Manitoba CSHP 2015 Success Story Award submission: Manitoba Renal Pharmacists Standards of Practice Initiative

Name of applicants:
Lori Wazny, Pharm.D., Amy Sood, Pharm.D., Colette Raymond, Pharm.D., Nick Honcharik, Pharm.D. and the Manitoba Renal Program Pharmacists.

Practice Sites involved:
All Renal Health Clinics, Peritoneal Dialysis (PD) units, and Hemodialysis (HD) units within the province of Manitoba which includes three Winnipeg hospitals (HSC, St. Boniface, Seven Oaks), Brandon, and 16 hemodialysis units located in smaller communities across the province.

Description of applicant involvement:
Lori Wazny, Amy Sood, and Colette Raymond drafted the initial document that was then reviewed and revised based on the Methods listed below and authored a manuscript about this initiative which has been accepted for publication in CJHP.

Nick Honcharik spearheaded the development of the original Winnipeg Regional Health Authority pharmacist clinical practice expectations and encouraged the Renal Pharmacists to develop their own specific set of expectations.

Initiative Rationale and Objectives:
The Manitoba Renal Program (MRP) pharmacists operate within a patient-centered medication therapy management model to provide care for patients with stage 1-5 chronic kidney disease (CKD) and receiving dialysis. The MRP has a unique funding structure with one full time equivalent (FTE) clinical pharmacist for every 100 HD patients, 200 PD or home HD patients, and 300 patients with stage 1-5 CKD. As of 2013, 11.8 full time employee (FTE) clinical pharmacists are employed. On average, the MRP pharmacists spend 90% of their time performing activities related to direct patient care within the MRP. The pharmacists attend all nephrologist clinics which include separate clinics for: stage 1-5 CKD (pharmacists focus on Stage 4-5 CKD and Stage 1-3 CKD receiving pharmacotherapy for glomerulonephritis); PD; home HD; rural HD. They also staff the in-centre HD units at each urban hospital and liaise via telephone with the HD units for 16 rural HD units. The MRP pharmacists meet every two months via teleconference to discuss clinical and operational issues affecting renal pharmacists in the program. Two of the pharmacists have post-baccalaureate Doctor of Pharmacy training that focus on HD and PD, respectively and serve as clinical practice leaders for the MRP pharmacists.

This initiative sought to develop Manitoba Renal Program (MRP) pharmacist clinical standards of practice. The purpose was to define and prioritize core activities that pharmacists must perform on a regular weekday with full staffing and it describes the processes and priorities for renal pharmacists operating as members of an interprofessional team We evaluated the literature describing the role of the renal clinical pharmacist, surveyed MRP pharmacists about existing clinical pharmacist services, met with pharmacy and MRP stakeholders and evaluated existing pharmacist standards of practice and existing MRP pharmacist activities and practices. Local policies and procedures, patient safety initiatives and published guidelines are incorporated into the standards of practice and can be updated accordingly. The document also contains hyperlinks to current clinical practice guidelines and articles and is updated yearly.

Methods:
A small working group of MRP pharmacists developed a draft set of renal pharmacist clinical standards of practice. The draft was distributed widely to all MRP pharmacists to obtain feedback on multiple occasions. Feedback for priority activities was obtained from nephrologists. Consensus was achieved and all MRP pharmacists, pharmacy managers and nephrologist medical directors have adopted the final version of the renal pharmacist clinical standards of practice.

Project Results:
The renal pharmacist standards of practice are a unique set of evidence based practice guidelines that serve to educate and train renal pharmacists, students or trainees completing a renal pharmacy rotation. Furthermore, the standards of practice serve as a tool to standardize patient care, set priorities, develop criteria for competency assessment and inform performance appraisals for renal pharmacists. Additionally, centres without funding for renal pharmacists can use the standards of practice to justify funding renal pharmacists.

CSHP 2015 Objectives highlighted by this project:

Goal 2: Increase the extent to which pharmacists help individual non-hospitalized patients achieve the best use of medications

Goal 3: Increase the extent to which hospital and related healthcare setting pharmacists actively apply evidence-based methods to the improvement of medication therapy

Attachments:
Renal Pharmacist Standards of Practice Document
Draft of CJHP article on this initiative

WRHA Pharmacy Program Direct Patient Care Guidelines

Pharmacist Performance Expectations

Manitoba Renal Program

May 2013

DEVELOPMENT OF THE PHARMACIST PERFORMANCE EXPECTATIONS

GUIDELINES FOR USE
Pharmacist Performance Expectations

Purpose:
The purpose of these Guidelines is to define performance expectations of pharmacy care that pharmacists will provide to Manitoba Renal Program patient, at any acute care WRHA facility, or St Boniface Hospital under full-staffed [pharmacist] conditions. These performance expectations will establish the "norm" for pharmacist practice. Performance expectations will provide a tool for pharmacists to self-evaluate the quality of the service they provide for Manitoba Renal Program patients and identify opportunities for personal and/or staff development. The performance expectations are viewed currently as the type of practice pharmacists will strive to attain. A phased-in approach for implementation is suggested.

Pharmacists play a key role in medication safety. Prevention and resolution of drug related problems is an essential component for the provision of medications in a safe and effective manner. Prioritization of pharmacist activities should take medication safety into consideration.

In the near future, it is expected that the performance expectations will evolve to standards of practice within the WRHA Pharmacy Program. Standardization of practice activities will help support the pharmacy practice model, assist in the orientation/education of new staff, and assist in the evaluation of staff.

Of note, different priorities exist across the MRP according to the clinical time allotted to the pharmacists who have shared clinical and distribution functions.

