Reviewer’s report

Title: The assessment of renal function in relation to the use of drugs in elderly in nursing homes; a cohort study

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Reviewer: Dharmapaul Raju

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The assessment of renal function in relation to the use of drugs in the elderly in nursing homes; a cohort study

Major Compulsory Revisions

Modig et al report a study which emphasizes the main concern with relying upon serum creatinine alone when assessing renal function in elderly nursing home patients with specific relationship to drug adverse reactions.

It has been previously well established that there is reduction in renal function with increasing age mostly due to loss of functioning nephron mass. Age results in a progressive decline in glomerular and tubular function. This superimposed upon deteriorating renal autoregulation makes elderly patients at increased risk for adverse effects of inappropriately adjusted medications and for progressive renal dysfunction.

Physicians are more cognizant that serum creatinine alone is an unreliable indicator of renal function in elderly patients. In particular, in those patients with advanced age and severe sacropenia. Though both glomerular filtration rate (GFR) equations (MDRD and Cockcroft-Gault) used in this study do utilize the patient’s age to estimate the GFR, they both tend to underestimate the true GFR. However, the MDRD equation is probably more accurate.

Measurement of Cystatin C has been shown to be a more precise measure of GFR, though it also has limitations. Specifically, cystatin C levels do rise with increasing age and in those patients with a higher lean body mass. Moreover, in patients with diabetes, thyroid disease and in those with elevated levels of inflammatory markers, levels of Cystatin C may be elevated (1).

The study itself draws data from a retrospective cohort on elderly nursing home patients. A significant portion of patients had decreased renal function as determined by Cystatin C measured GFR estimates. Though the study does report interesting observations the authors do not report any new conclusions, which add to the body of literature in this area. Moreover, laboratories in North America are more astute to the overreliance on serum creatinine alone on clinical decision making and are more commonly reporting calculated GFR estimates using the MDRD formula with the usual caveats of their limited utility in acute
kidney injury and those medications which interfere with serum creatinine excretion, etc.

The authors could improve the robustness of the study if they included additional data. Such as; were there any clinical adverse effects identified in patients whose medications were not adjusted for reduced renal function? Furthermore, were there any instances of progression of renal disease; in particular in those patients who were taking NSAIDs, or more importantly in patients concomitantly administered ACE inhibitors/ARBs? It would be interesting to see if any patients developed proteinuria, or increased quantity of proteinuria. One group of medications, which were not reported, was the use of diuretics in the study group. The use this class of medications would significantly affect the interpretability of the results and conclusions drawn.

There is also an assumption the medications such as digoxin and NSAIDs were clinically indicated in the study patients. The authors need to provide some comment as to whether these medications were clinically indicated and then they can include the comments already addressed with regards to appropriate dosage.

There should also a brief discussion with regards to cost-effectiveness of each laboratory method used and potential benefit of preventing a clinically significant adverse effect.


Discretionary Revisions

Page 2

Abstract

Line 1: Background: Renal function decreases with age.

Line 2: in order to avoid adverse reactions of medications and/or .....

Line 16: between the GFR estimates as concluded by other studies.

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Background

Line 1: Drug elimination through the kidneys is normally impaired in the elderly, both due to reduced renal

Line 2: blood flow and pertubations in glomerular filtration rate (GFR) [1]. In addition, elderly patients have many comorbidities

Line 3: such as hypertension, diabetes, and atherosclerotic
disease, which contribute to reduced renal function.

these adjustments are inadequately made by clinicians [3,4].

There are many

advanced coronary or lung illness, or concomitant use of contrast media.

of musculoskeletal disorders, particularly among the elderly [11].

from NSAIDs in the elderly is the precipitation or aggravation of congestive heart failure [16].

but can be common in patients with renal impairment, diabetes and those taking medications which interfere with renal potassium secretion.

but it is not an indication for discontinuing the medication. Eliminate the following sentence beginning with Angiotensin receptor blockers ....

There is not much research on.... Consider deleting

 ....better health, less adverse drug

reactions and reduce the number of unplanned hospital admissions.

The baseline comprehensive clinical assessment ...

<90umol/L.

NSAIDs.

quite commonly prescribed in elderly patients.

In 129 subjects who had cystatin.

function is common in this age group.

delete Thus, and start sentence with The clinical implication is ....

This is important to note as these patients often using many drugs and renal function has to be evaluated....
Line 18: There is an obvious risk that GFR overtime is…. consider deleting sentence or at least revising.

**Level of interest:** An article of limited interest

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests