RRT, to sustain life or choose conservative/palliative care treatment (Noble, 2008; Sliwka & Mendes, 2006; Timmers et al., 2008).

#### **IDENTIFIED CONSEQUENCES**

Consequences are outcomes related to the manifestation of the concept in nursing practice (Walker & Avant, 2010). A client living with ESRD requires a period of self-reflection to make decisions pertaining to treatment options and health-related outcomes that relate to the concept of QOL (Timmers et al., 2008). The impact of RRT and the potential adverse effects and complications of their chosen modality must be made explicit to clients, so they can make informed decisions (CNA, 2002; Goldstein et al., 2009). Individuals need to weigh the benefits and disadvantages of each treatment option against their own physical, emotional, social, and occupational dimensions of daily life (Bele et al., 2012; Timmers et al., 2008). Therefore, the clients' needs, as they relate to their defined perception of QOL, guide the selection of an appropriate treatment option (Goldstein et al., 2009; Timmers et al., 2008).

#### **EMPIRICAL REFERENTS**

Empirical referents demonstrate the existence of the phenomena under study by its occurrence in nursing practice. Consequently, QOL in the context of ESRD is the ability of clients to exemplify all three defining attributes in relation to their RRT, which can be measured in clinical practice. The assessment of HRQOL has been accepted by nephrology health care professionals, as a means of measuring various treatment regimens and intervention outcomes for clients living with ESRD (Finkelstein et al., 2009; Perlman et al., 2005). The Medical Outcomes Study Short Form-36 Health Survey (SF-36<sup>™</sup>) is an instrument of measure that has been subjected to extensive psychometric testing and is considered reliable and valid when measuring the HRQOL of ESRD clients (Kosinski, Bayliss, Bjorner, & Ware, 2000; Perlman et al., 2005; Tobita & Hyde, 2007). The SF-36<sup>™</sup> measures the effect of the burden of symptoms related to ESRD and its treatment modalities on two scales of physical and mental function (Perlman et al., 2005; Tobita & Hyde, 2007). Clients with ESRD who are satisfied with their HRQOL are able to engage in vigorous activities, perform instrumental activities of daily living, as well as engage in familial, social, and occupational roles (Cleary & Drennan, 2005; Ferri & Pruchno, 2009; Porter et al., 2012). Therefore, assessing the HRQOL of ESRD clients enables sharing of their lived experience and facilitates the implementation of strategic, individualized plans of care by health care professionals (Finkelstein et al., 2009; Kastrouni et al., 2010; Khalil et al., 2013).

#### POTENTIAL BENEFITS TO NEPHROLOGY NURSING PRACTICE

The concept analysis process enables the operationalized definition of a concept, in this case QOL in ESRD that speaks to the meaning a client ascribes to their QOL. Within the context of ESRD, the inability to fulfill one or more defining attributes would negatively impact the individual's perceived QOL. This notion reinforces the role that nephrology nurses are able to play in initiating dialogue with clients to examine and assess their health care needs in CKD—Stage 5. These findings also enhance the understanding between other nurses and health care providers of the importance of improving health care outcomes for clients through their lived experiences. Registered nurses play a pivotal role in the interdisciplinary team, as advocates for the health care needs of their clients, and the use of concept analysis can assist in this process (ANNA, 2005; Hamric, Spross & Hanson, 2009). Subsequently, the high cost of care related to ESRD requires innovative health care strategies in which registered nurses have an essential contribution (Kinchen & Powe, 2001; Kring & Crane, 2009; Morsch et al., 2006).

#### LIMITATIONS

There is a potential bias by researchers when carrying out concept analysis for choosing concepts that are perceived as valuable to the nursing discipline. Nurse researchers must remain objective through the iterative process of concept analysis and allow the meaning of the concept to emerge from the literature accounted as evidence (Walker & Avant, 2010). Inconsistency among scholars defining and assessing the concept of QOL may result in dissimilar views of defining attributes. Therefore, demographic and geographical considerations need to be acknowledged to avoid bias when assessing QOL. Future research is needed to operationalize nursing interventions while considering the defining characteristics of QOL when constructing care plans. Furthermore, as the health care system continuously evolves, so does QOL within the context of ESRD. Therefore, re-assessment of the concept of QOL should be carried out in order to ensure the defining attributes remain relevant and meaningful to clients and health care professionals.

#### CONCLUSION

Individuals living with ESRD face lifestyle changes and difficult decisions with regards to treatment options. Implementing the findings of this concept analysis to improve the health outcomes of those undergoing RRT enhances the quality of care provided by the interdisciplinary team in the nephrology program. Nurses can assess the presence, the absence or the compromise of any or all of the three defining attributes within their daily practices. Consequently, a lack of self-care by the patient, the inability of the patient to engage in vigorous activities, and/or the self-reported or proxy reported detachment to familial, social, and/or occupational roles should prompt the nurse to assess the client's QOL. The role of registered nurses is to educate, motivate, and facilitate clients' decision-making to select appropriate treatment options while at the same time improving their overall health. Understanding the concept of QOL guides health care professionals to assist clients in the selection of the treatment modality most likely to be associated with a higher QOL. Therefore, this concept must be in constant revision to reflect changes in the health care system and the population's needs for nephrology programs in an effort to maintain a client-centred approach.

#### ACKNOWLEDGEMENTS

The primary author gratefully acknowledges her colleague Crystal Wilson, MN, NP, CNCC(C), Nurse Practitioner for the Southern Alberta Trauma Program, for her guidance and support in the development of this scholarly work.

#### REFERENCES

- Al-Arabi, S. (2006). Quality of life: Subjective descriptions of challenges to patients with end stage renal disease. *Nephrology Nursing Journal*, 33(3), 285–293.
- American Nephrology Nurses Association. (2005). ANNA position statement. *Nephrology Nursing Journal*, 32(3), 313–327.
- Bele, S., Bodhare, T.N., Mudgalkar, N., Saraf, A., & Valsangkar, S. (2012). Health-related quality of life and existential concerns among patients with end stage renal disease. *Indian Journal of Palliative Care*, 18(2), 103–108. doi:10.4103/0973-1075.100824
- Butt, P., Beirness, D., Cesa, F., Gliksman, L., Paradis, C., & Stockwell, T. (2011). Alcohol and health in Canada: A summary of evidence and guidelines for low-risk drinking. Ottawa, ON: Canadian Centre on Substance Abuse.
- Canadian Association of Nephrology Nurses and Technologists. (2008). Nephrology Nursing Standards and Practice Recommendations. Barrie, ON: Author.
- Canadian Institute for Health Information. (2011). *Canadian organ replacement register annual report*. Ottawa, ON: Author.
- Canadian Institute for Health Information. (2006). *Treatment of end-stage organ failure in Canada, 1995 to 2004*. Ottawa, ON: Author.
- Canadian Nurses Association. (2008). *Advanced nursing practice:* A *national framework*. Ottawa, ON: Author.
- Canadian Nurses Association. (2002). *Code of ethics for registered nurses*. Ottawa, ON: Author.
- Cleary, J., & Drennan, J. (2005). Quality of life of patients on haemodialysis for end-stage renal disease. *Journal of Advanced Nursing*, 51(6), 577–586. doi:10.1111/j.13652648.2005.03547.x
- Constantini, L. (2006). Compliance, adherence, and self-management: Is a paradigm shift possible for chronic kidney disease clients? *Canadian Association of Nephrology Nurses and Technologists Journal*, 16(4), 22–26.
- Ferri, C., & Pruchno, R. (2009). Quality of life in end-stage renal disease patients: Differences in patient and spouse perceptions. *Aging & Mental Health*, 13(5), 706–714. doi:10.1080/13607860902845558
- Finkelstein, F., Wuerth, D., & Finkelstein, S. (2009). Health-related quality of life and the CKD patient: Challenges for the nephrology community. *Kidney International*, 76(9), 946–952. doi:10.1038/ ki.2009.307
- Fisher, R., Gould, D., Wainwright, S., & Fallon, M. (1998). Quality of life after renal transplantation. *Journal of Clinical Nursing*, 7(6), 553-563.
- Goldstein, S., Rosburg, N., Warady, B., Seikaly, M., McDonald, R., Limbers, C., & Varni, J. (2009). Pediatric end stage renal disease health-related quality of life differs by modality: A PedsQL ESRD analysis. *Pediatric Nephrology*, 24(8), 1553–1560. doi:10.1007/ s00467-009-1174-1
- Hamric, A., Spross, J., & Hanson, C. (2009). Advanced practice nursing: An integrative approach (4th ed.). St-Louis: Elsevier.
- Kastrouni, M., Sarantopoulou, E., Aperis, G., & Alivanis, P. (2010). Quality of life of Greek patients with end stage renal disease undergoing haemodialysis. *Journal of Renal Care*, *36*(3), 126–132. doi:http://dx.doi.org/10.1111/j.1755-6686.2010.00187.x
- Khalil, A., Darawad, M., Gamal, E. A., Hamdan-Mansour, A.M., & Abed, M.A. (2013). Predictors of dietary and fluid non-adherence in Jordanian patients with end-stage renal disease receiving haemodialysis: A cross-sectional study. *Journal of Clinical Nursing*, 22(1/2), 127–136. doi:10.1111/j.1365-2702.2012.04117.x
- Kinchen, K., & Powe, N. (2001). Measuring and managing health outcomes and quality of care in end-stage renal disease. *Disease Management & Health Outcomes*, 9(9), 483–493. doi:10.2165/00115677-200109090-00003
- Kolewaski, C., Mullally, M., Parsons, T., Paterson, M., Toffelmire, E., & King-Van Vlack, C. (2005). Quality of life and exercise rehabilitation in end stage renal disease. *Canadian Association of Nephrology Nurses and Technologists Journal*, 15(4), 22–29.
- Kosinski, M., Bayliss, M., Bjorner, J.B., & Ware, J.E. (2000). Improving estimates of SF-36<sup>®</sup> health survey scores for respondents with missing data. *Medical Outcomes Trust Monitor*, 5(1), 8–10.

- Kring, D., & Crane, P. (2009). Factors affecting quality of life in persons on hemodialysis. *Nephrology Nursing Journal*, 36(1), 15–25.
- Loos, C., Briançon, S., Frimat, L., Hanesse, B., & Kessler, M. (2003). Effect of end-stage renal disease on the quality of life of older patients. *Journal of the American Geriatrics Society*, 51(2), 229– 233. doi:10.1046/j.1532-5415.2003.51062.x
- Morsch, C., Gonçalves, L., & Barros, E. (2006). Health-related quality of life among haemodialysis patients—Relationship with clinical indicators, morbidity, and mortality. *Journal of Clinical Nursing*, 15(4), 498–504. doi:10.1111/j.1365-2702.2006.01349.x
- Niu, S., & Li, I. (2005). Quality of life of patients having renal replacement therapy. *Journal of Advanced Nursing*, 51(1), 15–21. doi:10.1111/j.1365-2648.2005.03455.x
- Noble, H. (2008). Supportive and palliative care for the patient with end-stage renal disease. *British Journal of Nursing*, 17(8), 498–504.
- Perlman, R.L., Finkelstein, F.O., Liu, L., Roys, E., Kiser, M., Eisele, G., ... Saran, R. (2005). Quality of life in chronic kidney disease (CKD): A cross-sectional analysis in the renal research institute– CKD Study. American Journal of Kidney Diseases, 45(4), 658–666. doi:10.1053/j.ajkd.2004.12.021
- Porter, A., Fischer, M., Brooks, D., Bruce, M., Charleston, J., Cleveland, W., ... Lash, J. (2012). Quality of life and psychosocial factors in African Americans with hypertensive chronic kidney disease. *Journal of Laboratory & Clinical Medicine*, 159(1), 4–11. doi:10.1016/j.trsl.2011.09.004
- Riaño-Galán, I., Málaga, S., Rajmil, L., Ariceta, G., Navarro, M., Loris, C., & Vallo, A. (2009). Quality of life of adolescents with endstage renal disease and kidney transplant. *Pediatric Nephrology*, 24(8), 1561–1568. doi:10.1007/s00467-009-1175-0
- Rodgers, B. (2005). *Developing nursing knowledge: Philosophical traditions and influences.* Philadelphia: Lippincott, Williams and Wilkins.
- Sliwka, C., & Mendes, L. (2006). Urologie, néphrologie et soins infirmiers (4th ed.). Rueil-Malmaison: Lamarre.
- Son, Y., You, M., & Song, E. (2012). Influence of type D personality on health-related quality of life among Korean patients with endstage renal disease. *International Journal of Nursing Practice*, 18(3), 260–267. doi:10.1111/j.1440-172X.2012.02030.x
- Timmers, L., Thong, M., Dekker, F., Boeschoten, E., Heijmans, M., Rijken, M., Weinman, J., & Kaptein, A. (2008). Illness perceptions in dialysis patients and their association with quality of life. *Psychology & Health*, 23(6), 679–690. doi:10.1080/14768320701246535
- Tobita, I., & Hyde, C. (2007). Quality of life research: A valuable tool for nephrology nurses. *Journal of Renal Care, 33*(1), 25–29. doi:10.1111/j.1755-6686.2007.tb00033.x
- Tyrrell, J., Paturel, L., Cadec, B., Capezzali, E., & Poussin, G. (2005). Older patients undergoing dialysis treatment: Cognitive functioning, depressive mood, and health-related quality of life. *Aging & Mental Health*, 9(4), 374–379. doi:10.1080/13607860500089518
- Vachon, M., Ouellette, A., & Achille, M. (2005). Analyse de classification hiérarchique et qualité de vie. *Tutorial in Quantitative Methods for Psychology*, 1(1), 25-30.
- Walker, L.O., & Avant, K.C. (2010). Strategies for Theory Construction in Nursing (5th ed.). Upper Saddle River: Pearson.
- White, Y., & Grenyer, B. (1999). The biopsychosocial impact of endstage renal disease: The experience of dialysis patients and their partners. *Journal of Advanced Nursing*, 30(6), 1312–1320. doi:10.1046/j.1365-2648.1999.01236.x
- World Health Organization Quality of Life Group (1993). Study protocol for the World Health Organization project to develop a quality of life assessment instrument (WHOQOL). Quality of Life Research, 2, 153–159.
- Yong, D., Kwok, A., Wong, D., Suen, M., Chen, W., & Tse, D. (2009). Symptom burden and quality of life in end-stage renal disease: A study of 179 patients on dialysis and palliative care. *Palliative Medicine*, 23(2), 111–119. doi:10.1177/0269216308101099