I. Expectations on a regular weekday (see appendix 1 for table for prioritization of activities, please refer to site specific standard operating procures for further detail):

A. The pharmacist shall perform the following **core activities** of a fully staffed weekday in order of priority

1. Attend Manitoba Renal Program clinics (peritoneal dialysis, local centres dialysis, home hemodialysis or renal health) as appropriate at site

- Organize patients and bloodwork processes as appropriate to site
- Review all clinic patients charts
- Review DPIN for all patients
- For patients seen by a pharmacist, generate best possible medication history, perform medication reconciliation and detailed medication review
- Document in health record any recommendations, suggestions or further patient information required for patients not be seen by a pharmacist as appropriate to site
- Additional processes per site

2. Attend multidisciplinary patient care rounds as appropriate (different models at different sites).

- Detailed discussion with team about patients covered on rounds
- Identify admitted patients for pharmacist medication reconciliation on discharge
- Identify patients for pharmacist medication review
- Additional processes per site (e.g. use rounds template)

3. *Discharge (or transfer) medication reconciliation for admitted hemodialysis, peritoneal dialysis, local centres dialysis, or home hemodialysis patients as appropriate or renal health clinic patients as appropriate*

- Reconcile inpatient medications with DPIN and Renal Medication flow sheet
- Write discharge prescription for medications including appropriate medications on the Renal Medication flow sheet and new medications started in hospital. Use professional judgment and contact MD to clarify outstanding issues.
- Have prescription faxed to outpatient pharmacy and copy dialysis unit as appropriate
- Provide patient with medication card and patient counseling (if appropriate)
- Document discharge and any issues in the patient's medical record if appropriate.
- Additional processes per site (e.g. some sites only do discharges for dialysis patients admitted under nephrology, renal health clinic patients usually only for renal medications only and at the request of the MRP team)
- Perform medication reconciliation during discharges, medication reviews, clinic visits, or between clinic visits as required in accordance with the MRP Medication Reconciliation Policy 60.40.09 http://www.kidneyhealth.ca/wp/wpcontent/uploads/pdfs/P&P/P&P_60.40.09_guideline.pdf

4. Review monthly bloodwork for hemodialysis patients as appropriate at site

- Organize patients and bloodwork processes as appropriate to site and according to site processes
- Use Anemia Treatment Algorithm if appropriate to adjust EPO and Iron doses if appropriate
- Additional processes per site (e.g. some sites, dieticians do MBD)

- ***Identify and resolve actual/potential drug elated problems*** (DRP's) during discharges, medication reviews, clinic visits, between clinic visits or on medication order review. This is accomplished through review of patient's medication profile, medical record, and review of pertinent laboratory results, patient/caregiver/health professional dialogue, interdisciplinary interaction, and communication with the dispensary / community pharmacy staff, patient/caregiver/health professional as appropriate. Patients may be prioritized according to their severity, at the discretion of the pharmacist.

5. ***Perform detailed medication reviews for patients as appropriate at practice site. Medication reviews are performed for new dialysis patients, on periodic review (q 6 months- 1 year), in preparation for MRP clinic visit (peritoneal dialysis, local centres dialysis, home hemodialysis or renal health) or at the discretion of the pharmacist or request of another health professional. (see list of renal specific DRPs below). Generally, priority patients for dialysis units are new starts to PD/HD.***

- Speak to patient, caregivers, family members and other healthcare professionals as appropriate to obtain the information required for the medication review.
- Review the most recent medication list (clinic list, Renal Medication flow sheet), DPIN and speak to the patient and caregiver to determine the ***best possible medication history*** (medication list) including herbal and OTC
- Identify and resolve actual/ potential DRPs (see below)
- Review patient for ***medication coverage issues***
- Ensure ***follow up bloodwork*** is ordered as appropriate based on recommendations and changes
- *Document any medication issues* in the appropriate place: directly in the patient care record or on the Pharmacist Medication Review Template or another place as appropriate to MRP site in accordance with the WRHA Pharmacy policy for documentation.
    - WRHA Documentation in the Health Record Policy http://home.wrha.mb.ca/prog/pharmacy/files/PharmacistDocumentationinaHealthRecord_000.pdf
- Write out medications on a regular ***outpatient prescription as appropriate***.
- Write refills as requested and as appropriate
- Provide ***continuity of care*** between facility and community pharmacy as appropriate. (e.g. to facilitate prescription delivery, compliance aid, drug coverage or other issues as required)
- Liaise with patient, caregivers, family members and other healthcare professionals as appropriate to provide medication related information to or for patients
- Additional processes per site

Types of DRP's to assess include but are not limited to (some relevant nephrology references included for each DRP):

- Review medications to determine if any drugs require ***renal dose adjustments*** WRHA Pharmacy policy for renal dosing, and standard resources such as Bennett's or Dialysis of Drugs **(labs: creatinine for CKD patients)**
    - Bailie GR, Mason NA.*2012 Dialysis of Drugs*. Saline (USA): Renal Pharmacy Consultants LLC; 2012 http://renalpharmacyconsultants.com/sitebuildercontent/sitebuilderfiles/2012dialysisofdrugsbooklet.pdf

- Aronoff GR, Berns JS, Brier ME, Golper TA, Morrison G, Singer I, et al *Drug Prescribing in Renal Failure Guidelines for Adults, 5th Ed.* Portland (USA): Book News, Inc.; 2007 http://kdpnet.louisville.edu/renalbook/
- WRHA Renal Dosing policy http://home.wrha.mb.ca/prog/pharmacy/files/RenalDrugDirectiveupdated_000.pdf
- Matzke GR, Aronoff GR, Atkinson AJ, Bennett WM, Decker BS, Echardt KU.. Drug dosing considerations in patients with acute and chronic kidney disease – a clinical update from KDIGO. *Kidney Int* 2011;(80):1122-37 PMID 21918498 http://www-ncbi-nlm-nih-gov.proxy2.lib.umanitoba.ca/pubmed/?term=21918498

- Review for any medications that are that are ***contraindicated in CKD*** and that should be minimized (e.g. NSAIDS in clinic patients, nitrofurantoin) **(labs: creatinine for CKD patients)**
- Review for any medications that are ***no longer required in dialysis*** (ie. potassium supplements, sodium bicarbonate, allopurinol etc) for dialysis patients
- Review patient for medication ***allergies / intolerances*** in accordance with the WRHA Pharmacy policy for documentation
  - WRHA Allergy Assessment Policy http://home.wrha.mb.ca/prog/pharmacy/files/PharmDocumentationofMedicationAllergiesAugust2006.pdf
- Review patient for ***medication adherence*** using DPIN and interview with patient and or caregiver
  - Raymond C, Wazny L, Sood A. Medication Adherence in patients with chronic kidney disease. CANNT J, 2011;21(2):47-50 http://www-ncbi-nlm-nih-gov.proxy2.lib.umanitoba.ca/pubmed/?term=21894841
- Review patient for ***drug drug interactions*** (resources include Micromedex, Lexcomp)
- Review patient for ***adverse drug reactions*** or side effects

