The Renal Pharmacist

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ADDRESS/INFO CHANGES

Please forward any address / phone number changes to the Website co-ordinator elaine.cheng@vch.ca. We are constantly updating our membership mailing list. Thank you

View from the Chair

On behalf of the RPN, we want to thank all members who participated in the 3rd Annual Nephrology Education Day held on March 26, 2010 in Toronto. It was a fantastic day with a great turn out of 70 attendees! Dr Vanita Jassal, a nephrologist from University Health Network (UHN, Toronto) started off the day with four cases highlighting common scenarios encountered with polypharmacy in geriatric medicine. Christine Nash, also from UHN, gave us the dietitian's perspective on management of protein-energy malnutrition in the hemodialysis population. Joanne Jung from British Columbia tackled the controversial topic of anticoagulation in the hemodialysis patient. Robert Bell from Montreal described his unique experience with using LMWHs for the prevention of clotting of the extracorporeal circuit during hemodialysis. Finally, Judith Marin from British Columbia went through the ABC's on choosing the right vitamin D. We also had 3 successful workshops to discuss clinical issues among colleagues working in hemodialysis, peritoneal dialysis and predialysis clinics. For those members that were not able to attend, the presentation slides are now available on the new RPN website!

Last Fall, RPN also hosted its first ever Nephrology Education Brunch in Winnipeg, Manitoba on November 15, 2009. We had approximately 20 attendees including nearly all of the renal pharmacists in Manitoba. Karen Shalansky reviewed the evidence for therapeutic and prophylactic dosing and monitoring of LMWHs in chronic kidney disease and Marisa Batistella had everyone's attention for

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CHECK OUT OUR WEBSITE AT **www.renalpharmacists.net**

View from the Chair (continued)

her talk on "Nocturnal Hemodialysis: A new sexy dialysis treatment and implications for pharmacists." There was lots of discussion and exchange of practical information. Please visit the RPN website to access these presentations.

The RPN will be partnering again with the CSN this year for the 2010 Annual Meeting being held in Montreal on May 26th to 30th, 2010. Please visit the CSN website for more information. Next year the CSN will be Co-Hosting the World Congress of Nephrology in Vancouver on April 8-12th, 2011. The RPN hopes to partner with the CSN for this unique opportunity. Please keep tuned for more information.

Please welcome Judith Marin, BPharm, MSc, PharmD from Fraser Health Renal Program in British Columbia who is Chair-elect for 2010. You can read more about her in this edition's newsletter. Also, a warm congratulations to the Manitoba Renal Pharmacists who have won the 2009 Commitment to Care & Service Award under the Hospital Pharmacy Initiative Category. Well done Manitoba! In this issue, there is a summary of recommendations for dosing and monitoring of LMWHs in renal insufficiency and Guidelines from Manitoba on Medication Administration Times for Hospitalized or Long-Term Care Patients receiving Chronic Hemodialysis. We welcome your newsletter submissions. Please send any announcements, interesting cases or summary articles of any CE that you have attended to Ryan Leppert at rleppert@lakeridgehealth.on.ca.

Last but not least, I want to personally thank all the executive members of the RPN for their valuable contribution to all the planning and coordination of past and upcoming events.

Have a wonderful summer!

Sincerely,
Amy Sood, BScPhm, PharmD
Chair, RPN

Member Profile

Judith Marin

Judith is a clinical pharmacist for Fraser Health authority. Judith has worked for the Fraser Health Renal program for the past 3 years, taking care of medication reconciliation, chronic pain management, anemia management, and other activities related to patient care, covering two hospital-based hemodialysis units, three community-based hemodialysis units, and a pre-dialysis clinic.