| Appendix A: Summary of Relevant Articles   |   |   |  |
|--|---|---|--|
| Authors  | Context   | Findings  |  |
| Al-Arabi, S. (2006).   | Hemodialysis patients described their experience of managing daily life.  | Three concept categories emerged from this study: 1. Life restricted 2. Staying alive 3. Feeling good   |  |
| Bele, S., Bodhare,<br>T.N., Mudgalkar,<br>N., Saraf, A., &<br>Valsangkar, S.<br>(2012).                            | Hemodialysis patients described<br>dimensions of HRQOL and existential<br>concerns to examine the relationships<br>between the two concepts.  | The lowest scores obtained for HRQOL were burden of kidney disease (33.45 + 13.53), work status (49.07 + 49.07), quality of social interaction (62.22 + 11.80), general health (43.06 + 13.01), and physical functioning (47.50 + 18.88). Disrupted personal integrity (12.80 + 2.81) and loss of continuity (5.37 + 1.17) were the most troublesome existential concerns. Existential concerns were shown to be distinct from HRQOL.   |  |
| Cleary, J., &<br>Drennan, J. (2005).   | Surveys measured QOL in patients<br>undergoing HD and compared those<br>results with the general population.<br>Differences between the two were<br>determined by dialysis adequacy<br>measurements (Kt/V) and self-reported<br>HRQOL. The 36-item Short Form Health<br>Survey questionnaire was implemented<br>to measure HRQOL. | Limitations in the areas of vitality, physical functioning, and<br>physical role were reported by patients undergoing HD.<br>Physical functioning was significantly lower in HD patients than<br>in the general population. Scores relating to mental health<br>were different among well-dialyzed patients than those less<br>well-dialyzed. Hemodialysis negatively impacted QOL.   |  |
| Ferri, C., & Pruchno,<br>R. (2009).  | Spouses and proxies rated QOL (for<br>their significant other living with ESRD)<br>lower than the patients themselves.<br>The differences and similarities<br>between spouse and patient reported<br>QOL was examined to explain this<br>phenomenon.  | Patients and their spouses perceived patient QOL and<br>its predictors differently. Spouses rated QOL and patient<br>characteristics lower than did the patient. Patient perceptions<br>regarding their mood and subjective health predicted changes<br>in both patient and spousal ratings of QOL. Spousal perceptions<br>of the patient functional ability predicted the spouse's rating<br>of QOL, but not the patient's own rating. Spousal self-reported<br>QOL explained variances in their rating of the patient's QOL.                                  |  |
| Finkelstein, F.,<br>Wuerth, D., &<br>Finkelstein, S.<br>(2009).  | Challenges of understanding how to<br>interpret and use information obtained<br>from measuring HRQOL for people<br>living with CKD is addressed.  | Strategies involving interdisciplinary team members were<br>shown to improve compromised HRQOL reports. Engaging<br>patients in assessment and gaining participation necessitates<br>innovation and creativity. Routine assessments are mandated<br>in the United States to improve patient outcomes for those<br>undergoing HD.  |  |
| Fisher, R., Gould, D.,<br>Wainwright, S., &<br>Fallon, M. (1998).  | QOL after renal transplantation is<br>explored by comparing stress and<br>QOL in five patients living with ESRD<br>awaiting a transplant and in five<br>patients who had received a graft<br>within the previous six months.  | The desire to undergo renal transplantation was perceived by the<br>patients as a means to "get off dialysis" and "lead a normal life".<br>Pre-transplant patients' main sources of stress were undergoing<br>HD, awaiting the call for transplantation, and social isolation<br>imposed by chronic disease. Quality of life was dramatically<br>improved for post-transplant patients in spite of renal symptoms;<br>these individuals felt privileged to receive this form of RRT.  |  |
| Goldstein, S.,<br>Rosburg, N.,<br>Warady, B., Seikaly,<br>M., McDonald, R.,<br>Limbers, C., & Varni,<br>J. (2009). | The 34-item PedsQL 3.0 End Stage<br>Renal Disease (ESRD) Module<br>measured differences in HRQOL<br>between children and adolescents<br>undergoing RRT, as well as their<br>parents.  | Parents reported a significantly higher HRQOL for pediatric<br>renal transplant recipients than the parents of those<br>undergoing dialysis, except for the Perceived Physical<br>Appearance Scale. Pediatric renal transplant recipients self-<br>reported comparable HRQOL except for the Family and Peer<br>Interaction Scale, which was significantly higher than in the<br>group of pediatric patients undergoing dialysis. Results have<br>demonstrated renal transplantation has a positive impact on<br>HRQOL for pediatric patients and their parents. |  |

continued on page 18...

| Appendix A: Summary of Relevant Articles   |   |   |  |
|--|---|---|--|
| Authors  | Context   | Findings  |  |
| Kastrouni, M.,<br>Sarantopoulou,<br>E., Aperis, G., &<br>Alivanis, P. (2010).  | Greek patients undergoing HD<br>evaluated their QOL with a Short-Form<br>(SF-36) questionnaire.   | Emotional status demonstrated a great impact on self-reported<br>QOL. Sexual dysfunctions were reported as distressing<br>in this study. Encouragement, acceptance of illness, and<br>understanding from HD staff demonstrated a positive impact<br>on patients and their reported QOL.   |  |
| Khalil, A., Darawad,<br>M., Gamal, E.A.,<br>Hamdan-Mansour,<br>A.M., & Abed, M.A.<br>(2013).                           | Jordanian patients undergoing HD<br>were evaluated to provide insight<br>regarding the relationships between<br>diet and fluid non-adherence,<br>depressive symptoms, QOL, exercise,<br>and social support.   | Patients demonstrated full commitment to diet<br>recommendations at a rate of 27% and only 23% to fluid<br>restrictions over a 14-day period of time. Multiple hierarchical<br>regressions demonstrated that age and residual renal function<br>affected dietary non-adherence. Depression negatively<br>impacted QOL with regards to importance and satisfaction.  |  |
| Kinchen, K., &<br>Powe, N. (2001).   | Assessment of health outcomes was<br>measured in patients living with ESRD<br>in an effort to improve the quality of<br>care.   | Quality of life was assessed by reviewing transplantation rates,<br>hematocrit, vascular access success and failure, and mean<br>urea reduction ratio. However, interpretation of these variables<br>must be done with caution. Case mix adjustments to allocate<br>resources for this client population should be done to improve<br>patient outcomes and patient care.  |  |
| Kolewaski, C.,<br>Mullally, M.,<br>Parsons, T.,<br>Paterson, M.,<br>Toffelmire, E., &<br>King-Van Vlack, C.<br>(2005). | Perceptions regarding physical,<br>emotional, and social wellbeing<br>subsequent to an eight-week intra-<br>dialytic exercise program were<br>examined for patients undergoing HD.  | The study was a positive experience and patients reported<br>an enhanced QOL. Three primary themes emerged from data<br>analysis: 1. Performance of ADLs was improved 2. Positive<br>change in HD experience 3. Enhancement of their sense of<br>control  |  |
| Kring, D., & Crane,<br>P. (2009).  | Patients living with ESRD described<br>their QOL and explored factors that<br>affected QOL.   | Quality of life was explained by the variability of factors, such<br>as: biological function, symptom burden, and general function,<br>perceptions related to health, environmental and individual<br>factors. However, anxiety, depression, and general health<br>perceptions significantly contributed to self-reported QOL.<br>Therefore, psychological factors may have a greater effect on<br>QOL than physiological factors.  |  |
| Loos, C., Briançon,<br>S., Frimat, L.,<br>Hanesse, B., &<br>Kessler, M. (2003).  | Elderly French patients beginning HD<br>compared their results of self-reported<br>QOL to a non-chronic renal failure<br>control group. The 36-item Short Form<br>Health Survey was implemented to<br>measure QOL by self-report along<br>with laboratory findings, symptoms of<br>disease, and co-morbid conditions. | Patients living with ESRD reported role limitation secondary<br>to physical function and social function key factors when<br>assessing their QOL. Dialysis was initiated when physical<br>function and vitality were compromised. Mental health has a<br>pivotal factor for measuring QOL in non-chronic renal failure<br>groups. Initiating dialysis does not affect QOL more than<br>other disease states if it is planned. Therefore, an unplanned<br>commencement of dialysis severely impaired QOL for this<br>sample of elderly patients. |  |
| Morsch, C.,<br>Gonçalves, L., &<br>Barros, E. (2006).  | Examination of the relationships<br>between QOL, morbidity, clinical<br>indicators (Kt/V, hematocrit, serum<br>albumin), and mortality for Brazilian<br>patients undergoing HD.   | Men reported a higher HRQOL in the energy and fatigue<br>component. Diabetes negatively affected physical functioning,<br>as compared to other diseases. A close relationship was<br>shown between QOL, morbidity, and mortality. Albumin and<br>hematocrit demonstrated great influences on QOL scores.  |  |
| continued on page 19   |   |   |  |

| Appendix A: Summary of Relevant Articles  |   |  |  |
|---|---|--|--|
| Authors   | Context   | Findings   |  |
| Perlman, R.L.,<br>Finkelstein, F.O.,<br>Liu, L., Roys, E.,<br>Kiser, M., Eisele, G.,<br>Burrows-Hudson,<br>S., Saran, R.<br>(2005). | Quality of life was examined in<br>individuals suffering from CKD in<br>comparison to individuals undergoing<br>HD and a healthy control group. The<br>Medical Outcomes Study Short Form-<br>36 (SF-36), as well as GFR, albumin,<br>and hemoglobin levels were analyzed<br>to evaluate QOL.  | Patients living with CKD had higher scores on the SF-36 than<br>patients undergoing HD, but both were lower than the control<br>group reported. Hemoglobin level positively affected mental<br>and physical QOL scores excepting the pain scale. GFR did not<br>significantly affect QOL.  |  |
| Niu, S., & Li, I.<br>(2005).  | Taiwanese patients undergoing RRT<br>(HD, PD, or transplantation) reported<br>their QOL by the WHOQOL-BREF-<br>TAIWAN instrument.   | Renal replacement therapies impact on different levels of<br>physical, psychological, and social health. Self-reported QOL<br>was higher for patients living with a transplant than those<br>undergoing HD and PD. All three groups scored lowest in<br>the psychological domain. Mean age, level of education,<br>marital status, and employment were significantly different for<br>transplant recipients than those undergoing HD or PD. Support<br>groups for those undergoing different forms of RRT should be<br>considered to enhance outcomes in the psychological domain.   |  |
| Noble, H. (2008).   | Supportive and palliative care is<br>presented to enhance nursing<br>interventions for those withdrawing<br>from dialysis or those living with ESRD<br>who choose not to pursue RRT.  | Symptom management for those nearing end of life from<br>ESRD is essential since the burden of disease outweighs<br>QOL benefits. Nursing care paradigms should shift towards<br>supportive health management through high-quality palliative<br>care in comparison to interventions of a physiological nature.  |  |
| Porter, A., Fischer,<br>M., Brooks,<br>D., Bruce, M.,<br>Charleston, J.,<br>Cleveland, W.,<br>Lash, J. (2012).                      | African Americans in the United<br>States living with hypertensive CKD<br>evaluated their HRQOL measured by<br>the Short Form-36. Life satisfaction was<br>measured by the Diener Satisfaction<br>with Life Scale. The Beck Depression<br>Inventory-II assessed depression.<br>Coping mechanisms were measured by<br>the Coping Skills Inventory-Short Form.<br>Social support was examined by the<br>Interpersonal Support Evaluation List-16. | Social support, coping skills, and satisfaction with life positively<br>affected HRQOL while unemployment and depression resulted<br>in lower scores of HRQOL. Higher GFR levels significantly<br>improved physical health composite scores, but not Mental<br>Health composite scores. Good social support systems and<br>coping skills significantly increased HRQOL.  |  |
| Riaño-Galán, I.,<br>Málaga, S., Rajmil,<br>L., Ariceta, G.,<br>Navarro, M., Loris,<br>C., & Vallo, A.<br>(2009).                    | Spanish children and adolescents living<br>with ESRD compared their self-reported<br>HRQOL in comparison to references<br>from population norms. HRQOL was<br>measured by the Spanish version of<br>the Child Health and Illness profile,<br>adolescent edition (CHIP-AE). Underlying<br>diagnosis, episodes of renal transplant<br>rejection, pre-emptive transplantation,<br>anemia, and height were included in the<br>analysis of HRQOL.    | Pediatric renal transplant recipients showed no significant<br>differences between their healthy peers in the CHIP-ARE<br>scores. Pediatric dialysis patients reported lower satisfaction<br>with health in comparison to transplant recipients and<br>healthy peers. Physical discomfort increased for transplant<br>recipients, as well as those having lived through a rejection<br>episode. Those with shorter height reported a lowered self-<br>esteem in satisfaction with health. Adolescents with a renal<br>transplant reported greater satisfaction with health than those<br>undergoing dialysis and matched scores from their healthy<br>peers. |  |
| Son, Y., You, M., &<br>Song, E. (2012).   | The impact of type D personality<br>in patients living with ESRD was<br>examined to determine whether there<br>was a link with depressive symptoms.   | Type D personality as defined by a combination of negative<br>affectivity and social inhibition was prevalent at 26%. Following<br>multivariate analysis, type D personality was an independent<br>predictor of HRQOL. Therefore, interventions should be<br>focused on reducing depressive symptoms to improve HRQOL.   |  |
| continued on page 20  |   |  |  |