- Review ***anemia*** management. Assess relevant labs, including trends **(labs - hemoglobin, transferrin saturation, ferritin trends)** and most recent EPO/iron therapy (dose, route, duration), and replavite (most recent fill and how/who administered for PD/clinic patients). Evaluate patient for possible EPO hyporesponsiveness, adverse effects. Recommend appropriate adjustments per protocol or pharmacist judgment.
  - KDIGO Anemia guidelines (2012) http://www.kdigo.org/clinical_practice_guidelines/pdf/KDIGO-Anemia%20GL.pdf
  - KDIGO Guidelines for CKD Management (2012) http://www.kdigo.org/clinical_practice_guidelines/pdf/CKD/KDIGO_2012_CKD_GL.pdf
  - Bennett CL, Becker PS, Kraut EH, Samaras AT, West DP. Intersecting Guidelines Administering Erythropoiesis Stimulating Agents to CKD patients with cancer. *Semin Dial*. 2009;22(1):1-4. http://www-ncbi-nlm-nih-gov.proxy2.lib.umanitoba.ca/pubmed/?term=19175532
  - CSN Anemia Management Guidelines Kidney International (2008) 74 (Suppl 110), S1–S24 http://www.nature.com/ki/journal/v74/n110s/full/ki2008270a.html
  - KDOQI Anemia Management Guidelines (2006) http://www.kidney.org/professionals/KDOQI/guidelines_anemia/index.htm
  - KDOQI Anemia Management Guidelines (Update 2007) http://www.kidney.org/professionals/KDOQI/guidelines_anemiaUP/index.htm
  - CSN Guidelines for patients with CKD not receiving dialysis (2008) http://www.cmaj.ca/content/179/11/1154.full.pdf+html
  - TREAT Trial http://www.nejm.org/doi/full/10.1056/NEJMoa0907845
  - FDA ESA warning http://www.fda.gov/drugs/drugsafety/postmarketdrugsafetyinformationforpatientsandproviders/ucm109375.htm

- Review ***mineral and bone disease***. Assess relevant lab values **(labs - corrected calcium, phosphate, PTH trends, ALP, albumin)** calcium bath concentration, parathyroidectomy surgical history and most recent phosphate binder/calcitriol /cinacalcet therapy. (Note, at some MRP sites, some aspects of this care are provided by dieticians)
    - KDIGO MBD (2008) http://www.kdigo.org/guidelines/mbd/index.html
    - Raymond CB, Wazny LD, Sood A. Update on the new Kidney Disease: Improving Global Outcomes (KDIGO) guidelines for mineral and bone disorders (MBD)--a focus on medications. CANNT J, 2010;20(1):42-8 http://www-ncbi-nlm-nih-gov.proxy2.lib.umanitoba.ca/pubmed/20426360
    - MRP Guidelines for use of cinacalcet (available by email)
    - Raymond CB, Wazny LD, Sood A. Sodium thiosulfate, bisphosphonates, and cinacalcet for calciphylaxis . CANNT J, 2009; 19(4):25 http://www-ncbi-nlm-nih-gov.proxy2.lib.umanitoba.ca/pubmed/20136032
    - CSN Guidelines for patients with CKD not receiving dialysis (2008) http://www.cmaj.ca/content/179/11/1154.full.pdf+html

- Determine if any medications are required or need to be adjusted for ***cardiac risk*** reduction after evaluation of cardiac history and risk (presence of MI, CAD, angina, CHF, TIA, a fib, diabetes, smoking status, hypertension, PVD), relevant lab values **(labs - lipid profile monitor MIBI, echo)** and use of aspirin, clopidogrel, ACE/ARB, BB, CCB, NTG, statin, diuretic, and anticoagulants **(labs INR warfarin, LMWH creatinine for clinic patients, platelets, all monitor drug interactions)**.
    - Herzog CA, eta l. Cardiovascular disease in chronic kidney disease. A clinical update from Kidney Disease: Improving Global Outcomes (KDIGO). (2011) http://www.kdigo.org/pdf/KDIGO%20CVD%20Controversy%20Rpt.pdf
    - Cheung AK, Henrich WL. Secondary prevention of cardiovascular disease in end-stage renal disease (dialysis) UpToDate V 10.2. http://www.uptodate.com.proxy2.lib.umanitoba.ca/contents/secondary-prevention-of-cardiovascular-disease-in-end-stage-renal-disease-dialysis?source=search_result&search=cardiovascular+disease+and+kidney+disease&selectedTitle=12%7E150
    - Gibson CM, Henrich WL. Chronic kidney disease and coronary heart disease. UpToDate V 10.2. http://www.uptodate.com.proxy2.lib.umanitoba.ca/contents/chronic-kidney-disease-and-coronary-heart-disease?source=search_result&search=cardiovascular+disease+and+kidney+disease&selectedTitle=2%7E150
    - Bell et al The use of antiplatelet therapy in the outpatient setting: Canadian Cardiovascular Society Guidelines Executive Summary. Can J Cardiol 2011 Mar-April 27(2):208-21 http://www.ncbi.nlm.nih.gov.proxy2.lib.umanitoba.ca/pubmed/21459270
    - KDOQI Cardiovascular disease in Dialysis (2005) http://www.kidney.org/professionals/KDOQI/guidelines_cvd/index.htm
    - CSN Guidelines for patients with CKD not receiving dialysis (2008) http://www.cmaj.ca/content/179/11/1154.full.pdf+html
    - KDIGO Guidelines for CKD Management (2012) http://www.kdigo.org/clinical_practice_guidelines/pdf/CKD/KDIGO_2012_CKD_GL.pdf

- Review ***blood pressure*** (and for clinic patients antiproteinuric therapies) including ACE/ARB, BB, CCB, diuretic and other antihypertensives **(monitor – pre-dialysis, post dialysis, intradialytic, clinic, dry weight, home BP machine, recent change)**