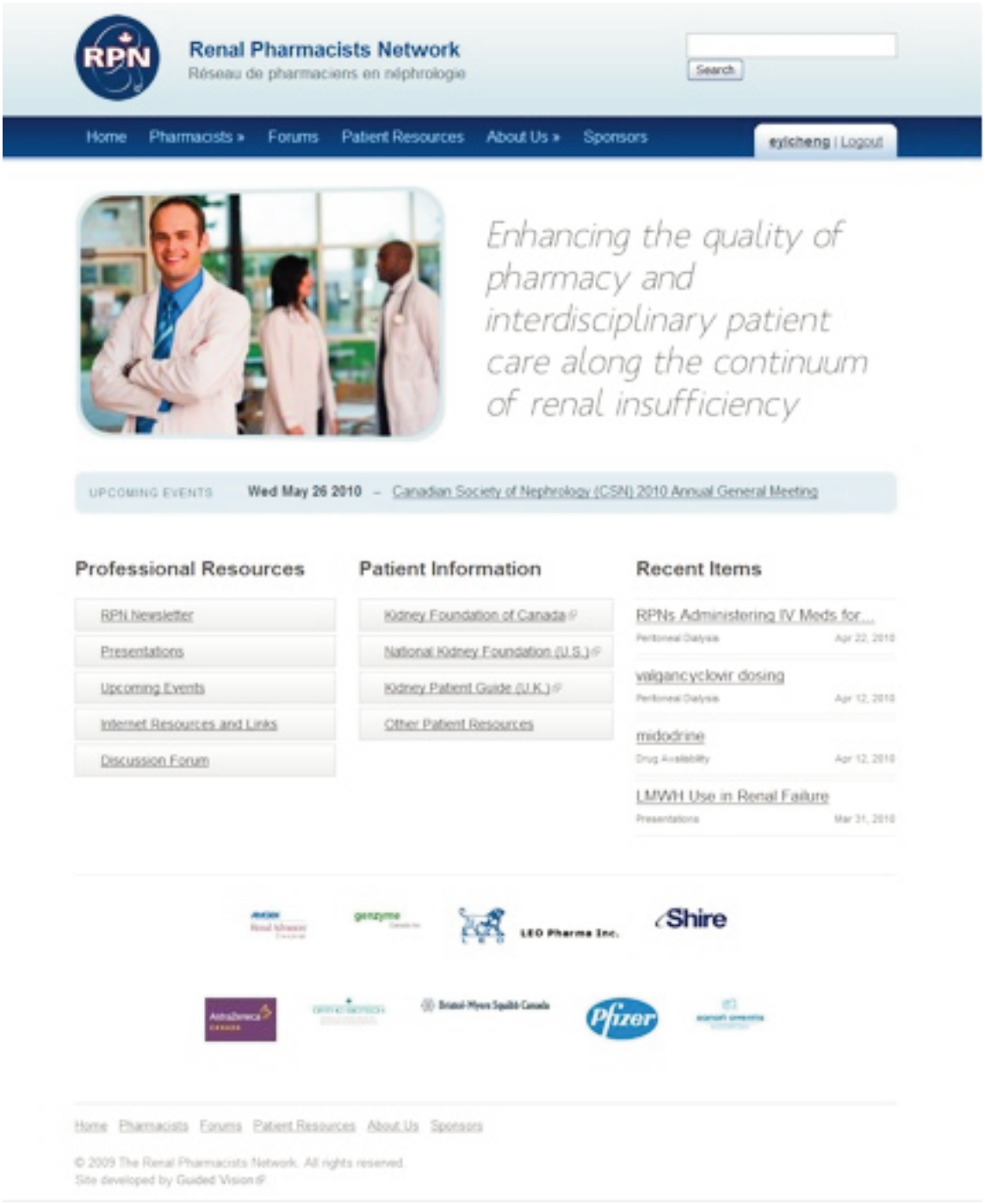
Judith completed her bachelor in Pharmacy, and Masters in hospital pharmacy at Université de Montréal. She then moved to Vancouver to pursue her PharmD at University of British Columbia, which she completed in May 2006. Judith is also a member of various committees for the British Columbia Renal Agency.
In her spare time, Judith likes to travel, garden, hike, run and ski… so she adapted herself quite well to the Vancouver life style! She also enjoys wine tasting, good food, going to plays and concerts, which help her stay in touch with her French background.