| Appendix A: Summary of Relevant Articles   |   |  |  |
|--|---|--|--|
| Authors  | Context   | Findings   |  |
| Timmers, L.,<br>Thong, M., Dekker,<br>F., Boeschoten,<br>E., Heijmans,<br>M., Rijken, M.,<br>Weinman, J., &<br>Kaptein, A. (2008). | Leventhal's self-regulation model (SRM)<br>was implemented as a theoretical<br>framework to examine illness<br>perceptions for patients undergoing<br>dialysis and the association with QOL.<br>Illness perceptions were measured by<br>the IPQ-R whereas the Short Form-36<br>(SF-36) measured QOL.  | Patients undergoing PD reported more personal control and<br>a better understanding of their illness than those undergoing<br>HD. Symptoms burden accompanied with a lowered sense of<br>personal control was associated with lower scores of well-<br>being. Increasing patient knowledge regarding ESRD and its<br>treatments, as well as coping skills with illness may improve<br>QOL in dialysis patients.  |  |
| Tobita, I., & Hyde, C.<br>(2007).  | Research tools, such as QLI-H and<br>KDQOLTM, were reviewed to examine<br>whether they accurately assess QOL<br>for people living with ESRD.  | Adequately assessing QOL enabled nurses to plan and<br>coordinate care for people living with ESRD. Understanding<br>instruments of measure that are readily available enables<br>nurses to accurately assess QOL to improve or maintain the<br>quality of care provided by nurses.  |  |
| Tyrrell, J., Paturel,<br>L., Cadec, B.,<br>Capezzali, E., &<br>Poussin, G. (2005).   | Elderly dialysis patients were assessed<br>for cognitive impairment, depressive<br>mood, and self-reported QOL since<br>an increasing amount of individuals<br>70 years old and older are requiring<br>dialysis secondary to ESRD. The<br>MADRS was implemented to measure<br>depression, QOL was measured by<br>the NHP, and cognitive function was<br>measured with the MMSE and BEC 96.  | Sixty per cent of participants were depressed and 30%–47% had cognitive impairment. Scores for QOL varied widely. Both cognitive impairments and depressive mood should be assessed regularly in elderly populations given the prevalence of the problem. Patients who are unwilling or unable to comply with treatment regimens should have individual case assessments since the negative impact of dialysis might outweigh the benefits.  |  |
| Vachon, M.,<br>Ouellette, A., &<br>Achille, M. (2005).   | The concept of QOL was analyzed<br>by hierarchical cluster analysis with<br>a sample of diabetic patients who<br>received a transplant. The Psychosocial<br>Adjustment to Illness Scale by self-<br>report was implemented to assess<br>psychosocial QOL.   | Two profiles emerged from this sample profile: pancreas<br>and renal transplant recipients or single renal transplant<br>recipients. Satisfaction regarding follow-up care and return<br>to work demonstrated a significant impact of QOL following<br>transplantation. The type of organ transplant affected the self-<br>reported QOL post-transplant.   |  |
| White, Y., & Grenyer,<br>B. (1999).  | The biopsychosocial impact of dialysis<br>in individuals living with ESRD and their<br>patterns is examined. Open-ended<br>questions yielded multiple themes by<br>verbatim analysis.   | Both the patients and their partners viewed their relationship<br>as very positive. However, dialysis overwhelmed their lives.<br>Patients' self-reported anger, depression, and hopelessness<br>with pervasive sadness, resentment, guilt, and loss were<br>prevalent in those undergoing dialysis. Dialysis can negatively<br>impact couples; however, some couples cope positively<br>despite life altering adjustment brought on by dialysis.<br>Nurses caring for this population of patients should grasp the<br>significant emotional impact of dialysis on couples living with<br>ESRD and its life-sustaining technology. |  |
| Yong, D., Kwok, A.,<br>Wong, D., Suen, M.,<br>Chen, W., & Tse, D.<br>(2009).   | Hong Kong patients undergoing<br>dialysis or receiving palliative care<br>assessed the symptom burden of ESRD<br>and their QOL. The modified Charlson<br>Comorbidity Index (CCI) examined<br>morbidity, the prevalence and intensity<br>of 23 ESRD related symptoms was<br>rated by a numerical rating scale of<br>0–10, the Brief Pain Inventory explored<br>their experience of pain, and QOL was<br>measured by the MOS SF-36. | The sample was composed of 25.1% palliative care patients<br>and 74.9% patients on dialysis. The most prevalent symptoms,<br>as well as the most intense in both groups were fatigue,<br>cold aversion, pruritus, lower torso weakness and difficulty<br>sleeping. Self-reported QOL was significantly impaired for both<br>groups; all QOL domains were correlated negatively with the<br>number of symptoms.   |  |

# Dosing chemotherapy agents in hemodialysis—A focus on multiple myeloma

By Rachel Runnels, BScPhm student, Karen Cameron, BScPhm, ACPR, CGP, Pamela Ng, BScPhm, and Marisa Battistella, BScPhm, PharmD

Copyright © 2014 Canadian Association of Nephrology Nurses and Technologists

#### LEARNING OBJECTIVES

- After reading this article, readers should be able to:
- 1. Describe the epidemiology of cancer in ESRD patients
- 2. Gain a basic understanding of multiple myeloma including its epidemiology and presentation
- 3. Gain a basic understanding of the commonly used antineoplastic agents in multiple myeloma
- 4. Understand the factors to consider for the removal of chemotherapy agents by hemodialysis

#### INTRODUCTION

Dialysis patients are at high risk for morbidity and mortality from cardiovascular (CV) disease, infectious disease, and cancer (Janus et al., 2013). Patients on hemodialysis (HD) have a 35% increased incidence of various cancers compared to chronic kidney disease (CKD) patients not on dialysis and an increased risk of mortality compared to ESRD patients without cancer (Holley, 2007; Janus et al., 2013; Lee, 2009; Vajdic et al., 2006). A retrospective cohort

Rachel Runnels, BScPhm student, University of Waterloo School of Pharmacy, Waterloo, ON

Karen Cameron, BScPhm, ACPR, CGP, Education Coordinator, University Health Network, Toronto, ON

Pamela Ng, BScPhm, Drug Information Pharmacist-Princess Margaret Cancer Centre, University Health Network, Toronto, ON

Marisa Battistella, BScPhm, PharmD, ACPR, Clinician Scientist, Assistant Professor, Leslie Dan Faculty of Pharmacy, University of Toronto, Clinical Pharmacist— Nephrology, University Health Network

Address correspondence to: Marisa Battistella, BScPhm, PharmD, ACPR, Clinical Pharmacist- Nephrology, University Health Network, 200 Elizabeth Street, EB 214, Toronto, ON M5G 2C4 Email: marisa.battistella@uhn.ca study demonstrated that the risk of cancer was increased in younger dialysis patients although this risk progressively declined with age (Maisonneuve et al., 1999). Cancer is the third highest cause of mortality (12%) amongst dialysis patients behind CV disease (52%) and infectious causes (25%) (Janus et al., 2013; Uchida et al., 2007). Possible reasons include the presence of chronic infections, use of immunosuppressive and cytotoxic drugs, nutritional deficiencies, altered DNA repair, chronic oxidative stress, and compromised immune systems. (Janus et al., 2010; Janus et al., 2013; Maisonneuve et al., 1999).

#### MULTIPLE MYELOMA AND KIDNEY DISEASE

Multiple myeloma (MM) is a hematological malignancy of the plasma cell (Mcguire & Williams, 2011; Smith & Yong, 2013). The disease results in the accumulation of plasma cells in the bone marrow leading to the over-production of monoclonal immunoglobulins, referred to as paraproteins and monoclonal free light chains, both of which can be detected in blood or urine and can cause organ and tissue damage (Mcguire & Williams, 2011; Smith & Yong, 2013). The malignancy arises due to genetic mutations that affect the differentiation of B lymphocytes into plasma cells, either a chromosomal translocation of an oncogene or multiple copies of various odd numbered chromosomes, leading to unregulated over expression and proliferation of the bone marrow (Smith & Yong, 2013). MM causes an abnormal increase in various cytokines, which have the capability to cause skeletal abnormalities including bone disease and hypercalcemia (Mcguire & Williams, 2011).

Kidney disease is a complication of MM, as these light chains may accumulate and cause obstruction and inflammation in the kidney leading to acute kidney injury (AKI) (Mcguire & Williams, 2011; Smith & Yong, 2013). Several other factors may precipitate the damage to the kidney tubule including hypercalcemia, dehydration and various nephrotoxic drugs. The treatment for MM with certain chemotherapy agents may also worsen kidney function (Ashley & Currie, 2009). Special considerations are needed for treating MM in patients with ESRD due to the complexity of the comorbidities and dosing regimens.

#### **EPIDEMIOLOGY**

MM is the second most common hematological cancer comprising 10%-15% of all hematological cancers (Sanai & Mahindra, 2013; Smith & Yong, 2013). It is more common in Afro-Caribbeans and African Americans and occurs 50% more often in men (Mcguire & Williams, 2011; Smith & Yong, 2013). It is more common in the elderly with the median age of diagnosis being 70 years. Patients typically survive a mean of five years after diagnosis. However, since younger patients may tolerate higher doses of chemotherapy they may have a longer median survival (seven years) (Sanai & Mahindra, 2013; Smith & Yong, 2013). A retrospective data collection study on CANcer and DialYsis (CANDY), which included 178 dialysis patients with chronic cancer demonstrated that MM accounted for 6% of cancers (Janus et al., 2013). Patients who present with both AKI and MM have lower survival. Additionally, patients with pre-existing chronic kidney disease (CKD) who develop MM have a median survival of less than two years (Katagiri, Noiri, & Hinoshita, 2013).

#### **CLINICAL PRESENTATION**

MM often presents with hypercalcemia, renal impairment, anemia, lytic bone disease, bone pain, and spinal cord compression (Katagiri, Noiri, & Hinoshita, 2013; Mcguire & Williams, 2011; Smith & Yong, 2013). Some patients present with non-specific symptoms including lethargy and back pain, which can cause a delay in the diagnosis (Smith & Yong, 2013). Other patients may be asymptomatic upon diagnosis, and this is referred to as smouldering MM (Mcguire & Williams, 2011).

#### TREATMENT OF MM IN HD PATIENTS

Dosing chemotherapy agents is challenging, as dialysis complicates the dosage and timing of drug administration and there are few studies in this patient population to help guide clinicians. Concerns about treating MM in HD patients include risk of toxicity due to accumulation of drug or active metabolites that are normally renally cleared and lack of efficacy due to drug removal by dialysis (Janus et al., 2010). Numerous factors need to be taken into consideration when modifying a medication regimen for dialysis patients including drug-specific factors, patient factors, and dialysis modality factors (Bailie & Mason, 2011; Janus et al., 2010).

#### **Drug factors**

The size of the medication relative to the pore sizes of the dialyzer membrane will determine if the drug will be removed by dialysis. If the molecule is smaller than the dialyzer pore the medication will likely be removed (Bailie & Mason, 2011). If the drug is highly bound to plasma proteins (such as albumin) there will be less free drug in plasma resulting in less removal by dialysis, as the large drug-protein complex does not pass through the HD membrane (Baillie & Mason, 2011, Fissell, 2013). The volume of distribution of a drug gives an indication as to where the drug is distributed in the body, such that with a large volume the drug is distributed more throughout tissues, whereas with a small volume, the drug likely remains in the plasma and, therefore, has a higher propensity to be removed. Additionally, drugs that are water soluble are removed more than lipid soluble drugs due to the aqueous nature of the dialysate. The plasma clearance refers to both non-renal and renal drug clearance. The more a drug is renally metabolized and cleared, the greater the propensity for the drug to be removed by dialysis (Baillie & Mason, 2011).

#### **Patient factors**

Patients with ESRD are typically uremic and some may also have low albumin levels due to their illness. This can lead to altered drug binding to albumin, leaving more available drug in the plasma for removal (Baillie & Mason, 2011; Fissell, 2013).

#### **Dialysis factors**

The dialyzer pore size, surface area and geometry of the dialyzer membrane will influence the dialysis of a drug. If the drug is smaller than the pores in the dialytic membrane, the drug will likely be removed. In addition, the faster the flow rate of the dialysate, the more likely the drug is to be removed (Baillie & Mason, 2011).

Most of the limited information guiding clinicians on dosing chemotherapeutic agents in dialysis is derived from case reports suggesting that standard chemotherapy doses are commonly used in oncology patients on HD (Holley, 2007; Janus et al., 2010). When limited information exists, most often it has been recommended that drugs be administered after dialysis or on non-dialysis days (Janus et al., 2010). In the CANDY study, 88% of dialysis patients receiving antineoplastic agents required a dose or time of administration adjustment, indicating that careful consideration should always be exercised (Janus et al, 2013). It is important to note that renal toxicity may not be an issue for dialysis patients who have no residual kidney function, but that these patients are still at risk of experiencing other cytotoxic adverse events (Janus et al., 2010). The major toxic effects observed in the CANDY trial included: hematological, hepatic, gastric, cutaneous, neurologic, medullar, and cardiac effects, temperature regulation dysfunction, infections, myelosuppression, mineral imbalance, bone pain, and thromboembolism (Janus et al., 2013).