- KDIGO Guidelines for Blood Pressure in CKD (2012) http://www.kdigo.org/clinical_practice_guidelines/pdf/KDIGO_BP_GL.pdf
- KDIGO Guidelines for CKD Management (2012) http://www.kdigo.org/clinical_practice_guidelines/pdf/CKD/KDIGO_2012_CKD_GL.pdf
- Henrich WL, Mailloux LU. Hypertension in dialysis patients. UpToDate V 10.2 http://www.uptodate.com.proxy1.lib.umanitoba.ca/contents/hypertension-in-dialysis-patients?source=related_link
- Kaplan NM, Rose BD. Hypertension in kidney disease. UpToDate V 10.2 http://www.uptodate.com.proxy1.lib.umanitoba.ca/contents/hypertension-in-kidney-disease?source=search_result&search=hypertension+and+chronic+kidney+disease&selectedTitle=1%7E150
- CSN Guidelines for patients with CKD not receiving dialysis (2008) http://www.cmaj.ca/content/179/11/1154.full.pdf+html
- KDOQI Hypertension (2004) http://www.kidney.org/professionals/KDOQI/guidelines_bp/index.htm

- Review ***diabetes*** management, including dialysis and home blood glucose monitoring, relevant lab values **(labs - HbA1c, creatinine for clinic patients, monitor drug interactions)** use of hypoglycemic agents (including especially subcutaneous and intraperitoneal insulin), adverse effects (including hypoglycemia), appropriate medication administration, consults to endocrinology, ophthalmology and recommend pharmacotherapy and or nondrug therapy as appropriate.
  - Berns SJ. Management of hyperglycemia in patients with end stage renal disease. UpToDate V 10.2. http://www.uptodate.com.proxy1.lib.umanitoba.ca/contents/management-of-hyperglycemia-in-diabetics-with-end-stage-renal-disease?source=search_result&search=diabetes+and+peritoneal+dialysis&selectedTitle=1%7E150
  - Canadian Diabetes Association Guidelines (2008) http://www.diabetes.ca/files/cpg2008/cpg-2008.pdf
  - KDOQI Diabetes and Chronic Kidney Disease (2007) http://www.kidney.org/professionals/KDOQI/guideline_diabetes
  - CSN Guidelines for patients with CKD not receiving dialysis (2008) http://www.cmaj.ca/content/179/11/1154.full.pdf+html
  - KDIGO Guidelines for CKD Management (2012) http://www.kdigo.org/clinical_practice_guidelines/pdf/CKD/KDIGO_2012_CKD_GL.pdf
  - KDOQI Clinical Practice Guideline for diabetes and CKD:2012 Update http://www.kidney.org/professionals/KDOQI/guidelines_diabetesUp/diabetes-ckd-update-2012.pdf

- Review ***pain management***, including source of pain, quantity, quality, therapies trialed, adverse effects, response to therapy, non-narcotic analgesics (d/c NSAIDs, COX2 in clinics), adjuvant medications, opiates **(labs, creatinine for clinic patients, monitor drug interactions, dose conversions between agents, appropriate refills and timing of refills)**, and recommend pharmacotherapy and or nondrug therapy as appropriate, including counseling on OTC analgesics.
  - Davison SN. The prevalence and management of chronic pain in end-stage renal disease. J Palliat Med 2007 Dec;10(6):1277-87. http://www-ncbi-nlm-nih-gov.proxy1.lib.umanitoba.ca/pubmed/18095806

- Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain http://nationalpaincentre.mcmaster.ca/opioid

- Review patient for ***peripheral neuropathy***, including source of pain, quantity, quality, therapies trialed, adverse effects, response to therapy, and recommend pharmacotherapy and or nondrug therapy as appropriate.
  - Naylor HK, Raymond CB. Treatment of neuropathic pain in patients with chronic kidney disease. CANNT J 2011;21(1):34-40 http://www-ncbi-nlm-nih-gov.proxy1.lib.umanitoba.ca/pubmed/21561014

- Review patient for ***restless leg syndrome***, including medications causing or exacerbating, therapies trialed, adverse effects, current symptoms and recommend pharmacotherapy and or nondrug therapy as appropriate.
  - Raymond CB, Breland L, Wazny LD, Sood AR, Orsulak CD. Treatment of restless legs syndrome in patients receiving dialysis – a focus on medications. CANNT J, 2010;20(2):29-35 http://www-ncbi-nlm-nih-gov.proxy1.lib.umanitoba.ca/pubmed/?term=20642163
  - International Restless Legs Syndrome Rating Scale http://www.medicine.ox.ac.uk/bandolier/booth/RLS/RLSratingscale.pdf

- Review patient for ***smoking status***, ask if patient is ready to quit and recommend pharmacotherapy and or nondrug therapy as appropriate.
  - Raymond CB, Naylor H. Strategies for smoking cessation in patients with chronic kidney disease. CANNT J 2010;20(4):24-31 http://www-ncbi-nlm-nih-gov.proxy1.lib.umanitoba.ca/pubmed/?term=21319580
  - WRHA smoking cessation resources http://home.wrha.mb.ca/prog/pph/tobacco/index.php or http://www.wrha.mb.ca/healthinfo/preventill/tobacco/resources.php

- Review patient for ***cramps*** including therapies trialed, adverse effects, current symptoms and pharmacotherapy and or nondrug therapy as appropriate.
  - Raymond CB, Wazny LD. Treatment of leg cramps in patients with chronic kidney disease receiving hemodialysis CANNTJ 2011;21(3):19-21 http://www-ncbi-nlm-nih-gov.proxy1.lib.umanitoba.ca/pubmed/?term=22013661

- Review patient for ***pruritis*** including therapies trialed, adverse effects, current symptoms and pharmacotherapy and or nondrug therapy as appropriate.

