

BP Blogger

Inside this issue:

| | |
|---|-------|
| Myth 1: Not much kidney disease in LTC | 1 |
| Myth 2: No need to adjust med doses | 1 |
| Myth 3: It's safer to under dose coumadin to avoid bleeding | 2 |
| Myth 4: Don't use coumadin if they fall | 2 |
| BPGs and Resources | 2 |
| Contacts for Information | 1 & 2 |

Myth Busting: Medications: The Right Dosing Issue

Myth 1: Not much kidney disease in LTC

Kidneys are critical for good health. Their main task is to remove waste products from the body. We have two kidneys, the size of a clenched fist, one on either side of the spine under the lower ribs. Kidney disease or renal impairment is more common in older adults. It is especially common in long term care, up to 44% of men and 70% of women have renal impairment. The 3 leading causes of kidney failure are diabetes,

high blood pressure and glomerulonephritis. Kidney damage is diagnosed using blood, urine or imaging tests. Glomerular filtration rate (GFR) is used to classify the severity of kidney damage. Calculated creatinine clearance (CrCl) is used as an indirect estimation of kidney function. Kidney function is categorized as stages by the level of CrCl, Stage 5 is the worst. Chronic kidney disease is defined as either kidney damage or CrCl <60 ml/min for ≥3 months. However, renal impairment is still frequently not recognized in older adults. For Ontario's 75,000 LTC residents that means about 30,000 residents have renal insufficiency.

Did you know? The glomerular filtration rate (GFR) decreases by 1 ml/min per year over age 40. By 90, kidney functioning has decreased to 1/3 of their original capacity.

Myth 2: No need to adjust med doses



Prescribing for LTC residents presents several challenges due to their various illnesses and age-related decline in kidney function. Many medications are cleared by renal excretion and the clearance of these and their metabolites from the body is lowered with reduced kidney function. Inappropriate prescribing along with reduced kidney function increases the risk of adverse medication events in frail LTC residents such as falls, delirium, confusion, and agitation. In studies, 1 in 3 prescriptions were considered inappropriate for the calculated CrCl of residents. The medications most frequently prescribed inappropriately were allopurinol, glyburide, ranitidine, hydrochlorothiazide and metformin. Significant predictors for receiving an inappropriate medication were advancing age, number of

| CrCl Calculations for Men | |
|-----------------------------|--|
| = | $(140 - \text{age}) \times \text{weight (kg)} / \text{Serum creatinine } (\mu\text{mol}) \times 0.8$ |
| CrCl Calculations for Women | |
| = | Men CrCl x 0.85 |

| Stages of Chronic Kidney Disease | | | What About LTC Residents? |
|----------------------------------|--------------------------|---|---------------------------|
| | Kidney Damage with | CrCl value (ml/min/1.72m ²) | |
| 1 | Normal or increased CrCl | ≥90 | 33% have CrCl <30 |
| 2 | Mild decreased CrCl | 60-89 | |
| 3 | Moderate decreased CrCl | 30-59 | 40% have CrCl <60 |
| 4 | Severe decreased CrCl | 15-29 | |
| 5 | Kidney failure | <15 or dialysis | |

<http://www.kidney.sk.ca/kidneydisease/stages/index.html>
The Kidney Foundation of Canada www.kidney.ca

prescribed medications, and number of physicians prescribing the medications in the LTC home. Equations to predict creatinine clearance from serum creatinine such as the **Cockcroft-Gault formula** have been shown to give more valid and practical estimates of kidney function since with aging, serum creatinine increases and muscle mass decreases. Unfortunately, renal function is often overlooked by physicians and nurses when medication therapies are being considered or changed.

So what does this mean for a 90 yr old resident who weighs 50kg with a serum Cr of 110?