Treatment for MM improves quality of life and prolongs life, but is not curative. (Mcguire & Williams, 2011). Standard therapy involves triple drug combinations, but there remains the unanswered question of whether four drugs are better (Smith & Yong, 2013). Treatment for the younger and fitter patients (generally under 65) involves high-dose chemotherapy and autologous hematopoietic stem cell transplantation, as this has been shown to extend survival (Katagiri, Noiri, & Hinoshita, 2013; Smith & Yong, 2013). In these patients, the evidence is stronger for triple therapy protocols involving the use of bortezomib. This is often used with dexamethasone and combined with thalidomide, doxorubicin, or cyclophosphamide. If the patients are older or unsuitable for transplantation due to comorbidities, standard treatment involves chemotherapy alone. Melphalan and prednisone have been traditionally used for transplant ineligible patients. However, the standard is now shifting to adding thalidomide or bortezomib to these patients, as well (Smith & Yong, 2013). The pharmacokinetic (PK) parameters of individual agents commonly used to treat MM are discussed in Table 1: Commonly used chemotherapy agents to treat MM and their associated pharmacokinetic (PK) parameters.

#### Melphalan

Melphalan is a DNA cross-linking drug that is used with prednisone and may be combined with a third agent, as a standard treatment regimen to improve survival in MM (Janus et al., 2013; Katagiri, Noiri, & Hinoshita, 2013). Based on its PK parameters, there is the potential for melphalan to be removed by hemodialysis. High doses of melphalan (i.e., 100-200mg/m<sup>2</sup> daily) have been reported to be poorly tolerated in renal impairment and, in particular, toxic hematological effects may occur. A dose reduction is, therefore, usually recommended (Katagiri, Noiri, & Hinoshita, 2013; Lichtman et al., 2007). In patients with normal kidney function, dosing is typically 9 mg/m<sup>2</sup> PO for four days (UHN, 2013). Previously published recommendations have been made to reduce the dose by 50% in hemodialysis patients (Ashley & Currie, 2009).

#### Bortezomib

Bortezomib is a proteasome inhibitor that acts to inhibit the transcriptional regulator nuclear factor kappa B (NF-kB). NF-kB is a factor that is involved in cancer development, so inhibition of this factor decreases cancer development (Mcguire & Williams, 2011; Janus et al., 2013; Goyama & Mulloy, 2013). Based on its PK parameters (Table 1) there is a low potential for bortezomib to be removed by hemodialysis. In normal kidney function dosing for bortezomib ranges from 0.7mg/m<sup>2</sup> IV or SC every three to four days to 1.5mg/m<sup>2</sup> IV or SC every seven days (UHN, 2013). According to a dose escalation study, standard dosing was well tolerated in nine hemodialysis patients, and the study concluded that no dose reductions were necessary and bortezomib should be dosed after dialysis (Leal et al., 2011). Common toxic effects reported in the CANDY study included thrombocytopenia, temperature control dysfunction, cardiac rhythm changes, and hypotension (Janus et al., 2013). In non-HD patients, central nervous system (CNS), gastrointestinal (GI) and hematologic effects are commonly reported (Lexicomp, 2013).

#### Pamidronate

Pamidronate is a bisphosphonate that is used to treat bone disease including hypercalcemia and osteolytic bone lesions in symptomatic patients with MM (Ashley & Currie, 2009; Janus et al., 2013; Lexicomp, 2013; Smith & Yong, 2013). Based on its PK parameters (Table 1), there is the potential for pamidronate to be removed by hemodialysis. In patients with normal renal function, pamidronate is dosed at 90mg IV every 28 days to three months (UHN, 2013). According to the *Renal Drug Handbook*, a dose of 30mg or 60mg is recommended for patients on HD (Ashley & Currie, 2009). Potential adverse effects in patients with renal dysfunction include bone pain, osteomalacia, hypocalcemia, osteonecrosis of

#### Table 1

(Ashley & Currie, 2009; Baxter Corporation, 2012; Janssen Inc., 2013; Janus et al., 2010; Lichtman et al., 2007; Novartis Pharmaceuticals Canada Inc., 2012; Triton Pharma Inc., 2010; Wishart, Knox, & Law, 2013)

| Medication       | Percent excreted<br>unchanged in urine (%) | Molecular<br>weight (Daltons) | Percent protein bound<br>(%)               | Volume of distribution       |
|------------------|--|-------------------------------|--|------------------------------|
| Melphalan        | 30   | 305                           | 60–90                                      | 0.5 L/Kg                     |
| Bortezomib       | small amount                               | 384                           | 83   | >500 L                       |
| Pamidronate      | 20–55                                      | 235                           | 54   | 0.5 to 0.6 L/Kg              |
| Cyclophosphamide | Primary pathway<br>excretion renal         | 261                           | 10–20 (parent)<br>>60 (active metabolites) | 0.56 L/Kg                    |
| Dexamethasone    | 65   | 392                           | 77   | 0.8–1 L/Kg                   |
| Thalidomide      | <0.7                                       | 258                           | 55–66                                      | 166 L                        |
| Doxorubicin      | 10   | 580                           | 50–85                                      | >20-30 L                     |
| Etoposide        | 29–60                                      | 589                           | 74–94                                      | 0.17–0.5 L/Kg                |
| Lenalidomide     | 82   | 259                           | 19–29                                      | 84.6-230 L (varies depending |
|                  |  |                               |  | on dose.)                    |

The CANNT Journal - January–March 2014, Volume 24, Issue 1

the jaw, renal failure and kidney stones (Ashley & Currie, 2009; Janus et al., 2013; Smith & Yong, 2013).

#### Cyclophosphamide

Cyclophosphamide is a DNA cross-linking drug commonly used in MM (Janus et al., 2013). Based on its PK parameters (Table 1), there is potential for drug removal by hemodialysis. Previously, there have been recommendations to reduce the dose in dialysis patients by 25% and to administer the dose after HD (Janus et al., 2010). The Renal Drug Handbook recommends using 50%-100% of the dose depending on the indication or protocol used (Ashley & Currie, 2009). The dosing regimens for cyclophosphamide are variable, and some include large amounts of IV saline administered before, during or after the drug (UHN, 2013). Since patients on HD adhere to a strict fluid intake, a modification to the fluid administration regimen could be considered for each patient (Szamosfalvi & Yee, 2013; Welch et al., 2013). Examples of such a consideration could be to provide an additional HD session 7–12 hours post drug administration, to perform ultrafiltration, or to modify the amount of fluid given, as per the protocol (Janus et al., 2010). Overall, in HD patients, reported adverse effects include hematologic and GI effects, similar to non-HD patients (Janus et al., 2013).

#### Dexamethasone

Dexamethasone is an anti-inflammatory corticosteroid that is included in various regimens in the treatment of MM (Lexicomp, 2013). The recommendations for dosing dexamethasone for patients on dialysis are to dose as in normal renal function because it is not dialyzed (Ashley & Currie, 2009). In general, some adverse events include cardiovascular events, dermatological events, central nervous system effects, endocrine and metabolic effects (Lexicomp, 2013).

#### Thalidomide and Lenalidomide

Thalidomide is an immunomodulator that acts as an angiogenesis inhibitor (Katagiri, Noiri, & Hinoshita, 2013; Lexicomp, 2013). Based on its PK parameters (Table 1) there is a low potential for drug removal by hemodialysis. The recommendations for thalidomide are to dose as in normal renal function for patients on dialysis (Ashley & Currie, 2009; Lichtman et al., 2007). With normal renal function, thalidomide is given at a fixed dose of 200 mg orally every night for 30 days (UHN, 2013). In general, some common adverse effects reported are hyperkalemia (especially in dialysis), hematological toxicities, edema and fatigue (Ashley & Currie, 2009; Katagiri, Noiri, & Hinoshita, 2013; Lexicomp, 2013; Lichtman et al., 2007). A similar medication to thalidomide, lenalidomide has been reported to possess more potency with greater tolerability for the treatment of MM (Mcguire & Williams, 2011). A small study of six patients on hemodialysis given a single, 25-mg dose of lenalidomide showed an approximate 4.5-fold increase in half-life and an 80% decrease in drug clearance compared to healthy subjects. Approximately 40% of the

administered dose was removed from the body during a single dialysis session (Celgene monograph). For patients with MM on dialysis, recommended lenalidomide dose is 5 mg once daily; on dialysis days the dose should be given following dialysis (dose in patients with normal renal function is 25 mg daily) (Canadian monograph celgene.com). General adverse events include hematological toxicities, gastrointestinal effects, dermatologic effects, and cardiovascular toxicities (Lexicomp, 2013).

#### Doxorubicin

Doxorubicin is an intercalating agent that acts to inhibit DNA and RNA synthesis (Janus et al., 2013; Lexicomp, 2013). Based on its PK parameters (Table 1) there is a low potential for drug removal by hemodialysis. No dosage reductions have been recommended although exposure to the medication in dialysis patients has been shown to be greater than in non-HD patients (Lichtman et al., 2007). Doxorubicin can be given at a dose of 36 mg/m<sup>2</sup> by central IV line and, in dialysis patients, it is recommended to dose after HD or on a non-HD day (Janus et al., 2010; UHN, 2013). In general, some common adverse effects include cardiotoxicity, congestive heart failure, and hematologic toxicities (Ashley & Currie, 2009; Lexicomp, 2013).

#### Etoposide

Etoposide is a topoisomerase inhibitor that has been studied several times with mixed findings (Janus et. al., 2010; Lexicomp, 2013). Based on its variable PK parameters (Table 1) it is tough to predict its potential for drug removal by hemodialysis. While some studies found standard dosing tolerable, other studies resulted in greater drug exposure in HD patients (Janus et al., 2010). A previous recommendation has been to administer 50% of the normal dose and adjust based on the clinical response for patients undergoing hemodialysis (Ashley & Currie, 2009; Janus et al., 2010). In patients with normal renal function, dosing is variable at 60-120 mg/m<sup>2</sup> IV depending on the protocol (Ashley & Currie, 2009). In general, some major adverse events include dermatologic, gastrointestinal, and hematologic effects (Lexicomp, 2013).

#### CONCLUSION

MM has been reported to occur in 6% of patients on HD, who have an increased mortality over the general population (Janus et al., 2013). In order to treat these patients effectively, various factors need to be taken into consideration including: drug factors, patient factors, and dialysis modality factors. Patients with impaired renal function are at risk of drug toxicity due to drug or metabolite accumulation, as well as a risk of diminished efficacy if the drug is removed by dialysis. Although some recommendations have been outlined in this review, additional larger studies are needed to help better guide clinicians in dosing chemotherapy agents for the treatment of MM in HD (Janus et al., 2010).

#### REFERENCES

- Ashley, C., & Currie A. (2009). *The renal drug handbook,* 3e. Renal Pharmacy Group: Oxon, U.K. Radcliffe Publishing Ltd.
- Baillie, G., & Mason, N. (2011). 2011 dialysis of drugs: What determines drug dialyzability? (p. 4)
- Baxter Corporation (2012). Product Monograph Procytox (Cyclophosphamide). Retrieved from http://www. baxter.ca/en/downloads/product\_information/ PROCYTOX\_PM\_SEP072012\_EN.pdf
- Celegene. (2013). Product Monograph Revlimid. Retrieved from http://www.celgene.com/Canada/pdfs/Revlimid%20 Product\_Monograph\_-\_English\_Version.pdf
- Fissell, W.H. (2013). Antimicrobial dosing in acute renal replacement. Advances in Chronic Kidney Disease, 20(1), 85–93. doi:10.1053/j.ackd.2012.10.004; 10.1053/j.ackd.2012.10.004
- Goyama, S., & Mulloy, J.C. (2013). NF-κB: A coordinator for epigenetic regulation by MLL. *Cancer Cell*, 24(4), 401–2. doi:10.1016/j.ccr.2013.09.016
- Holley, J.L. (2007). Screening, diagnosis, and treatment of cancer in long-term dialysis patients. *Clinical Journal of the American Society of Nephrology: CJASN*, 2(3), 604–610. doi:10.2215/ CJN.03931106
- Janssen Inc. (2013). Product Monograph Velcade (Bortezomib). Retrieved from www.janssen.ca/ subcategory\_docdownload?id=1631
- Janus, N., Launay-Vacher, V., Thyss, A., Boulanger, H., Moranne, O., Islam, M.S., ... Thariat, J. (2013). Management of anticancer treatment in patients under chronic dialysis: Results of the multicentric CANDY (CANcer and DialYsis) study. Annals of Oncology: Official Journal of the European Society for Medical Oncology/ESMO, 24(2), 501–507. doi:10.1093/annonc/ mds344; 10.1093/annonc/mds344
- Janus, N., Thariat, J., Boulanger, H., Deray, G., & Launay-Vacher, V. (2010). Proposal for dosage adjustment and timing of chemotherapy in hemodialyzed patients. *Annals of Oncology: Official Journal of the European Society for Medical Oncology/ ESMO*, 21(7), 1395–1403. doi:10.1093/annonc/mdp598; 10.1093/annonc/mdp598
- Katagiri, D., Noiri, E., & Hinoshita, F. (2013). Multiple myeloma and kidney disease. *The Scientific World Journal*, 2013, 487285. doi:10.1155/2013/487285; 10.1155/2013/487285
- Leal, T.B., Remick, S.C., Takimoto, C.H., Ramanathan, R.K., Davies, A., Egorin, M.J., ... Mulkerin, D. (2011). Dose-escalating and pharmacological study of bortezomib in adult cancer patients with impaired renal function: A national cancer institute organ dysfunction working group study. *Cancer Chemotherapy and Pharmacology*, 68(6), 1439–1447. doi:10.1007/s00280-011-1637-5; 10.1007/s00280-011-1637-5
- Lee, J.E., Han, S.H., Cho, B.C., Park, J.T., Yoo, T.H., Kim, B.S., ... Choi, K.H. (2009). Cancer in patients on chronic dialysis in Korea. *Journal of Korean Medical Science*, 24(Suppl.), S95–S101. doi:10.3346/jkms.2009.24.S1.S95;10.3346/ jkms.2009.24.S1.S95
- Lexicomp online. (2013). Retrieved from http://online.lexi.com/ lco/action/home/switch
- Lichtman, S.M., Wildiers, H., Launay-Vacher, V., Steer, C., Chatelut, E., & Aapro, M. (2007). International society of geriatric oncology (SIOG) recommendations for the adjustment of dosing in elderly cancer patients with renal insufficiency. *European Journal of Cancer (Oxford, England: 1990)*,