- Review patient for ***gastrointestinal*** issues (reflux, constipation, diarrhea, history of GI bleeding) including therapies trialed, adverse effects, current symptoms and pharmacotherapy and or nondrug therapy as appropriate

- Review patient for ***infectious diseases*** including line infections, skin infections, peritonitis, requiring treatment or prophylaxis for appropriate drug, dose duration. Consider signs and symptoms, previous infectious organisms **(labs - CBC, culture- vancomycin or aminoglycocide levels, creatinine for clinic patients, monitor ototoxicity for aminoglycosides)**
  - Vancomycin dosing Zelenitsky SA, Ariano RE, McCrae ML, Vercaigne LM. Initial vancomycin dosing protocol to achieve therapeutic serum concentrations in patients undergoing hemodialysis. *Clin Infect Dis*. 2012;55(4):527-33. http://www-ncbi-nlm-nih-gov.proxy1.lib.umanitoba.ca/pubmed/?term=22573855

- Review hemodialysis patient ***antibiotic locks*** for appropriate drug, dosing, duration and administration per MRP Policy 30.30.02, and 30.30.14 **(labs - CBC, culture)**
    - http://www.kidneyhealth.ca/wp/wp-content/uploads/MRP-PP-Manual-March-2011.pdf

- Review peritoneal dialysis patients with ***peritonitis*** for medication appropriateness and dosing **(labs - CBC, culture)**
    - QxMD PD Reference Guide available online and for download on Apple or Android devices at: **http://www.qxmd.com/references/access-care-guide**
    - DeVin F, Rutherford P, Faict D. Intraperitoneal administration of drugs in peritoneal dialysis patients: a review of compatibility and guidance for clinical use. Peritoneal Dialysis International, Vol. 29, pp. 5–15
      http://www.pdiconnect.com/content/29/1/5.full.pdf+html
    - Peritonitis Guidelines (2010) http://www.pdiconnect.com/cgi/reprint/30/4/393

- Review hemodialysis patients for ***phosphate and calcium additives to the dialysate*** if administered appropriate drug, dosing, duration and administration per according to MRP policy 60.50.02, 60.50.03 **(labs - corrected calcium, phosphate, PTH trends, ALP, albumin)**
    - http://www.kidneyhealth.ca/wp/wp-content/uploads/MRP-PP-Manual-March-2011.pdf

- Review renal health clinic and peritoneal dialysis patients for ***elevated potassium*** including medications causing or exacerbating, dietician recommendations, previous therapies and use of and pharmacotherapy and or nondrug therapy as appropriate **(labs - potassium).** In other sites, this is followed by dieticians unless pharmacists are specifically asked.
    - Raymond CB, Sood AR, Wazny LD. Treatment of hyperkalemia in patients with chronic kidney disease – a focus on medications. CANNT J 2010;20(3):49-54 http://www-ncbi-nlm-nih-gov.proxy1.lib.umanitoba.ca/pubmed/?term=21038829

- Review renal health clinic patients for ***metabolic acidosis*** including previous therapies and use of and pharmacotherapy as appropriate **(labs - bicarbonate)**
    - KDIGO Guidelines for CKD Management (2012) http://www.kdigo.org/clinical_practice_guidelines/pdf/CKD/KDIGO_2012_CKD_GL.pdf

- Contribute to MRP policies and procedures to facilitate appropriate ***vaccination*** status for Hepatitis B **(labs HbSAg, HbsAb, anti-HCV),** pneumonia and influenza according to MRP policy 60.30.04 and standardized order sets as appropriate. Pharmacists and nurses document and follow serology, while nurses and administer vaccines.
    - http://www.kidneyhealth.ca/wp/wp-content/uploads/MRP-PP-Manual-March-2011.pdf

- Review patient for ***psychotropic medications (antidepressants, antipsychotics, sedatives)*** drug dosing, adverse effects, drug interactions, potential for discontinuation and pharmacotherapy and or nondrug therapy as appropriate.
    - Hedayati SS, Yalamanchili V, Finkelstein FO. A practical approach to the treatment of depression in patients with chronic kidney disease and end-stage renal disease. *Kidney Int* 2012;81(3):247-55 http://www-ncbi-nlm-nih-gov.proxy1.lib.umanitoba.ca/pubmed/?term=22012131

- Review clinic patients for ***gout*** therapy: including drug choice, drug dosing, adverse effects, drug interactions, potential for discontinuation and pharmacotherapy and or nondrug therapy as appropriate.
- Review patient for **duplication** of pharmacologically or therapeutically similar medications
- Review patient for appropriate dosage form and route of administration
- Review patient for medication therapy not indicated
- Review patient for medication therapy which is indicated but not utilized
- Review patient for problems related to intravenous drug administration as requested by a nurse (e.g. IV incompatibilities, stability, rate of administration)
- Review patient for the use of the following high alert medications not mentioned previously*:* digoxin (labs levels, creatinine for clinic patients, potassium, magnesium, monitor drug interactions), lithium (labs levels, creatinine for clinic patients, monitor drug interactions), and immunosuppressive therapy (labs, creatinine for clinic patients, CBC, drug specific parameters e.g. TPMT, cyclosporine levels, monitor drug interactions)) as per WRHA Pharmacist Practice expectations. Additional medications can be monitored as determined by the individual pharmacist.
    - WRHA Pharmacist Practice Expectations http://home.wrha.mb.ca/prog/pharmacy/files/PharmacistPerformanceExpectations.pdf

B. The pharmacist shall perform the following **must-do activities** of a fully staffed weekday (prioritized with pharmacist professional judgment)

- *Provide drug information* for immediate patient care that day.
- *Provide student education* to U of M Pharmacy students and residents.
- *Provide monitoring and follow-up* of actions/recommendations made (e.g. resolution of DRP, individualization of medication therapy requiring follow-up).
- *Provide continuity of care* within the facility

C. The pharmacist shall perform the following ***desirable*** activities as appropriate (prioritized with pharmacist professional judgment)

- *Provide investigation of medication incidents or errors*.
- *Provide review/triage of HD or PD medication orders.*
    - Screening of medication order problems, appropriateness, duration, dosing and drug interactions as appropriate or on request from renal health team.
    - Contact prescribing nephrologist as necessary
- *Participate in MRP and WRHA initiatives (*e.g. drug protocol development, pre printed orders review, committees, development of policy and procedures).
- *Provide education related activities to health professionals*
- *Provide drug information* not needed immediately (e.g. future patient care, interest).
- *Provide continuity of care between WRHA facilities* when patients' are transferred.
- *Provide drug use management activities* including prospective audits.
- *Participate in projects or research.*

APPENDIX 1: Prioritization of Pharmacist Activities

#	Pharmacist Activities	Regular M-F day	Short Staffed	
1	Attend clinic (HD, PD, CKD) as appropriate at site	M	M	Depends on severity for all situations
2	Attend multidisciplinary patient care rounds as appropriate	M	M	Depends on severity for all situations
3	Discharge (or transfer) medication reconciliation	M	M	
4	Review monthly bloodwork as appropriate at site	M	M	Depends on severity for all situations
5	Perform detailed medication reviews to identify actual and potential DRPs and to document recommendations, monitoring and follow up (priority new starts to HD or PD)	M	M	Depends on severity for all situations
6*	Provide drug information for immediate patient care that day.	M	M	
	Provide student education to U of M Pharmacy students and residents when scheduled	M	M	
	Provide monitoring and follow-up of actions/recommendations made (e.g. resolution of DRP, individualization of medication therapy requiring follow-up).	M	S	Needs to be selective
	Provide continuity of care within the facility	M	S	
10	Provide investigation of medication incidents or errors.	S	S	
11	Provide review/triage of HD or PD medication orders	S	S	Depends on severity for all situations
12	Participate in MRP and WRHA initiatives (e.g. drug protocol development, pre printed orders review, committees, development of policy and procedures).	S (see criteria)	None	
13	Provide education related activities to health professionals	S	None	
14	Provide drug information not needed immediately (e.g. future patient care, interest).	S	None	Needs to be selective
15	Provide continuity of care between WRHA facilities when patients are transferred.	S	None	
16	Provide drug use management activities including prospective audits.	S	none	
17	Participate in projects or research.	S	None	

* Prioritized within this category with pharmacist professional judgement

NOTE: M = "Must Do" activity
S = "Should Do" activity

CJHP manuscript (accepted for publication Aug. 2013)
Renal pharmacist clinical standards of practice

Introduction

The prevalence of chronic kidney disease (CKD) continues to increase.<1> Patients with stage 1-5 CKD and those receiving dialysis are at extremely high risk for drug therapy problems (DTPs).<2,3> In controlled trials in general patient populations, clinical pharmacist interventions have shown to reduce hospital admissions, length of hospitalization, readmissions and emergency department visits.<4-7> Pharmacist activities most associated with improved patient outcomes include participation on rounds, interviewing patients, performing medication reconciliation, discharge counseling and post-discharge follow-up.<5> A systematic review of eight controlled trials in patients with CKD, found that clinical pharmacist interventions improved management of anemia, blood pressure, lipids, as well as calcium and phosphate parameters. Pharmacist interventions were found to reduce hospital admissions, length of hospitalization and incidence of end-stage renal disease or death.<8>

The Manitoba Renal Program (MRP) provides comprehensive renal care for the province of Manitoba, Canada (population 1.2 million). The MRP provides care at four urban hospitals and 12 rural hemodialysis units. Health services offered include in-centre hemodialysis (HD), peritoneal dialysis (PD), home HD, and interprofessional renal health clinics for individuals with stage 1-5 CKD not requiring renal replacement therapy. Currently, the MRP has approximately 1100 HD patients, 285 PD patients, and nearly 4500 patients with stage 1-5 CKD.

Description of the Pharmacy Practice Model

The MRP pharmacists operate within a patient-centered medication therapy management model to provide care for patients with stage 1-5 CKD and receiving dialysis within the MRP.<9> The MRP has a unique funding structure with one full time equivalent (FTE) clinical pharmacist for every 100 HD patients, 200 PD or home HD patients, and 300 patients with stage 1-5 CKD. <10> This funding structure provides equitable and consistent patient care across the province, and allows the pharmacists to perform patient care, research and serve as educators. As of 2013, 11.8 full time employee (FTE) clinical pharmacists are employed within the MRP. They include 19 individual MRP pharmacists who range from 0.2 to 1.0 FTE devoted to the MRP. On average, the MRP pharmacists spend 90% (range 20%-100%) of their MRP time performing activities related to direct patient care within the MRP with the remainder of their time performing drug distribution in the hospital inpatient pharmacy. The MRP pharmacists attend all nephrologist clinics which include separate clinics for: stage 1-5 CKD (pharmacists focus on Stage 4-5 CKD and Stage 1-3 CKD receiving pharmacotherapy for glomerulonephritis); PD; home HD; rural HD (pharmacist see all dialysis patients in clinic). They also staff the in-centre hemodialysis units at each urban hospital and liaise via telephone with the hemodialysis units for 16 rural hemodialysis units. The MRP pharmacists practice at different institutions that are geographically separate, with different pharmacy managers, practice patterns, clinic structure, patient populations and with different nephrologists within the MRP. However, the MRP pharmacists meet at least every two months in person and via teleconference to discuss clinical and operational issues affecting renal pharmacists in the program. Two of the pharmacists have post-baccalaureate Doctor of Pharmacy training that focus on HD and PD, respectively and serve as clinical practice leaders for the MRP pharmacists.

Development and Evaluation of the MRP Renal Program Standards of practice

We sought to develop MRP pharmacist clinical standards of practice (standards of practice). The purpose of the renal pharmacist clinical standards of practice is to define and prioritize core activities that pharmacists must perform on a regular weekday with full staffing

levels. We evaluated the literature describing the role of the renal clinical pharmacist, surveyed MRP pharmacists about existing clinical pharmacist services, met with pharmacy and MRP stakeholders and evaluated existing pharmacist standards of practice and existing MRP pharmacist activities and practices.<12> A small working group of MRP pharmacists developed a draft set of renal pharmacist clinical standards of practice. The draft was distributed widely to all MRP pharmacists to obtain feedback on multiple occasions. Feedback for priority activities was obtained from nephrologists. Consensus was achieved and all MRP pharmacists, pharmacy managers and nephrologist medical directors have adopted the final version of the renal pharmacist clinical standards of practice (Table 1). A list of drug therapy problems (DTPs) commonly experienced by patients with CKD that MRP pharmacists routinely evaluate patients for is outlined in Table 2. Local policies and procedures, patient safety initiatives and published guidelines are incorporated into the standards of practice and can be updated accordingly.

Implications for Practice

Creation of renal pharmacist standards of practice across diverse practice environments and numerous pharmacists allows for a common method to perform and prioritize clinical pharmacist activities and to aid in the training of new staff. Across the MRP, the pharmacists typically assess patients prior to the nephrologist. Therefore, the pharmacist's documentation is critical to ensuring an accurate medication list is on the chart and DTPs are identified prior to the Nephrologists review. This streamlined approach prevents DTPs and helps to resolve existing DTPs quickly. The use of a set of standards of practice as a common approach to patient assessment provides continuity of pharmacist care across the MRP. For example, we have used standards of practice to develop a standard medication review template for HD and PD patients which becomes part of the medical record (Table 3). Within the MRP, we have used the standards of practice as guidelines, and for training purposes. Future use could include using the standards to develop criteria for competency assessment or to inform performance appraisals.

Others have developed and validated a list of criteria to assess medication safety and use issues in patients with CKD in order to identify DTPs.<11> However, this list of DTPs is based on community pharmacist interventions. The specialized renal pharmacists have the advantage of access to patient care records and have developed trusting relationships with the nephrologists, which facilitates optimization of medication therapy.. The renal pharmacist standards of practice document describes renal specific DTPs, but also describes processes and priorities for renal pharmacists operating as members of an interprofessional team.

Conclusion

The renal pharmacist standards of practice are a unique set of evidence based practice guidelines that can serve to educate and train renal pharmacists, students or trainees completing a renal pharmacy rotation. Furthermore, the standards of practice can serve as a tool to standardize patient care, set priorities, develop criteria for competency assessment and inform performance appraisals for renal pharmacists. Additionally, centres without funding for renal pharmacists can use the standards of practice to justify funding renal pharmacists.

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Table 1. Renal pharmacist clinical standards of practice

The pharmacist must perform these core clinical activities on a fully staffed weekday* (in order of priority):

1. Attend all MRP clinics (includes PD, home HD, rural HD and CKD stage 1-5 seen in 24 half day clinics per week):
    - Review laboratory test results and medications for all patients.
    - Document in health record any recommendations, suggestions or further patient information required for patients not seen by a pharmacist.
    - For patients seen by a pharmacist, generate best possible medication history, perform medication reconciliation <13> and detailed medication review.
2. Attend multidisciplinary patient care rounds (twice weekly for HD/PD patients)
    - Contribute to interprofessional discussion about patients.
    - Identify admitted patients for discharge medication reconciliation.
    - Identify patients for pharmacist medication review.
3. Perform discharge (and transfer) medication reconciliation for admitted patients receiving dialysis prior to discharge or at first subsequent dialysis session (HD). <13>
    - Reconcile inpatient medications with home and in-centre hemodialysis medications.
    - Perform detailed medication review (Table 2) and document recommendations in the patient's medical record.
    - Write discharge prescription for medications including appropriate medications for in-centre hemodialysis and new medications started in hospital. Contact prescribing nephrologist to make recommendations and confirm prescription.
    - Provide patient with medication card and patient counseling.
4. Review monthly laboratory test results for HD patients.
5. Perform detailed medication review for new starts to HD or PD (Table 2) within two weeks.
6. Perform detailed medication review for other patients (Table 2).

Perform the following must do activities (prioritized with pharmacist professional judgment)

- Ensure follow up laboratory tests are ordered based on pharmacist recommendations.
- Ensure patients have adequate prescriptions and refills.
- Liaise with community pharmacy as appropriate. (e.g. to facilitate prescription delivery, compliance aid, drug coverage).
- Liaise with patient, caregivers, family members and other healthcare professionals as appropriate to provide medication related information to or for patients.
- Provide drug information for immediate patient care that day.
- Provide education to pharmacy students and residents.
- Provide monitoring and follow-up for recommendations.†
- Provide communication between MRP and other pharmacists within the facility. †

The pharmacist shall perform the following desirable activities as appropriate and as pharmacist is available:

- Participate in MRP and pharmacy program initiatives (e.g. drug protocol development, pre printed orders review, committees, development of policy and procedures, responding to drug shortages).
- Provide education related activities to health professionals.
- Provide communication between MRP and other pharmacists at another facility.

- Provide drug information not needed immediately.
- Perform drug use management activities including prospective audits.
- Participate in projects or research.
- Provide investigation of medication incidents or errors.
- Provide review/triage of medication orders to identify DTPs, appropriateness, duration, dosing and drug interactions (as a separate activity to a medication review, medication reconciliation or a MRP clinic visit).

MRP – Manitoba Renal Program, HD – hemodialysis, PD peritoneal dialysis, CKD – chronic kidney disease, DTP – drug therapy problem

* Evening HD patients are reviewed and seen by pharmacists who work later shifts periodically in order that all patients are seen by a pharmacist. Weekend pharmacist coverage consists of centralized dispensary pharmacist coverage at each site. † These activities are "should do" activities when short staffed

Table 2 Reviewing patients with chronic kidney disease for drug therapy problems

General medication review process.

- For new dialysis patients, prior to nephrologist review or clinic visit (every six months to one year), or at the request of another health professional (Table 3).
- Interview patient, caregivers, family members and other healthcare professionals
- Generate of best possible medication history and perform medication reconciliation.<13>
- Review laboratory test results, investigations, physical findings and medications to identify DTPs.
- Document medication review, DTPs and recommendations in the medical record
- Identify and resolve actual/potential DTPs during discharges, medication reviews, clinic visits, between clinic visits after review of laboratory test results, on medication order review or detailed medication review.

Assess patient for general DTPs: <14-20>

- allergies/intolerances
- drug drug interactions
- adverse drug reactions
- medication causing or exacerbating a symptom
- duplication of pharmacologically or therapeutically similar medications
- appropriate dosage form and route of administration
- medication therapy not indicated
- medication which is indicated but not utilized
- medication adherence
- problems related to IV administration
- medications that require renal dose adjustments
- medications that are that are contraindicated in CKD or that should be minimized
- medications that are no longer required in dialysis

Assess the patient for DTPs specific to CKD by assessing the following:

- Anemia. Assess hemoglobin, transferrin saturation, ferritin, use of erythropoietic stimulating agent, iron, and renal multivitamin. Consider erythropoietin hyporesponsiveness.<21-26>
- Mineral and bone disease. Assess corrected calcium, serum phosphate, parathyroid hormone, alkaline phosphatase, albumin, calcium bath concentration, phosphate and calcium additives to the dialysate, surgical history (for parathyroidectomy), use of phosphate binders, vitamin D analogue, or cinacalcet. Liaise with dietitian about diet.<27,28>
- Cardiovascular risk. Assess for presence of cardiovascular disease and risk factors, and therapies to reduce this risk (antiplatelets, anticoagulants, antihypertensives, statins, antianginal therapies and antiarrhythmics).<28-30>
- Hypertension and proteinuria. Assess BP pre-dialysis, post dialysis, intradialytic, at clinic, home, dry weight, proteinuria, antihypertensives and antiproteinuric therapies.<28,31>
- Diabetes. Assess glucose monitoring pre-dialysis, post dialysis, clinic, and at home, glycated hemoglobin, and use of hypoglycemic agents.<28,32-34>
- Pain. Assess source of pain, quantity, quality and use of opioids, NSAIDs and adjunctive

therapies.<35,36>

- Peripheral neuropathy. Assess source of pain, quantity, quality and use of antidepressants, anticonvulsants and opioids. <37>
- Restless leg syndrome. Assess symptom severity and frequency, sleep disturbance, daytime fatigue, and use of dopamine agonists, gabapentin, levodopa, benzodiazepines or opioids <38,39>
- Smoking status. Assess readiness to quit, and use of NRT, bupropion or varenicline, provide education <40>
- Cramps. Assess symptom severity and frequency, use of quinine, vitamin E <41>
- Pruritis. Assess symptom severity and use of topical or systemic agents
- Gastrointestinal issues (e.g. reflux, history of bleeding, ulcer, dyspepsia, constipation, diarrhea). Assess signs and symptoms, use of antacids, laxatives, stool softeners, agents to treat diarrhea and use of NSAIDs or corticosteroids.
- Infectious diseases (e.g. line infections, skin infections, peritonitis) requiring treatment or prophylaxis including antibiotic locks and intraperitoneal antibiotics. Assess signs and symptoms, cultures and sensitivities. <42-45>
- Hyperkalemia (for CKD stage 1-5 patients). Assess serum potassium, presence of hemolysed sample, use of potassium supplements, ACE inhibitors, ARBs, potassium sparing diuretics or other agents know to increase serum potassium. Assess use of potassium binding resins and diuretics. Liaise with dietitian regarding diet.<46>
- Metabolic acidosis (for CKD stage 1-5 patients). Assess serum bicarbonate concentrations and use of supplementation.<28>
- Depression, anxiety, insomnia. Assess consultations with other health professionals and use of antidepressants, antipsychotics, benzodiazepines, and sedatives.<47>
- Gout. (for CKD stage 1-5 patients) Assess serum uric acid level, frequency and severity of gout attacks and use of colchicine, NSAIDs or corticosteroids, allopurinol or febuxostat. <48>
- Review patient for the use of the following high alert medications: digoxin, lithium, phenytoin and immunosuppressive therapy.
- Vaccination status for Hepatitis B, pneumonia and influenza. Assess serology, and administration of vaccines.<28

DTPs – drug therapy problems, CKD chronic kidney disease, ACE – angiotensin converting enzyme inhibitors, ARBs – angiotensin receptor blockers, BP – blood pressure, NSAID non-steroidal anti-inflammatories, NRT – nicotine replacement therapy, IV - intravenous

Table 3 Manitoba Renal Program pharmacist medication review template

Date: DD/MM/YY Seen: □ In Unit □ Clinic □ Site Visit
Compliance Tools: □ Bubble Pack □ Dosette □ Other: _____
Community Pharmacy: _____ Kayexalate at home □ Yes □ No
Medications verified with: □ Patient/Caregiver □ Rx Label □ Pharmacy
□ Electronic prescription record □ Chart reviewed
Herbal Products: □ No □ Yes _____
OTC (other than as Rx): □ No □ Yes_____
Allergies/Intolerances: _____
ESRD Secondary to: _____ HD initiated on:_____
Comments: _____

Anemia:
Hgb_____ ESA _____
TSAT_____ IV iron_____
Ferritin_____ Replavite □ Yes □ No

Mineral Metabolism:
CorCa_____ PO4 binders_____
PO4_____ PTH_____
ALKPhos/GGT_____ Vitamin D_____
Ca^{2}++ bath_____ Parathyroidectomy □ No □ Yes _____

Cardiovascular disease:
History of: □ HTN □ Diabetes □ CVA/TIA □ MI □ A.fib □ CHF
□ Smoking □ Angina _____
Pre HD BP:_____ Post HD BP:_____ HR_____ Fluid up_____ L/tx
Lipid profile:_____(date) TC___ HDL___ LDL___ TG___ TC/HDL___
□ BB_____ □ ACE/ARB_____ □ ASA □ Clopidogrel
□ Statin_____ □ CCB_____ □ Warfarin □ Diuretic
(INR target_____)
□ NTG Spray_____

Diabetes:
□ 1 □ 2 HbA1c: ____(date) □ Ophthalmologist □ Endocrinologist _____
□ No Pre/Post HD glucose: _____/_____ Home glucose: _____
B.S.<4: □ No □ Yes _____□ Insulin_____
□ OHA: _____

Gastrointestinal Issues:
RLS/Leg Cramps:
Pruritis
Sleep Disturbances:
Pain Issues:
Therapeutic Drug Monitoring:
Other Issues:

Pharmacist Signature:_____ Date: DD/MM/YY

ESA – erythropoiesis stimulating agent
OTC – over-the-counter
Rx – prescription
IV – Intravenous
PCH – personal care home

MAR – medication administration record
BB – beta-blocker
PTH – parathyroid hormone
HD – hemodialysis
Hgb – hemoglobin
PO4 – phosphate
CVA – cerebrovascular accident
LDL – low density lipoprotein
CorCa – calcium corrected for albumin
DM – diabetes mellitus
CHF – congestive heart failure
TSAT – transferrin saturation
HTN – hypertension
A.Fib – atrial fibrillation
ESRD – end-stage renal disease
TIA – transient ischemic attack
MI – myocardial infarction
TC – total cholesterol TG – triglycerides
BP – blood pressure
HR – heart rate
Ca^{2}++ - calcium
OHA – oral hypoglycemic agent
HDL – high density lipoprotein
CCB – calcium channel blocker
HbA1c – glycosylated hemoglobin
B.S. – Blood Sugar
NTG – Nitroglycerin
RLS – Restless leg syndrome
NSAIDS – nonsteroidal anti-inflammatory drugs
ACE/ARB – angiotensin-converting enzyme inhibitor/angiotensin II receptor blocker