Judith looks forward to joining the dynamic RPN executive as the new chair-elect and feels the RPN is an excellent way of collaborating and networking with renal pharmacists across the country to improve patient care. Another great networking opportunity will be the April 2011 World Congress of Nephrology in Vancouver! Hope to see you there!

RPN Website - Snapshot

Submitted by: Elaine Cheng, RPN Website Coordinator

The Renal Pharmacists Network (RPN) launched its newly redesigned website, which is accessible at www.renalpharmacists.net, at the end of January of this year. The project was undertaken, in part, due to feedback from its members on the ease of finding information within the old RPN website. Content from the old website was carried forward to the new website but is now presented in a manner that we hope you will find to be more easily accessible.



The homepage features a navigation bar at the top of the page which allows access to different areas of the website, a rotating blue bar halfway down the page that highlights some of the upcoming renal conferences and meetings, and directly underneath a "Professional Resources", a "Patient Information" and a "Recent Items" section. The "Recent Items" section is automatically updated as new content is added to the website or as new items are posted to the discussion forums. In the "Pharmacists" section, you will find the RPN newsletters, presentations from RPN events, information on upcoming and past renal conferences and meetings, and internet resources and links. Email addresses for individual members of the RPN executive committee is now available under "About Us".

Should you need to update your contact information, "My account" can be accessed through one of two ways, by clicking on your username beside the logout link in the navigation bar, or by clicking on any of the headings in the navigation bar, with the exception of "Home", which enables a blue box and a link to "My Account" to appear on the right. Notification settings for the emails sent out by the RPN can be adjusted here. If you wish to receive emails from the RPN, the master switch needs to be enabled. You can choose to receive new content that has been added to the website and/or new comments on discussion forum postings and the amount of content that you would like to appear in the email.

We hope that you will find the layout and features of the new website to be more user friendly. However, if you should encounter any problems while accessing any of the webpages or have comments / feedback on the new website, feel free to send an email to me at renalpharmacistsnetwork@gmail.com. Also, if you come across information that you feel would be worthwhile sharing with other healthcare professionals, please send an email to me to have the content added to the website.

2009 Hospital Pharmacy Initiative Award

The Renal Pharmacists Network (RPN) would like to congratulate the Winnipeg Regional Health Authority's Manitoba Renal Program (MRP) pharmacists' for earning the 2009 Hospital Pharmacy Initiative Award in the 2009 Commitment to Care & Service Awards, a national awards program hosted by Pharmacy Practice and Drugstore Canada.

Medication Administration Times

Guidelines for Hospitalized or Long-Term Care Patients receiving (Chronic) Hemodialysis

Prepared by: Lori Wazny, Pharm.D., Clinical Pharmacist, Manitoba Renal Program, Sept. 29, 2008

Manitoba Renal Program / Programme manitobain des maladies rénales

Please contact the patient's hemodialysis unit if any clarification is needed on whether a medication is to be administered on the ward or in the hemodialysis unit.