It means that usual med doses need to be cut in 1/2

More information on This and Other Best Practices

• **Contact** your **Regional LTC Best Practices Coordinator**. They can help you with Best Practices Info for LTC. **Find them at:**

- www.rgpc.ca
Click on Long Term Care
- www.shrtn.on.ca
Click on Seniors Health

• **Check out** the **Hamilton Long Term Care Resource Centre** www.rgpc.ca

• **Surf the Web** for BPGs Some sites and

resources are listed on [page 2](#). ©MLvanderHorst



Regional Geriatric Program Central (Centre of Excellence in Inter-professional Practice Collaborative Geriatric Care) and The Long-Term Care Resource Centre (SHRTN), Hamilton



Cutting Through the Foggy Myths Using Best Practice Guidelines in Long Term Care

Editor

Mary-Lou van der Horst
Geriatric Nursing /Knowledge Translation Consultant (GIIC)
Regional Geriatric Program - Central St. Peter's Hospital
88 Maplewood Ave., Hamilton, ON. L8M 1W9
marylou1harold@explornet.com

Library Support Services

Shannon Buckley
SHRTN Library Services-Hamilton Long Term Care Resource Centre
88 Maplewood Ave., Hamilton ON L8M 1W9
SBuckley@stpetes.ca

Find it on the Web at
www.rgpc.ca or www.shrtn.on.ca

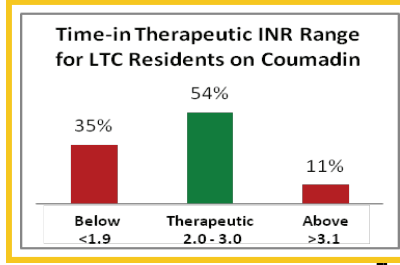
Myth 4: Don't use coumadin if they fall

The risk of falling and hitting the head with the potential to develop an internal head bleed if often considered a reason why not to start anticoagulation in residents. High risk residents with a history of falling usually have multiple medical conditions along with physical and function issues. Studies have shown that residents do respond favourably to coumadin. For residents who fall, physicians may use a careful approach. Studies confirm that the risk

Myth 3: It's safer to under dose Coumadin to avoid bleeding

thinner" or anticoagulant that is used to prevent blood clots from forming or getting larger. Most often, it's residents who have had a stroke, blood clot in their legs, TIAs (transient ischemic attacks) or have atrial fibrillation that are taking this medication. **Maintaining a therapeutic level of coumadin is critical to ensure it's effective.** This is a balancing act between taking enough coumadin to prevent a clot from forming while at the same time making sure you don't take too much so that you spontaneously bleed. To measure if a resident is within therapeutic range, their blood INR (international normalized ratio) is measured. **Ideal range for INR is 2.0 to 3.0.** Studies have

Coumadin (Warfarin) is often prescribed to LTC residents. It is a "blood



The Facts on INR Levels: Clots/Bleeding

- Combined risk of stroke/clot & bleeding:**
- When maintained at 2-3: the risk per year is 4.3%
 - When maintained at less than 2: risk per year jumps to 10.6%
 - When maintained at 3-5: risk is 7%
 - If greater than 5: the risk jumps to 52%
- Conclusion:** Keep the resident in INR range of 2-3. Running low INRs (below 2) triples the risk for stroke or bleed. Clearly, avoid INRs greater than 5. (Oake et al., 2008)

were within, below and above INR therapeutic range: 54%, 35% and 11% of the time. They also found that 20% of the time, the INR was not measured within 7 days after starting or a change in medication dose. In addition, many physicians tend to use a careful approach and run INRs lower than 2 to minimize the risk of bleeding.



Check out these Best Practices & Guidelines. Answers to the Myths came from them. Find out more!

Canadian:

Institute for Safe Medication Practices Canada (February 24, 2006). *ISMP Canada Safety Bulletin: Top 10 drugs reported as causing harm through medication error.* (December 30, 2006). *Appropriate anticoagulant use - A patient safety priority.* www.ismp-canada.org

Bédard, M. Klein, R. Papaioannou, A. Motyka, S. Hutchinson, L. And Clarke, J.A. (2003). Renal impairment and medication use among psychogeriatric inpatients. *Can J Clin Pharmacol.*, 10(2), 78-82.

Garb, A.X. Papaioannou, A. Ferko, N. Campbell, G. Clarke, J.A. And Ray, J.G. (2004). Estimating the prevalence of renal insufficiency in seniors requiring long-term care. *Kidney International*, 65, 649-653.