43(1), 14-34. doi:10.1016/j.ejca.2006.11.004

- Maisonneuve, P., Agodoa, L., Gellert, R., Stewart, J.H., Buccianti, G., Lowenfels, A.B., ... Boyle, P. (1999). Cancer in patients on dialysis for end-stage renal disease: An international collaborative study. *Lancet*, 354(9173), 93–99.
- Mcguire, T.R., & Williams, C. (2011). Chapter 144. Multiple Myeloma. In B.G. Wells (Ed), *Pharmacotherapy: A Pathophysiologic Approach*, 8e. Retrieved from http://www. accesspharmacy.com.proxy.lib.uwaterloo.ca/content. aspx?aID=8010679
- Novartis Pharmaceuticals Canada Inc. (2012). Product Monograph Aredia (Pamidronate Disodium). Retrieved from http://www. novartis.ca/asknovartispharma/download.htm?res=aredia\_ scrip\_e.pdf&resTitleId=733
- Sanai N., & Mahindra A. (2013). Therapeutic strategies for the treatment of multiple myeloma. *Discovery Medicine*. Retrieved from http://www.discoverymedicine.com/Neeraj-Saini/2013/04/26/therapeutic-strategies-for-the-treatment-of-multiple-myeloma/
- Smith, D., & Yong, K. (2013). Multiple myeloma. *BMJ (Clinical Research Ed.)*, 346, f3863. doi:10.1136/bmj.f3863
- Sowinski, K.M., Churchwell, M.D., & Decker, B.S. (2014). Chapter 30. Hemodialysis and peritoneal dialysis. In B.G. Wells (Ed.), *Pharmacotherapy: A Pathophysiologic Approach*, 9e. Retrieved from http://www.accesspharmacy.com.proxy.lib.uwaterloo. ca/content.aspx?aID=57484208
- Szamosfalvi, B., & Yee, J. (2013). Considerations in the critically ill ESRD patient. Advances in Chronic Kidney Disease, 20(1), 102–109. doi:10.1053/j.ackd.2012.10.012; 10.1053/j. ackd.2012.10.012
- Triton Pharma Inc. (2010). *Product Monograph Alkeran* (*Melphalan*). Retrieved from http://www.tritonpharma.ca/ uploads/files/pdf/alkeran-en.pdf
- Uchida, K., Shoda, J., Sugahara, S., Ikeda, N., Kobayashi, K., Kanno, Y., ... Suzuki, H. (2007). Comparison and survival of patients receiving hemodialysis and peritoneal dialysis in a single center. Advances in Peritoneal Dialysis. Conference on Peritoneal Dialysis, 23, 144–149.
- University Health Network (UHN) Princess Margaret Hospital. (2013). Corporate Intranet: Oncology > OPIS > Regimen Build> MY. Retrieved from http://documents.uhn.ca/ sites/UHN/Oncology/Forms/ReaderView.aspx?Root-Folder=%2fsites%2fuhn%2fOncology%2fOPIS%2fRegimen%5fBuild%2fMY&FolderCTID=0x0120003632B-DA718CC19488D8CF711E7C7B0B4&View=%7b1DDD8430 %2dB84D%2d499C%2d82E8%2d2B97079C945C%7d
- Vajdic, C.M., McDonald, S.P., McCredie, M.R., van Leeuwen, M.T., Stewart, J.H., Law, M., ... Grulich, A.E. (2006). Cancer incidence before and after kidney transplantation. JAMA: The Journal of the American Medical Association, 296(23), 2823– 2831. doi:10.1001/jama.296.23.2823
- Welch, J.L., Astroth, K.S., Perkins, S.M., Johnson, C.S., Connelly, K., Siek, K.A., ... Scott, L.L. (2013). Using a mobile application to self-monitor diet and fluid intake among adults receiving hemodialysis. *Research in Nursing & Health*, 36(3), 284–298. doi:10.1002/nur.21539; 10.1002/nur.21539
- Wishart, D., Knox, C., & Law, V. (2013). *Drugbank Open Data Drug* & *Drug Target Database Web. February* 17, 2013. Retrieved from http://www.drugbank.ca/

#### CONTINUING EDUCATION STUDY QUESTIONS

**CONTACT HOUR: 2.0 HRS** 

### Dosing chemotherapy agents in hemodialysis— A focus on multiple myeloma

By Rachel Runnels, BScPhm student, Karen Cameron, BScPhm, ACPR, CGP, Pamela Ng, BScPhm, and Marisa Battistella, BScPhm, PharmD

Copyright © 2014 Canadian Association of Nephrology Nurses and Technologists

- Cancer has been shown to be the third highest cause of mortality in ESRD patients at what percentage?
  - a) 52%
  - b) 25%
  - c) 12%
  - d) 6%
- 2. Which statement is TRUE regarding the epidemiology of multiple myeloma?
  - a) it occurs more often in females than males
  - b) it occurs more commonly in Caucasians
  - c) the malignancy is due to genetic mutations
  - d) younger patients have a decreased survival rate compared to elderly patients
- 3. Which of the following is a common symptom in multiple myeloma?
  - a) liver failure
  - b) bone pain
  - c) hypocalcemia
  - d) neuropathic pain
- 4. Which of the following is TRUE regarding drug removal by hemodialysis?
  - a) the larger the drug relative to the dialyzer pore size, the more likely it will be removed
  - b) the slower the blood and dialysate flow rates, the more the drug is removed
  - c) the less a drug distributes in peripheral body tissues and remains in the blood, the more the drug is removed
  - d) the higher the degree of uremia causing an increased concentration of drug in the blood, the less the drug is removed

- Which of the following is TRUE regarding drug removal via hemodialysis?
  - a) the more a drug is renally cleared compared to hepatically cleared, the more the drug is removed
  - b) the greater the water solubility of a drug and the tendency for the drug to stay in the blood, the less the drug is removed
  - c) the higher the concentration of albumin, the more a proteinbound drug is removed
  - d) the greater the surface area of the dialyzer, the less the drug is removed
- 6. Why should medications that are renally cleared be dose adjusted in a patient with no remaining kidney function on HD?
  - a) the medication is not compatible with transplanted kidneys
  - b) the medication may accumulate and lead to systemic toxicity otherwise
  - c) the medication may accumulate and lead to renal toxicity otherwise
  - d) the high dose of medication may clog the HD machine
- A patient on hemodialysis with multiple myeloma is receiving a chemotherapy agent. You need to determine whether or not a drug dosage reduction is required. The drug is 75% eliminated by the kidney, the size of the molecule is 200 Daltons (small), the volume of distribution is 1 L/Kg (small), and the protein binding is 50% (low). You decide:
  - a) a dosage reduction is not required. The patient receives dialysis three times a week, which is sufficient to remove the medication from the patient's circulation.

- b) a dosage reduction is required. This medication looks like it is not removed by dialysis and it will accumulate and lead to serious side effects.
- c) a dosage reduction is not required. The medication looks like it will be removed by the kidney.
- d) a dosage reduction is required. The medication looks like it will be removed by dialysis, but may accumulate in between dialysis sessions.
- 8. In question 7 above, you decide to give the medication to the patient:a) after dialysis
  - b) before dialysis
  - c) during dialysis
  - d) it does not matter when you give it
- 9. A hemodialysis patient who is 174 cm and weighs 154 pounds is to receive Melphalan. The daily dose for this patient, if he had normal kidney function would be 9mg/m<sup>2</sup> PO for four days. What daily dose do you recommend for this patient with ESRD? (Please note: his body surface area is 1.73 m<sup>2</sup>)
  a) 16.5 mg PO daily
  - b) 8.3 mg PO daily
  - c) 23 mg PO daily
  - d) 11.5 mg PO daily
- The same patient above is to receive Bortezomib. The daily dose for patients with normal kidney function is 0.7mg/m<sup>2</sup> IV every three days. What dose do you recommend for this patient with ESRD?
   a) 1.2 mg
  - b) 1.8 mg

c) 0.7 mg

d) 0.9 mg

#### CONTINUING EDUCATION STUDY **ANSWER FORM**

#### **CE: 2.0 HRS CONTINUING** EDUCATION

### Dosing chemotherapy agents in hemodialysis— A focus on multiple myeloma

Volume 24, Number 1

By Rachel Runnels, BScPhm student, Karen Cameron, BScPhm, ACPR, CGP, Pamela Ng, BScPhm, and Marisa Battistella, BScPhm, PharmD

#### **Post-test instructions**:

- Select the best answer and circle the appropriate letter on the answer grid below.
- Complete the evaluation.
- Send only this answer form (or a photocopy) to: CANNT National Office, P.O. Box 10, 59 Millmanor Place, Delaware, ON NOL 1E0 or submit online to www.cannt.ca
- Enclose a cheque or money order payable to CANNT.
- Post-tests must be postmarked by March 30, 2015.
- If you receive a passing score of 80% or better, a certificate for 2.0 contact hours will be awarded by CANNT.
- Please allow six to eight weeks for processing. You may submit multiple answer forms in one mailing, however, you may not receive all certificates at one time.

CANNT member - \$12 + HST (\$13.56); Non-member - \$15 + HST (\$16.95)

#### POST-TEST ANSWER GRID

*Please circle your answer choice:* 

| 1.  | а | b | с | d |
|-----|---|---|---|---|
| 2.  | а | b | с | d |
| 3.  | а | b | с | d |
| 4.  | а | b | с | d |
| 5.  | а | b | с | d |
| 6.  | а | b | с | d |
| 7.  | а | b | с | d |
| 8.  | а | b | с | d |
| 9.  | а | b | с | d |
| 10. | а | b | с | d |

| EVALUATION   |          |         |     |          |       |
|--|----------|---------|-----|----------|-------|
|  | Strongly | disagre | e S | Strongly | agree |
| 1. The offering met the stated objectives.         | 1        | 2       | 3   | 4        | 5     |
| 2. The content was related to the objectives.      | 1        | 2       | 3   | 4        | 5     |
| 3. This study format was effective for the content | . 1      | 2       | 3   | 4        | 5     |
| 4. Minutes required to read and complete:          | 50       | 75      | 100 | 125      | 150   |
| Comments:  |          |         |     |          |       |
| COMPLETE THE FOLLOWING:<br>Name:                   |          |         |     |          |       |

CANNT member? 🖵 Yes 🖵 No Expiration date of card \_\_\_\_\_

# Satellite hemodialysis services for patients with end stage renal disease

By Kathy Organ, RN, BN, MN, and Sandra MacDonald, RN, BN, MN, PhD

Copyright © 2014 Canadian Association of Nephrology Nurses and Technologists

#### ABSTRACT

More than 40,000 Canadians are living with end stage renal disease and approximately 22,400 of those are currently being treated with hemodialysis (The Kidney Foundation of Canada, 2013). Long distance travel to access hemodialysis services can be a serious burden for patients, and travelling more than 60 minutes can mean a 20% greater risk for death, as compared with those who travel 15 minutes or less (Moist et al., 2008). Satellite hemodialysis units are seen as one solution to this problem. This study assessed the impact of services provided by one satellite hemodialysis unit on patients' satisfaction, access to care and quality of life using a qualitative interview research design. Seven patients were interviewed and three themes emerged including the burden of long distance travel before satellite services (safety, time and cost), satisfaction with satellite services (pleasant environment and continuity of care), and improved quality of life. This study showed that a satellite hemodialysis unit improved access to services and enhanced the quality of life of those patients who participated in the study.

**Key words:** renal replacement therapy, satellite hemodialysis units, quality of life

#### INTRODUCTION

End stage renal disease (ESRD) is a significant health problem for Canadians. There are currently 40,385 people in Canada living with ESRD, more than triple the number since 1990, and 22,420 of those are currently receiving hemodialysis (The Kidney Foundation of Canada, 2013). Newfoundland and Labrador (NL) has the second highest prevalence of ESRD in Canada, with a rate per million of the population (RPMP) of 1,389.2, as compared to the national rate of 1,118.7 (CIHI, 2011). In Canada, the prevalence rate for ESRD patients being treated by hemodialysis (HD) has also increased by 212% since 1990 with the highest

Kathy Organ, RN, BN, MN, Director of Health Services, Dr Charles L. LeGrow Health Centre, Port aux Basques, NL AOM 1C0

Sandra MacDonald, RN, BN, MN, PhD, Professor, School of Nursing, Memorial University of Newfoundland, St. John's, NL

Submitted for publication: June 20, 2013.

Accepted for publication in revised form: October 15, 2013.

numbers of new patients seeking HD treatment residing in NL. Moreover, when renal replacement therapy was the treatment of choice, all provinces used HD the majority of the time (77.8%), but NL had the highest proportion of HD use at 94.4% (CIHI, 2011). In 2011, 59% of the population of NL lived in urban centres while the remaining 41% lived in rural settings (Statistics Canada, 2011). Access to HD services can be improved with the use of satellite HD units that are closer to patients' homes. This study assessed the impact of the transfer of HD services from a tertiary care main dialysis unit to a satellite unit on patients' satisfaction with the services, access to the services, and quality of life.

#### BACKGROUND/LITERATURE REVIEW Benefits of satellite hemodialysis units

Patients who travel more than 60 minutes to a hospital hemodialysis unit have a 20% greater risk for death, as compared to those who travel 15 minutes or less (Moist et al., 2008). The time commitment associated with travel significantly impacts the quality of life of these individuals because HD usually involves spending three to four hours per day three times a week attached to an HD machine, plus the time required to travel to the dialysis unit (Algoma, Cochrane, Manitoulin and Sudbury District Health Council and Northern Shores District Health Council, 2002). Satellite units closer to patients' homes can reduce travel time and, therefore, could reduce the risk of developing health complications from ESRD and improve patients' quality of life (Diamant et al., 2010). Quality of life for patients with ESRD is largely determined by their level of physical, emotional, and social functioning in the presence of kidney disease (Testa & Simonson, 1996). Moist et al. (2008) demonstrated that ESRD patients with shorter travel times to HD have a significantly better quality of life. The benefits of satellite services include reduced stress from long distance travel, improved geographic access for those living in remote locations, reduced patient travel time, and the provision of care that is generally more acceptable to patients (Barrett, Butler, Bornstein, Doyle, & Gillam, 2008; Diamant et al., 2011; Lindsay et al., 2009; Moist et al., 2008).

Other documented benefits include better management of urea reduction, improved survival outcomes, and increased satisfaction with services (Bernstein, Zacharias, Blanchard, Yu, & Shaw, 2010). Roderick et al. (2005) reported that the proportion of satellite patients achieving the Renal Association Standards for adequacy of dialysis, as measured by the urea reduction ratio, was higher or comparable to those who received hospital services. They also found there were fewer hospitalizations of satellite patients, although the number of hospitalizations per patient, total length of stay and mean length of stay was comparable between groups. Individuals with ESRD have expressed high levels of satisfaction with satellite services; especially team communication, continuity of staff, and the environment and the atmosphere of the unit (Diamant et al., 2010; Diamant et al., 2011; Mendelssohn, 2009; Roderick et al., 2005).

Despite these benefits, there are a number of drawbacks to satellite HD including difficulty managing patients with increasingly complex needs. Expanding HD satellite services away from a hospital setting may make managing the ongoing medical needs of patients more difficult (Bernstein et al., 2010; Diamant et al., 2011; Lindsay et al., 2009; Roderick et al., 2005). A "comorbidity creep" or shift occurs over time, as increasingly complex patients continue to be dialyzed at the satellite unit, as opposed to travelling longer distances to a regional centre (Lindsay et al., 2009).

#### Barriers to accessing hemodialysis services in NL

The vast geography and unpredictable weather conditions in NL create challenges and barriers for access and delivery of hemodialysis services, especially in rural and remote areas of NL. The distance to services in the western region of NL can vary greatly by community, and some patients have to travel long distances by car, boat or helicopter. Travel by car is a problem for these patients, especially during the harsh winter months when there is an increased risk for road accidents. Travelling long distance by car to hospital HD services can also be a substantial financial burden for patients (Manns, Mendelssohn, & Taub, 2007).

Anecdotal information from patients receiving hemodialysis in the western region of NL have reported that the cost of transportation via a private vehicle can range from \$7,500 to \$18,000 per year. Many patients also experience a financial burden associated with the start of dialysis, and may have to sell their homes to establish a permanent residence closer to the main dialysis unit. The demands of receiving dialysis may also have an impact on their ability to work and, thus, further affect their income (Algoma, Cochrane, Manitoulin and Sudbury District Health Council and Northern Shores District Health Council, 2002; Diamant et al., 2010).

In addition to the financial burden, the time commitment for travel in NL can have a significant impact on the patient's quality of life (Algoma et al., 2002). Anecdotal information from patients receiving satellite services on the west coast of NL indicate they can spend up to 780 hours a year travelling to hospital services. Patients who require hemodialysis often experience changes in family dynamics and social roles, and reduced opportunities for social and recreational activities (Diamant et al., 2010). Time for social and recreational activities is further reduced when travelling long distances for care. In an effort to reduce the barriers to accessing hemodialysis services, satellite units have been shown to be effective in reducing travel time, reducing driving stress, reducing fatigue and making more time available for patients to spend with their family and friends (Diamant et al., 2010).

#### PURPOSE

The purpose of this study was to assess the impact of the transfer of HD services from a tertiary care main dialysis unit to a satellite unit on patients' satisfaction with the services, access to the services, and quality of life.

#### METHODOLOGY

#### Setting

The HD satellite unit is located in a 44-bed health care centre in a rural community, on the west coast of NL, with a population of approximately 4,900 people. The unit serves an area with a total population of about 10,000. The nearest secondary facility for HD is 220 kilometres away, while the nearest tertiary health care centre is 900 kilometres away. The HD satellite unit has four beds and is open three days a week, capable of dialyzing eight patients per week.

#### Design

This study used a qualitative research interview design with face-to-face, one-on-one interviews with patients dialyzing in one HD satellite unit on the west coast of NL during 2011. The sample was a convenient sample of patients receiving services in the HD satellite unit. The technique for sampling involved the researcher approaching all of the patients who were transferred from the main HD unit during the period of June 15 to 28, 2011, and who were receiving treatment at the satellite unit. This research study was intended to include all of the patients who had transferred during that period, but one patient died before the study could be completed. The sample consisted of three females and four males. All patients were contacted in person by the researcher to determine whether they were interested in participating in the study. All seven patients agreed to participate.

If patients agreed to participate, they received a written invitation and a copy of the consent form. The consent form provided a written summary of the study, contact information and a statement reminding patients that they could withdraw from the study at any time. That information was sent to patients one week before the scheduled interview. Prior to the interview written consent was obtained. The interviews were conducted at the HD satellite unit by the researcher in a small, private room that was separate from the unit to maintain anonymity and confidentiality.

Interested individuals were asked to participate in an interview that lasted approximately 60 minutes. Openended questions were designed by the research team to elicit information on patient satisfaction, access to services and quality of life. The interviews were guided by the following open ended questions: (1) Has coming to the HD satellite unit affected your life in any way? (2) Overall, how do you feel about the care you received through the unit? (3) Do you have any suggestions for change to the unit? (4) Is there anything else about the unit or your involvement with the unit that you would like to tell me about?

#### **Ethical considerations**

This study received full approval from the Human Research Ethics Authority (HREA) of Newfoundland and Labrador prior to the start of data collection. All information collected was held in the strictest confidence. Interviews were completed in a small, private room at the satellite unit, or at a place that was convenient for the patients. Confidentiality was maintained by using an ID number for each participant, conducting the interviews in a private area, storing the tape recordings in a locked file cabinet in the researcher's office and only the researchers had access to the original interviews. Using the Tri-council policy statement on Ethical Conduct for Research involving Humans (CIHI, 2011), the researchers anticipated and addressed any ethical issues involved, and minimized any anticipated risks.

#### Data analysis

All interviews were recorded and transcribed verbatim. Digital audio recordings and notes were reviewed by the researchers and analyzed using Colaizzi's (1978) methodological interpretation. The steps of Colaizzi's method include: acquiring an understanding through listening and reading, extracting noteworthy statements, formulating meanings from these significant statements, organizing the meanings into themes, referring themes back to the original data for validation, noting discrepancies, integrating results, and formulating a description of the phenomenon under study (Colaizzi, 1978). Data saturation was not a consideration in this study as the sample size was small and saturation could not be ensured.

#### LIMITATIONS OF THE PROJECT

This study involved patients who had experienced relatively extreme travel circumstances (400–500 kilometre round trip known for rough weather situations). All patients who travelled for dialysis to the main dialysis unit prior to receiving HD services were included in this study. Individuals from other dialysis units may have different experiences and, therefore, offer different suggestions. Therefore, these findings cannot be generalized to other populations.

#### **FINDINGS**

All seven patients who were invited to participate agreed to be interviewed. The face-to-face interviews were conducted over a period of two weeks. Two patients wanted to be interviewed at a time other than during HD, while the remaining five asked to be interviewed during HD to avoid another trip. Times were arranged as convenient for the participant. Interviews were completed in a small room at the HD satellite unit, or at a private place that was convenient for the patients. Patients were informed before the interviews that there were no right or wrong answers; rather, their experiences, perceptions, thoughts, and feelings were the important information that the researcher was reviewing. Three major themes emerged from the data including the following: (1) the burden of travel before and after the satellite unit (distance travelled, safety, time and cost); (2) satisfaction with the satellite HD unit services (pleasant environment and continuity of care), and (3) improved quality of life.

#### **Burden of travel**

All patients reported experiencing the burden of travelling long distances to the hospital prior to the opening of the satellite unit (Appendix A). Safety, time and cost all contributed to this burden. All seven patients reported travelling in adverse weather conditions with one patient reporting a 7.5-hour drive in what would normally be a 2.5-hour drive, because of a winter storm. Most patients reported having to stay overnight in a hostel or with relatives because they were unable to drive back home on the highway due to snow-covered roads in the winter. One patient initially chose not to receive the recommended number of HD treatments per week due to the burden associated with travel from a remote community to the hospital. That patient expressed that he felt he was a burden to his family because he had to be accompanied to and from his treatment. This burden was, however, relieved when the patient received services at the satellite unit closer to this home.

**Safety:** One of the unique concerns for patients travelling long distances in NL is the abundance of moose on the highway. There are about 125,000 moose on the island, and the highways often intersect areas of prime moose habitat (Department of Transportation and Works, 2011). While no patients were involved in a moose-vehicle accident while travelling for HD at the hospital, all patients reported having close calls or "narrow escapes" with moose. As well, all patients reported an increased level of stress related to their safety on the highway, especially after dark. Patients reported long and hazardous trips to reach HD services prior to the satellite services. With the transfer of services to the satellite unit, the stress of a hazardous journey was eliminated.

**Time travelling:** Patients voiced concerns related to the length of time they spent travelling to receive HD services prior to the opening of the satellite unit. On average, most patients spent five to six hours per day driving in addition to the time spent receiving dialysis. The average time per trip was around five hours per day. With dialysis sessions three times per week this amounted to 780 hours per person per year spent in travel alone. This equates to more than a month (32.5 days) per year of each person's life spent travelling to HD services.

Patients talked about being away from home for 12 hours or more on the day that they were travelling to the hospital HD unit, and that often impacted negatively on the length of their recovery time from dialysis sessions. Most reported that it took the next day to recuperate from the previous dialysis session and just as they were starting to feel better, they started the travel cycle all over again.

**Cost of travel:** Three of the patients interviewed drove themselves to receive their HD at the hospital and a fourth

required someone to drive them. The three patients who drove themselves reported daily costs ranging from \$100 to \$120 per day. With 156 trips on average per year, this would amount to a cost of approximately \$15,600 to \$18,720 per year. This is a significant cost for travel, especially considering that all of the patients were currently retired from the workforce and on a fixed income. One of the patients travelled by taxi, but was only partially subsidized and had to pay \$335 per month out of pocket for transportation.

#### Satisfaction with satellite services

All patients expressed satisfaction with the physical environment of the unit and thought it was beautiful, clean and comfortable (Appendix B). They reported that the staff was pleasant and cooperative, and that the unit was a nice place. All patients were pleased with the physical layout of the unit. Most patients expressed that there was no difference in their care at the satellite HD unit, as compared to the hospital HD unit. One patient reported they felt better and had fewer hypotensive episodes since starting dialysis at the satellite HD unit. Overall, patients reported they were satisfied with the level and quality of care provided. All patients commented on the friendly atmosphere of the unit and the good relationship with the staff. They liked the smaller unit size and they were better able to get to know other patients and the staff.

#### Quality of life with satellite services

Two of the seven patients had previously relocated to receive HD services, but returned to their homes when the satellite HD unit was opened. Moving back to their home community helped them to spend more time with their family and friends. All patients voiced an improved quality of life since starting dialysis at the satellite unit (Appendix B). The greatest impact noted by all patients was the decrease in the amount of time they spent travelling to and from the hospital HD unit. Patients noted that the value of the time saved in travel was immeasurable. Any time that could be spent with family and participating in daily activities, as opposed to activities associated with dialysis was valued. Some patients were able to attend dialysis sessions at the satellite unit on their own without having to be accompanied by a family member, thus decreasing the "feeling like a burden". All patients reported feeling less tired after arriving home from dialysis because of the decrease in travel time.

Dialysis treatments are physically draining, and extra time travelling can compound patients' tiredness. Patients attending the satellite unit reported being able to get home in time to get the rest they needed. They reported being able to carry on with the rest of their day, and participate in more activities with family and friends. Some patients reported a decrease in the amount of stress related to travelling during the winter months, and an overall improvement in their mental health and well-being. As well, since they had all experienced a decrease in the total time required to travel to and from and receive dialysis, all reported having more time to take part in social activities. Overall, patients reported feeling less stressed from having to travel long distances to receive HD treatment.

#### DISCUSSION

Over the past 10 years, there has been a 70% increase in the number of hemodialysis visits to the main HD unit in western NL, and travelling long distances for HD services is a problem for many people, especially if they are elderly or have mobility issues. In an effort to help address this problem, a new satellite HD unit was opened, under the direction of the main HD unit. The purpose of this study was to assess the impact of the transfer of those services on patients who had received HD services at the main dialysis unit and then moved to the satellite HD unit. According to the patients interviewed for this study, the transfer of services did have an impact on patients' satisfaction with the HD services, improved the patients' geographic access to those services, and improved the quality of their lives. This study has shown that a smaller satellite unit closer to the patients' homes can have a positive impact on patient satisfaction, improve access to services, and improve the quality of life of those who avail of these services.

The findings of this study correspond with previous research related to dialysis care provided at HD satellite units and travel-related issues in the perception of dialysis patients' quality of life. Similar findings, presented in a study conducted by Diamant et al. (2010) reported that the benefits of being transferred to a satellite unit closer to home included less travel time, reduced driving stress, less fatigue, increased continuity of care with staff at the satellite unit, the pleasant environment of the unit, as well as having more time available for family and friends and increased energy. Roderick et al. (2005) also found that patients reported a significantly higher level of satisfaction with the care received at satellite dialysis unit, while Moist et al. (2008) found a significantly better health-related quality of life for those patients with shorter travel times to receive dialysis.

The findings from this study related to the high cost of travel were similar to the findings of the Panacea Research & Evaluation Report (2003) and Barrett et al. (2003), which evaluated two pilot satellite HD units established in other communities in NL. Those reports indicated that patients who received HD in satellite units closer to their homes experienced personal cost savings and, as well, there were considerable savings to the province for those who were subsidized. Similar to the findings of this study, the Panacea Research & Evaluation Report (2003) indicated that patients receiving services from a satellite HD units reported no differences in the dialysis treatment received at the satellite units as compared to care at the main unit.

#### **RECOMMENDATIONS FOR FUTURE RESEARCH**

This project has explored the qualitative factors that have impacted the lives of clients that required HD and the impact of transferring care to a satellite unit closer to home. The project did not assess clinical outcomes of the care provided in the satellite unit as compared to the main unit. The experiences of the clients involved in this project indicated a positive impact on quality of life, but the question still remains whether or not the care that is provided in the satellite unit can compare with that provided in the main dialysis unit in relation to clinical performance targets and survival outcomes. Long-term outcomes should also include "clinical performance targets" and "survival outcomes". Further research is warranted in this area.

#### SUMMARY AND CONCLUSIONS

This study focused on the perceptions of patients with ESRD who were travelling great distances to receive HD, and the impact that transferring to a smaller satellite HD unit closer to home had on their lives. The findings of this study correspond with previous research related to dialysis care provided at satellite units. Patients receiving care at a satellite HD unit closer to home reported reduced travel time, reduced driving stress, and less fatigue. They were satisfied with the care they received and the pleasant environment of the unit. Patients reported they had more time for family and friends and increased energy because of less time travelling. According to the patients interviewed for this study, the HD services they were receiving at the satellite unit had improved their access to care. The findings of this study are consistent with other studies that report high levels of patient satisfaction with the care received at satellite HD units, and a higher quality of life related to less time travelling for HD services.

Given the limited research available in this area, this study provides further evidence that providing dialysis care in satellite units closer to home can have a positive impact on quality of life of patients experiencing end stage renal disease.

#### REFERENCES

- Algoma, Cochrane, Manitoulin & Sudbury District Health Council & Northern Shores District Health Council. (2002). *Northeastern Ontario dialysis services report*. Ontario: Author. Retrieved from http://www.ontla.on.ca/library/repository/ mon/24001/298231.pdf
- Barrett, B., Butler, J., Bornstein, S., Doyle, M., & Gillam, S. (2008). Evidence in context: The provision of dialysis services in rural and remote populations in Newfoundland and Labrador. St. John's, NL: Newfoundland and Labrador Centre for Applied Health Research. Retrieved from http://www.nlcahr.mun.ca/ research/chrsp/Evidence\_in\_Context\_dialysis\_summary.pdf
- Barrett, B., Hunt, E., Penney, D., Pond, M., Griffiths, B., Matthews, F., et al. (2003). *Provincial renal advisory committee report: Framework for the development of a provincial kidney program.* St. John's: Government of Newfoundland and Labrador. Retrieved from http://www.health.gov.nl.ca/health/publications/provincial\_renal\_advisory\_committee\_report\_2003. pdf
- Bernstein, K., Zacharias, J., Blanchard, J.F., Yu, B.N., & Shaw, S.Y. (2010). Model for equitable care and outcomes for remote full care hemodialysis units. *Clinical Journal of American Society of Nephrology*, 5(4),645–651. doi:10.2215/CJN.04550709
- Canadian Association of Nephrology Nurses & Technologists. (2008). Canadian Association of Nephrology Nurses and Technologists Nephrology Nursing Standards and Practice Recommendations. Barrie, ON: Author.
- Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada (2010). *Tri-Council policy statement: Ethical conduct for research involving humans*. Public Works and Government Services Canada.
- Canadian Institute for Health Information. (2011). *Treatment* of end-stage organ failure in Canada, 2000 to 2009. Ottawa: Author.
- Colaizzi, P.F. (1978). Psychological research as the phenomenologist views it. In R.S. Valle & M. King (Eds.), *Existential phenomenological alternatives for psychology* (pp. 48–71). New York: Oxford University Press.
- Department of Transportation and Works (2011). *Moose advisory*. Retrieved from http://www.roads.gov.nl.ca/department/ moose.html
- Diamant, M.J., Harwood, L., Movva, S., Wilson, B., Stitt, L., Lindsay, R.M., & Moist, L.M. (2010). A comparison of quality of life and travel-related factors between in-center and

satellite-based hemodialysis patients. *Clinical Journal of American Society of Nephrology*, 5(2), 268–274. doi:10.2215/CJN.05190709

- Diamant, M.J., Young, A., Gallo, K., Xi, W., Suri, R.S., Garg, A.X., & Moist, L.M. (2011). Hemodialysis in a satellite unit: Clinical performance target attainment and health-related quality of life. *Clinical Journal of American Society of Nephrology*, 6(7), 1692–1699. doi:10.2215/CJN.07650810
- Kidney Foundation of Canada. (2013). *Facing the facts*. Retrieved from http://www.kidney.ca/page.aspx?pid=2013
- Lindsay, R.M., Hux, J., Holland, D., Nadler, S., Richardson, R., Lok, C., Moist, L., & Churchill, D. (2009). An investigation of satellite hemodialysis fallbacks in the province of Ontario. *Clinical Journal of American Society of Nephrology*, 4(3), 603–608. doi:10.2215/CJN.02890608
- Manns, B.J., Mendelssohn, D.C., & Taub, K.J. (2007). The economics of end-stage renal disease care in Canada: Incentives and impact on delivery of care. *International Journal Health Care Finance Economics*, 7(2–3), 149–169. doi:10.1007/ s10754-007-9022-y
- Mendelssohn, D.C. (2009). Satellite dialysis in Ontario. Clinical Journal of American Society of Nephrology, 4(3), 523–524. doi:10.2215/CJN.00480109
- Moist, L.M., Bragg-Gresham, J.L., Pisoni, R.L., Saran, R., Akiba, T., Jacobson, S.H., Fukuhara, S., ... Port, F.K. (2008). Travel time to dialysis as a predictor of health-related quality of life, adherence, and mortality: The Dialysis Outcomes and Practice Patterns Study (DOPPS). *American Journal of Kidney Diseases*, 51(4), 641–650. doi:10.1053/j.ajkd.2007.12.021
- Panacea Research & Evaluation. (2003). Institution and community-based satellite haemodialysis units: A comparison of models in Stephenville and Clarenville, Newfoundland and Labrador. St. John's: Author.
- Roderick, P., Nicholson, T., Armitage, A., Mehta, R., Mullee, M., Gerard, K., Drey, N., ... Townsend, J. (2005). An evaluation of the costs, effectiveness and quality of renal replacement therapy provision in renal satellite units in England and Wales. *Health Technology Assessment*, 9(24), 1–178. doi:10.3310/ hta9240
- Statistics Canada (2011). 2011 Census. Retrieved from http:// www12.statcan.gc.ca/census-recensement/index-eng.cfm
- Testa, M.A., & Simonson, D.C. (1996). Assessment of quality-of-life outcomes. *New England Journal of Medicine*, 334(13), 835–840.

| Appendix A: Qualitative Comments: Burden of Travel |  |   |  |  |
|--|--|---|--|--|
| Theme  | Comment 1  | Comment 2   |  |  |
| Burden to<br>family                                | I had to get someone to go with me every day I went.<br>I could drive in, but I wasn't well enough to drive<br>back. I felt like a burden to my family and I couldn't<br>imagine having to travel that highway in all types of<br>weather.   | I had to depend on my brother and R I really felt like<br>a burden to my family.  |  |  |
| Safety   | I've seen as high as 185 moose in the spring of the<br>year and a lot of them were on the road. I had one<br>close call in nine years. We had one close call around<br>Wishing Well Park one night. The moose was in the<br>middle of the road, he fell down when we passed<br>him, and we hauled out around him and managed to<br>miss him. | We had lots of close calls. Lots of snow!   |  |  |
| Time   | We would leave home at 10 o'clock in the morning<br>and get home at 10 o'clock or later at night. It would<br>take me all of the next day to get over, just in time to<br>start it all over again.   | There was times when I was coming out, I was tired<br>enough that I had to pull over for 10 or 15 minutes. I<br>had to pull over on the side of the road and have a<br>rest. Couple of times I pulled over I'd lay down and<br>lie back and when I'd come to myself, I'd jump up<br>and grab the steering wheel thinking I was still on the<br>highway driving. |  |  |
| Cost   | It was expensive. It was all my own cost. For dialysis<br>alone, I was racking up about 1,500 kilometres a<br>week on my vehicle plus the wear and tear.   | My income was completely taken up by dialysis<br>and we had to live on my wife's income. They had<br>a fundraiser for me down home one year and that<br>helped a lot for a while.   |  |  |

| Appendix B: Qualitative Comment: Satisfaction with Services |   |   |  |  |  |
|---|---|---|--|--|--|
| Theme   | Comment 1   | Comment 2   |  |  |  |
| Time with<br>family and<br>friends                          | I was so happy, I was so happy when I found I could come back<br>to my home. Receiving dialysis in Port aux Basques has made<br>it better for me. I got my own family here. I got my son, my<br>daughter; and then I got my relatives who come back and forth.<br>And my friends, oh my dear, I get lots of visitors now. | Since I've been coming out here I've been<br>able to visit my son in North Sydney. I've<br>been able to go over for the weekend and<br>the nurse has arranged for me to go over<br>to get dialysis. |  |  |  |
| Pleasant<br>environment                                     | I like the nurses. I know them pretty well. I met them a lot<br>throughout the years. They weren't strangers. They knew me<br>and I knew them.  | It's a beautiful unit we got here. I couldn't<br>believe the first day I came here. It is<br>beautiful.   |  |  |  |
| Satisfaction  | The staff here is wonderful. You couldn't ask for any better.   | The nurse worked with the nephrologists<br>and adjusted my dialysis. I used to get<br>terribly weak when I got dialysis before,<br>but since I've been coming here it hasn't<br>been an issue.      |  |  |  |
| Quality of life   | I got my life back. Last fall after I moved back, I'd spend a lot of<br>time up to my cabin. When I got off dialysis, I was able to go up to<br>my cabin. I'd go out in the field, I'd cut grass, and I'd tend to the<br>cabin. When I finish dialysis dinnertime, I got a full day to do what<br>I want to do.           | It's a lot better coming here. When I get off<br>dialysis I can go on home. I got a lot more<br>time to spend with my friends.  |  |  |  |

# Addressing quality of life and end-of-life decisions with patients

Gavril Hercz, MD, and Marta Novak, MD

Copyright © 2014 Canadian Association of Nephrology Nurses and Technologists

#### QUESTION

What do you suggest doing to help RNs deal with the patients who have very poor quality of life and want to discontinue HD, or potentially should have it discussed with them, but physicians are reluctant to bring up the topic?

#### RESPONSE

This is a very important and difficult issue that we face with increasing frequency in our dialysis population. There are different ways that the topics of quality of life and end-of-life decisions could be addressed. It is helpful to think about these as a process, i.e. there is usually no need to rush a decision of treatment withdrawal.

Nurses, who usually know their patients and their families quite well, are in a good position to open up this conversation and also "to keep it on the agenda" when interacting with patients and the team members, including physicians. It would be crucial to involve family members and caregivers if the patient agrees. Sometimes we face particularly challenging situations, when the family members want to continue the dialysis therapy, but the patient would prefer to withdraw from treatment. Religious, spiritual and cultural issues would also play an important role in how people think about prolonging life in the face of suffering and poor quality of life. Bringing up these issues at case conferences, weekly rounds or multidisciplinary team meetings at dialysis centres could ensure that there is a verbalized understanding amongst dialysis team members of the situation and wishes of the patients.

Nurses can play a crucial role in encouraging patients to bring up the topic with every member of the team. There are several tools available that can be used to facilitate end-of-life decisions and advance care planning (e.g., *Speak Up – Start the conversation about end-of-life care* workbook). These resources can help everyone to develop a "common language" when talking about sensitive issues.

Social work and psychiatric consultation might also be helpful, as well as a palliative care consultation also, if available and appropriate. The decision should always be consensus based, reflect the patient's wishes, and his or her best interests.

It is also important to acknowledge that it is difficult for us to lose our patients, when we have worked so hard to keep them alive and in good health. Often we do not have the time, place and/or opportunity to grieve. It is crucial to understand our own personal approaches and emotions, as they relate to these life-death decisions and processes when caring for terminally ill patients. We feel that it would be important to develop a culture of care in dialysis, which appreciates how staff would be able to handle these situations in an optimal way. It is also useful to develop a mechanism for grieving, as well as for the prevention of compassion fatigue and burnout. Our multidisciplinary team members could be a real source of support. As well, regular Balint groups could help with self-reflection and self-care.

### "Stay in the Know" at www.cannt.ca

#### VISIT YOUR CANNT WEBSITE FOR:

- "What's New" at a glance
- nephrology job postings
- educational resources: awards/bursaries/grant applications
- PDF articles of previous CANNT Journal issues
- online continuing education articles that earn you CEU credits
- links to educational and professional affiliate websites
- CANNT merchandise available in our online store
  regional report updates and our annual CANNT/
- ACITN report
- CANNT Nursing and Technical Practice Standards, revised 2008

- national nephrology certification information and exam preparation support
- regional, national and international educational events information
- National Nephrology Professionals' Day information—discover how colleagues from across Canada celebrate the day
- CANNT National Symposium 2014 details and updates

Join or renew your CANNT membership online today at www.cannt.ca!