Medication	Preferred Administration Time (UNLESS SPECIFIED OTHERWISE)	Rationale
Antibiotics, IV Antibiotics removed by hemodialysis: Amoxicillin, Ampicillin, Cefazolin, Cefotaxime, Cefoxitin, Ceftazidime, Cefuroxime, Cephalexin, Gentamicin, Imipenem, Linezolid, Meropenem, Metronidazole, Moxifloxacin, Penicillin, Piperacillin ± tazobactam, Ticarcillin ± clavulanate, Tobramycin, Trimethoprim/sulfamethoxazole, Vancomycin	If ordered 3 times per week, IV antibiotics are usually given in the hemodialysis unit. Please contact patient's hemodialysis unit to confirm. Antibiotics removed by hemodialysis: • If ordered once daily, administer at bedtime. • If BID, give 1st dose at standard morning time and 2nd dose at bedtime (as inpatients may be dialyzed during the evening dialysis shift). • If TID or QID, give at regularly scheduled times with at least 1-2 doses posthemodialysis	
Antihypertensives (all) Antihypertensives removed by hemodialysis: Atenolol Captopril Enalapril Lisinopril Metoprolol Methyldopa Ramipril	In patients with low blood pressure (i.e. systolic blood pressure <100 mm Hg), consult with a physician regarding whether to hold or administer antihypertensives prior to hemodialysis. Antihypertensives removed by hemodialysis: • If ordered once daily, administer at bedtime. • If BID, give 1st dose at standard morning time and 2nd dose at bedtime (as inpatients may be dialyzed during the evening dialysis shift). • If TID or QID, give at regularly scheduled times with at least 1-2 doses posthemodialysis.	Note: Some patients may have antihypertensives specifically ordered to be given BEFORE hemodialysis if they have increased blood pressures during hemodialysis.
Calcitriol, IV Calcitriol, oral (Rocaltrol®)	IV calcitriol always given in the hemodialysis unit. Administer at bedtime if being used to lower parathyroid hormone (PTH). Administer at standard dosing times if being used to treat or prevent hypocalcemia (e.g. pre or post parathyroidectomy).	Less hypercalcemia and hyperphosphatemia with oral calcitriol when given at bedtime.
Calcium carbonate (Apo-Cal®, Tums®)	Administer with meals unless otherwise specified. Calcium Drug Interactions: Oral Fluroquinolone antibiotics – e.g. ciprofloxacin, levofloxacin, or moxifloxaxcin. Administer oral fluroquinolone antibiotics 2 hours before or 4 hours after calcium carbonate. Calcium decreases absorption of oral fluroquinolones. Does not apply if fluroquinolone antibiotic is given I.V. Iron (oral) – ferrous sulfate, ferrous gluconate, ferrous fumarate. Administer 1-2 hours before or after calcium carbonate. Calcium decreases absorption of oral iron tablets by 30-40%.	Calcium is used to binds phosphorus in food and to increase calcium levels in hypocalcemic patients. Calcium absorption from calcium carbonate is increased 10% to 30% by administering with a meal. However, patients on very large doses of calcium to treat/prevent hypocalcemia (e.g. post-parathyroidectomy) may be prescribed calcium carbonate both with AND in between meals.
Darbepoetin alfa (Aranesp®)	Always given in the hemodialysis unit.	Note: This only applies to hemodialysis patients. Renal Health Clinic and Peritoneal Dialysis patients will receive subcutaneous doses of darbepoetin alfa on the ward.
Emla® Cream	Apply 1 hour prior to hemodialysis. Apply Emla® along the fistula where the needles will be inserted. Sites should be 6-8 cm apart and at least 2 cm from previous sites. Generously apply and do not rub in (the cream should remain a white blob). Cover with plastic wrap (Saran Wrap®) so it will not rub off.	Emla® is a topical anesthetic used to freeze hemodialysis needle sites. Do not apply over open sores or skin irritation.
Epoetin alfa (Eprex®)	Always given in the hemodialysis unit.	Note: This only applies to hemodialysis patients. Renal Health Clinic and Peritoneal Dialysis patients will receive subcutaneous doses of epoetin alfa on the ward.
Fluoroquinolone antibiotics, oral (e.g. Ciprofloxacin, Levofloxacin)	Once daily oral doses: administer at bedtime IV fluroquinolones: no issues	Oral calcium, iron, and aluminum containing medications cause greatly decreased absorption of these antibiotics. Give 2 hours before or 4 hours after these drugs. Dosing at bedtime will usually allow the correct interval.
Gabapentin, oral	Give dose(s) after hemodialysis; usually given at bedtime if used for restless leg syndrome.	Significantly removed by hemodialysis.
Iron, IV: IV Iron dextran IV Iron sucrose (Venofer®) IV Sodium ferric gluconate (Ferrlecit®)	Always given in the hemodialysis unit.	
Nitroglycerin patches	If applied in AM, leave on for hemodialysis unless otherwise specified by patient or physician.	Rarely causes significant hypotension, however, the use of nitroglycerin patch during hemodialysis is patient-specific.
Sevelamer (Renagel®)	Always with meals.	Binds phosphorus in food.
Vitamin B and C (Replavite®)	Administer at bedtime.	Significantly removed by hemodialysis.