Juric Vratatic, J. (2006). Renal function in the elderly. Dosage adjustments for patients with renal insufficiency. *Tipps Clinical Update*, 2(1), 1-4.

Man-Son-Hing, M and Laupacis, A. (2003). Anticoagulant related bleeding in older persons with atrial fibrillation. *Arch Intern Med*, 163, 1580-586.

Papaioannou, A. Bedard, M. Campbell, G. Dubois, S. Ferko, N. Heckman, and Flett, N (2002). Development and use of a computer program to detect potentially inappropriate prescribing in older adults residing in Canadian long-term care facilities. *BMC Geriatrics*, 2(5), 1-7.

Papaioannou, A. Ray, G.R. Ferko, N.C. Clarke, J.A. Campbell, G. and Adachi, J.D. (2001). Estimation of creatinine clearance in elderly persons in long-term care facilities. *American Journal of Medicine*, 111, 569-573.

Papaioannou A, Clarke JA, Campbell G, and Bedard M. (2000). Assessment of adherence to renal dosing guidelines in long-term care facilities. *J Am Geriatr Soc.*, 48, 1470-1473.

Oake, N., Jennings, S., Forster, A.J., Fergusson, D., Doucetter, S., & Van Walraven, C. (2008). Anticoagulation intensity and outcomes among patients prescribed oral anticoagulant therapy: A systematic review and meta-analysis. *CMAJ*, 179(3), 235-244.

Verhovsek, M, Motlagh, B, Crowther, MA, Kennedy, C, Dolovich, L, Campbell, Wang, L and Papaioannou, A. (2008). Quality of anticoagulation and use of warfarin-interacting medications in long-term care: A chart review. *BMC Geriatrics*, 8(13), 1-6.

of having an internal head bleed from a fall is so small that a resident with the average risk of a stroke from atrial fibrillation (5%) and no major illnesses must fall 300x a year for the risk of the anticoagulation to outweigh its benefits. In fact, falling is usually not a reason to avoid starting anticoagulation medication. Research supports the stroke protection benefits of anticoagulation therapy in older adults especially those with a history of hypertension, left ventricular dysfunction diabetes and/or TIAs or stroke.

Did you know these medications interact with Coumadin?

- | | |
|----------------------|-------------------------|
| Acetaminophen | Citalopram |
| Acetylsalicylic acid | Diltiazem |
| Phenytoin | Ciprofloxacin |
| Sertraline | Cotrimoxazole |
| Metronidazole | Clarithromycin |
| Amiodarone | Amoxicillin-clavulanate |
| Miconazole | Propranolol |
| Fluvoxamine | Erythromycin |
| Fluconazole | Fluvastatin |
| Quinidine | Ropinerole |
| Celecoxib | Entacapone |

Studies found that 79% of residents were prescribed at least one coumadin-interacting medication

Did you know that these common medications should be either adjusted or avoided in LTC residents with CrCl 10-50?

| | | |
|---------------|---|-------------------|
| Alendronate | Hydrochlorothiazide | Paroxetine |
| Allopurinol | Levofloxacin | Perindopril |
| Arthrotec | Lithium Carbonate | Quinapril |
| Atenolol | Lisinopril | Ramipril |
| Captopril | Maalox | Ranitidine |
| Cilazapril | Meperidine | Risedronate |
| Ciprofloxacin | Metformin | Spirolactone |
| Digoxin | Milk of Magnesia | Tolterodine |
| Dyazide | Nitrofurantoin | Trimethoprim |
| Enalapril | NSAIDs (Celecoxib, Ibuprofen, Meloxicam, Naproxen, Tiaprofenic) | /Sulfamethoxazole |
| Famotidine | | Venlafaxine |
| Glyburide | | |

(Bédard et al, 2003; Juric Vratatic, 2006).

Special thanks to Ontario Regional Geriatric Program Central, Dr. Alexandra Papaioannou (Division of Geriatric Medicine, McMaster University), Medical Pharmacies Ltd., Seniors Health Research Transfer Network (SHRTN)

SUPPORTED BY: CIHR
Grant #KTS73426 Improving Prescribing of Medications and Patient Safety in LTC



Check out the October 2007 issue for more information on Medications