### **CANNT Nominations**

#### **CALL FOR NOMINATIONS 2014**

The nominations committee is calling for nominations for the position of:

President-Elect Vice-President Technologists Vice-President Ontario Vice-President Western Region

Eligibility for office: Member in good standing.

#### **GENERAL REQUIREMENTS:**

Each candidate must:

- $\checkmark\,$  Understand the responsibilities of each position.
- ✓ Be willing to commit the required amount of time to fulfil the duties of office.
- ✓ Be willing to work within parliamentary procedure, which is used to ensure an efficient and fair voting procedure by self-governing organizations.
- ✓ Will submit a National Officer Candidate Information Form available online at www.cannt.ca or from the National Office (see address below).

#### **POSITION DESCRIPTIONS:**

- **1. President-Elect:** Elected by the membership for a period of one year after which he/she will become President, then Past-President. Assists the President in the overall administration of the Association while becoming familiar with the operation of CANNT in preparation to assume the presidency. The total commitment would be for a three-year period.
- **2. Vice-President Technologists:** Elected by the membership for a twoyear period. Promotes and facilitates the goals and objectives of the Association throughout the region. The Vice-President represents the concerns and addresses issues for the technologists on a local and national level to the Board of Directors.
- **3. Vice-President Ontario:** Elected by the membership for a two-year period. Promotes and facilitates the goals and objectives of the Association throughout the region. The Vice-President represents his or her regional concerns and acts as a liaison between the Board of Directors and the membership.
- **4. Vice-President Western Region:** Elected by the membership for a two-year period. Promotes and facilitates the goals and objectives of the Association throughout the region. The Vice-President represents his or her regional concerns and acts as a liaison between the Board of Directors and the membership.

**Deadline for nominations is May 15, 2014.** Information on candidates will be available online after May 15, 2014, and voting will take place online.

Please submit nominations online at **www.cannt.ca** or to:

#### CANNT

PO Box 10, 59 Millmanor Place Delaware, ON, NOL 1E0 Telephone: (519) 652-6767 Toll Free: (877) 720-2819 Fax: (519) 652-5015 Email: **cannt@cannt.ca** 



### NOMINATING FORM

**Position**:

Name of Candidate:

Membership Number:

Nominated by\*: 1. Name:

2. Membership Number:

\*Nominations can only be made by current members.

\*\*I agree to let my name stand for office and if elected, I agree to serve my term of office.

Signature of candidate\*\*

Date: \_\_\_\_

### **CANNT** Membership

| First Name   | □ I have attained CNeph  | (C)/                               |
|--|--|------------------------------------|
| Last Name  | - cdt designation  |                                    |
| Home Address   | I am a member of CNA   |                                    |
| City   | Ontario applicants only  | y F                                |
|  | Do you belong to RNAO?   |                                    |
| Province Postal Code   | Yes I No   |                                    |
| Telephone (H) ()   | <b>Professional Status</b>                                     |                                    |
| (W) ()   | Registered Nurse   |                                    |
| Fmail  | Kegistered Practical Nu  | urse/Registered Nursing Assistant/ |
|  | <ul> <li>Elcensed Fractical Nur</li> <li>Technician</li> </ul> | Se                                 |
| Employer   | <ul> <li>Technologist</li> </ul>                               |                                    |
| Employer Address   | _ Other (Specify)  |                                    |
| City   | Number of years in nephr                                       | ology                              |
| Province Postal Code   | Area of responsibility   |                                    |
| Mailing Address Professed D Home D Work  | Direct Patient Care  | Teaching                           |
| Maning Address Heleffed G Home G Work  | Administration   | Research                           |
| Do you consent to the use of your name and address on mailing lists that CANNT has considered pertinent and appropriate?<br>• Yes • No | Technical  | Other (Specify)                    |
| Do you consent to the use of your email for all correspondence   | Work environment   |                                    |
| with CANNT?  | Acute Care   | Independent Health Care            |
| Tyes In No   | Self-Care Unit   | Private Sector                     |
| New Member or  Renewal   | Highest level of educati                                       | ion                                |
| CANNT # (if renewal):  | Nursing  | Non-Nursing                        |
| Memberghin Fee (HST #100750860)  | Diploma  | Diploma                            |
| Membership Fee (1131 #100759809)<br>Membership fee is tax deductible.  | □ Baccalaureate  | □ Baccalaureate                    |
| □ One Year: \$70.00 + HST/GST  | □ Master's   | □ Master's                         |
| Two Years: \$130.00 + HST/GST  | Doctorate  | Doctorate                          |
| □ Student Rate: \$35.00 + HST/GST*   | I am at present studyin  | g toward                           |
| *Proof of full-time enrolment must accompany application   | Nursing  | Non-Nursing                        |
| AB/BC/SK/MB/N1/NU/QC/Y1: 5% GS1; ON/NL/NB: 13% HS1;<br>PEI-14% HST-NS-15% HST  | Specialty Certificate  | Specialty Certificate              |
|  | Baccalaureate  | □ Baccalaureate                    |
| I enclose \$   | Master s   | Master's                           |
| of Nenhrology Nurses and Technologists   | Doctorate  |                                    |
|  | Primary area of practic  | e                                  |
| Method of payment:   | Progressive renal insuf  | fficiency (pre-dialysis)           |
| Cheque I Money order I Visa I Mastercard   | ☐ Transplantation  |                                    |
| Cardholder Name:   | Hemodialysis   |                                    |
| Credit Card Number:  | Peritoneal     Dediatrica                                      |                                    |
| Expiry Date: 3-digit CVV code:   | <ul> <li>Other (Specify)</li> </ul>                            |                                    |
| Signature:   |  |                                    |
| 0  | Re   | eturn to <b>CANNT</b>              |



to CANNT Mailing Address:

CANNT,

P.O. Box 10, 59 Millmanor Place, Delaware, ON N0L 1E0 Telephone (519) 652-6767 Fax (519) 652-5015

### **Demande d'adhésion**

| Prénom  | J'ai obtenu la désignat                                  | tion                          |
|---|--|-------------------------------|
| Nom de famille  |  |                               |
| Adresse à domicile  | Je suis membre de l'A                                    |                               |
| Ville   | Demandeurs de  |                               |
| Province Code postal  | Faites vous partie de l'AO                               | IA?                           |
|   | Oui DNon   |                               |
| Telephone (D) ()  | Statut professionel                                      |                               |
| (T) ()  | Infirmière(ier) autoris                                  | ée(sé)                        |
| Courriel  | Infirmière(ier) auxilai                                  | re autorisée(sé) /            |
| Employeur   | infirmière(ier) auxilai                                  | re                            |
| Advaga da l'émployar  | Technicienne/technici     Technicienne/technici          | en                            |
| Adresse de l'employer   | Iechnologue Autre (spécifier)                            |                               |
| Ville   |  | . 1 1 .                       |
| Province Code postal  | Années d'éxperience en n                                 | éphrologie                    |
| Adresse de correspondance 📮 domicile 📮 travail  | Domain de responsabil                                    | ité                           |
| Accepter your que l'ACITN signite votre nom et votre adresse que                                    | □ Soins directs  | Enseignement                  |
| des listes d'envois qu'elle juge pertinentes et appropriées?  | Administration   | Autre (spécifie               |
| □ Oui □ Non   |  |                               |
| Avez-vous consentez à l'utilisation de votre e-mail pour toute                                      |  |                               |
| correspondance avec l'ACITN?  | Milieu de travail  |                               |
| □ Oui □ Non   | Soins actifs Unité d'autosoins                           | Services de sar Sectour privé |
| 🖵 Nouveau membre ou 📮 Renouvellement  |  |                               |
| Numéro de l'ACITN (si renouvellement):  | Plus haut niveau d'inst                                  | ruction?                      |
| Frais d'adhésion (TPS #100759869)   | Infirmiere(ler)  | Autres                        |
| Les frais d'adhésion sont deductibles d'impots.   | Baccalauréat   | Baccalaureat                  |
| □ Un an: 70,00 \$ + TVH/TPS   | Maîtrise   | Maîtrise                      |
| Deux ans: 130,00 + TVH/TPS  | Doctorat   | Doctorat                      |
| Iarii etudiant: 35,00 + 1 VH/1P5<br>*La demande doit inclure une nreuve d'inscription à plein temps | To nouveuis nyésontom                                    | ant das átudas                |
| AB/BC/SK/MB/NT/NU/QC/YT: 5 % TPS; ON/NL/NB: 13 %  | Domaine infirmière(ier)                                  | Autre domaine                 |
| TVH; PE: 14 % TVH; NS: 15 % TVH   | Certificat   | Certificat                    |
| Je joins \$   | Baccalauréat   | Baccalauréat                  |
| payable à l'ACITN.  | Maîtrise   | Maîtrise                      |
| Node de naiement :  | Doctorat   | Doctorat                      |
| □ Chèque □ Mandat de poste ou chèque visé   | Secteur de pratique sp                                   | écialisé                      |
| Uisa Mastercard   | Insuffisance rénale pro                                  | ogressive (pré-dialyse)       |
| Nom du titulaire de la carte :  | Transplantation  |                               |
| Numéro de la carte :  | Hémodialyse  |                               |
| Date d'avairation :   | Péritonéale Pédiatria                                    |                               |
| Date d expiration:  | <ul> <li>rediatrie</li> <li>Autre (spécifier)</li> </ul> |                               |
| Signature:  | - mune (specifier)                                       |                               |

#### Poster à **ACITN**

Adresse postale :

CANNT/ACITN

P.O. Box 10, 59 Millmanor Place, Delaware, ON NOL 1E0 Téléphone (519) 652-6767 Télécopieur (519) 652-5015



Enseignement Recherche Autre (spécifier)

Services de santé indépendants

### **Guidelines for authors**

The Canadian Association of Nephrology Nurses and Technologists (CANNT) Journal invites letters to the editor and original manuscripts for publication in its quarterly journal. We are pleased to accept submissions in either official language—English or French.

#### Which topics are appropriate for letters to the editor?

We welcome letters to the editor concerning recently published manuscripts, association activities, or other matters you think may be of interest to the CANNT membership.

### What types of manuscripts are suitable for publication?

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

- Original research papers
- Relevant clinical articles
- Innovative quality improvement reports
- Narratives that describe the nursing experience
- Interdisciplinary practice questions and answers
- Reviews of current articles, books and videotapes
- Continuing education articles.

#### How should the manuscript be prepared?

**Form:** The manuscript should be typed double-spaced, one-inch margins should be used throughout, and the pages should be numbered consecutively in the upper right-hand corner. More formal research or clinical articles should be between five and 15 pages. Less formal narratives, question and answer columns, or reviews should be fewer than five pages.

**Style:** The style of the manuscript should be based on the **Publication Manual of the American Psychological Association (APA),** Sixth Edition (2009), available from most college bookstores.

**Title page:** The title page should contain the manuscript title, each author's name (including full first name), professional qualifications [e.g., RN, BScN, CNeph(C)], position, place of employment, address, telephone, fax numbers and email address. The preferred address for correspondence should be indicated.

**Abstract:** On a separate page, formal research or clinical articles should have an abstract of 100 to 150 words. The abstract should summarize the main points in the manuscript.

**Text:** Proper names should be spelled out the first time they are used with the abbreviation following in brackets, for example, the Canadian Association of Nephrology Nurses and Technologists (CANNT). Generic drug names should be used. Measurements are to be in Standards International (SI) units. References should be cited in the text using APA format. A reference list containing the full citation of all references used in the manuscript must follow the text.

**Tables/Figures:** Manuscripts should only include those tables or figures that serve to clarify details. Authors using previously published tables and figures must include written permission from the original publisher. Such permission must be attached to the submitted manuscript.

#### How should the manuscript be submitted?

#### Email your manuscript to: athomas6@cogeco.ca

Include a covering letter with contact information for the primary author and a one-sentence biographical sketch (credentials, current job title and location) for each author.

### How are manuscripts selected for the CANNT Journal?

Each manuscript will be acknowledged following receipt. Research and clinical articles are sent out to two members of the **CANNT Journal** manuscript review panel to be reviewed in a double-blind review process. All manuscripts may be returned for revision and resubmission. Those manuscripts accepted for publication are subject to copy editing; however, the author will have an opportunity to approve editorial changes to the manuscript. The criteria for acceptance for all articles include originality of ideas, timeliness of the topic, quality of the material, and appeal to the readership. Authors should note that manuscripts will be considered for publication on the condition that they are submitted solely to the **CANNT Journal.** Upon acceptance of submitted material, the author(s) transfer copyright ownership to CANNT. Material may not be reproduced without written permission of CANNT. Statements and opinions contained within the work remain the responsibility of the author(s). The editor reserves the right to accept or reject manuscripts.

#### **Checklist for authors**

✓ Cover letter

🗸 Article

- Title page to include the following:
  - title of article
  - each author's name (including full first name)
  - professional qualifications
  - position
  - place of employment
  - author to whom correspondence is to be sent, including address, phone, fax number, and email address
- Text of article, with abstract if applicable, **double-spaced, pages numbered**
- References (on a separate sheet)
- Tables (one per page)
- Illustrations (one per page)
- Letters of permission to reproduce previously published material.



13 March 2014

## KIDNEYS AGE, JUST LIKE YOU







**IFKE** International Federation of Kidney Foundations initiative





<sup>Pr</sup>CATHFLO<sup>®</sup> (alteplase, recombinant) is indicated for the restoration of function to central venous access devices. Product monograph available at www.rochecanada.com

Registered Trade-Mark of Hoffmann-La Roche Limited

CATHFLO® Registered Trade-Mark of Genentech, Inc., used under licence