Low Molecular Weight Heparin Use In Renal Failure

Submitted by: Karen Shalansky, Pharm.D., FCSHP - November 15, 2009

Summary: Patients with renal dysfunction have an increased bleeding risk with anticoagulants in general. Low molecular weight heparins (LMWH), which have smaller chains compared to unfractionated heparin (UFH), are primarily excreted renally, as opposed to UFH which is both renally and hepatically eliminated. As such, there is a risk of accumulation of LMWH in patients with renal dysfunction, especially those with CrCl < 30 mL/min.

Prophylactic doses of dalteparin (2500-5000 units SC daily) and tinzaparin (4500 units SC daily) have been shown to be safe with minimal to no accumulation for up to 30 days.[1-3] Enoxaparin in prophylactic doses (40mg SC daily) may accumulate in renal dysfunction and it is recommended to reduce dosage to 20-30 mg SC Q24H in patients with CrCl < 30 mL/min.[3,4]

For therapeutic anticoagulation, UFH is still the anticoagulant of choice in patients with reduced renal function. However, in some patients, LMWH may be preferable, for example, in patients with no IV access, or as bridge therapy until oral warfarin takes effect. Therapeutic doses of tinzaparin (175 units/kg/day) for less than 10 days appear to be safe with minimal accumulation in patients with venous thromboembolism (VTE), although studies are small and are primarily conducted with CrCl ≥ 20 mL/min.[5-7] This is due to its longer chain length (molecular weight) compared to other LMWHs that increases its clearance by the liver (Table 2).[8,9] A recent VTE treatment study in very elderly patients (≥ 90 yo) with renal impairment found a higher all-cause mortality rate in the tinzaparin group, although this was not related to bleeding or any adverse effect of tinzaparin.[10] Enoxaparin does accumulate with renal dysfunction and there is a linear correlation between rising anti-Xa levels and worsening CrCl.[11] Dosage adjustment of enoxaparin is necessary with CrCl < 30 mL/min to either full dose given once daily per CPS recommendations[12] or a lower dose given twice daily per American recommendations.[13] Studies on enoxaparin dosing have primarily been conducted in patients with acute coronary syndromes (ACS). There is minimal data on the use of therapeutic doses of dalteparin in renal failure[14]; a case report of dalteparin 200 units/kg/day in an 84 yo female with CrCl of 25 mL/min resulted in development of a hematoma on day 4 with a drop in hemoglobin from 119 to 55 g/L.[6] Finally, similar to enoxaparin, nadroparin has been shown to accumulate with worsening renal function[15], although there are no dosing strategies in the literature.

If therapeutic dose LMWH is administered to patients with CrCl < 30 mL/min, it is recommended to follow anti-Xa levels (peak or trough), especially if therapy is anticipated to be greater than 5 days. Although not well studied, target peak anti-Xa levels (drawn 4-5 hours post-dose) should be in the range of 0.6-1.5 units/mL for once daily dosing and 0.6-1.0 units/mL for twice daily LMWH therapy.[5,16] Trough anti-Xa levels prior to next dose should be < 0.5 units/mL.[7] Initial levels could be drawn just prior to or after the third dose.

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Figure 1.

Comparison of Heparin and LMWH		
Agent	**Average MW (daltons)**	**AntiXa:IIa Ratio**
Heparin	15,000	1:1
Tinzaparin	6,500	1.9:1
Dalteparin	5,600	2-2.7:1
Enoxaparin	4,500	2.7-4:1
Nadroparin	4,300	3.2-3.7:1

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