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An assessment of the appropriate use of medicines in older patients with impaired kidney function, in a general practice setting

Margaret L. Jordan
*University of Wollongong, mjordan@uow.edu.au*

Julie M. Blaze
*University of Wollongong, jblaze@uow.edu.au*

Jeffrey G. Hall
*University of Wollongong*

Judy Mullan
*University of Wollongong, jmullan@uow.edu.au*

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Abstract

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An assessment of the appropriate use of medicines in older patients with impaired kidney function, in a general practice setting

2015 PHC RESEARCH CONFERENCE: POSTER ABSTRACT

Author(s)
Margaret Jordan*, Julie Blaze, Jeff Hall, Judy Mullan

Organisation
University of Wollongong, Illawarra and Southern Practice Research Network, Bulli Medical Practice

Aims & rationale
Many medicines prescribed in general practice require a dosage change as kidney function routinely declines with aging. Presently there lacks a systematic approach to identifying the patients at risk of a medication-related adverse event. The aim of this preliminary research was to investigate how kidney function is assessed and the appropriateness of use of medications in this general practice, in a population 65 years or older, by engaging a clinical pharmacist.

Methods
The first stage of the research was to retrospectively estimate the kidney function, via the Cockcroft-Gault equation (used for drug-dosing) and compare this with the measure of kidney function, the eGFR (estimated Glomerular Filtration Rate) provided by laboratories, of the recruited patients. Medications known to require attention when used in kidney impairment were recorded if used and their appropriateness analysed.

Findings
The kidney function and medicines of 96 patients were assessed retrospectively. The mean estimates of kidney function using the two assessments were statistically significantly different (45mL/min vs 63mL/min/1.73m2, p<0.0001). Over half (56%) of the patients had some degree of kidney impairment; 51 individual medicines that require attention in kidney impairment were prescribed. The majority of usage was
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Margaret Jordan¹,², Jeff Hall¹, Julie Blaze¹, Judy Mullan²

¹.Bulli Medical Practice  ².University of Wollongong

Background

Kidney function declines with age. Many medicines require care when used in older people. GPs’ self-reported errors¹ and medication-related hospital admissions² suggest that management could be improved.

Estimates of kidney function

<table>
<thead>
<tr>
<th>Glomerular filtration rate</th>
<th>Creatinine clearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Known as: eGFR</td>
<td>eCrCl</td>
</tr>
<tr>
<td>Availability: Routinely reported by labs</td>
<td></td>
</tr>
<tr>
<td>Intended use: Staging in kidney disease</td>
<td>Guides drug dosing</td>
</tr>
<tr>
<td>Clinical significance: eGFR &lt;60mL/minute/1.73m² (marker of CKD stage 3a)</td>
<td>Reduce drug dose/ precautions with: some medicines if &lt; 60mL/min many medicines if &lt; 50mL/min</td>
</tr>
</tbody>
</table>

Stages of kidney impairment

Aim

In a population 65 years or older, to investigate:

• how kidney function is assessed; and

• the appropriateness of use of medications in the presence of reduced kidney function;

in this general practice, by engaging a clinical pharmacist.

How GPs can assess kidney function:

• eCrCl calculated using Best Practice™ clinical tools
• reported eGFR

Findings

Records of 96 patients were reviewed.

Kidney function:

• All patients reviewed had kidney function assessed;

• CrCl was not estimated for patients to guide drug-dosing;

• cohort means of eGFR & estimated CrCl were statistically significantly different:

63mL/min/1.73m² vs 45mL/min, p<0.0001. See Figure.

• Over half (56%) had reduced kidney function requiring caution with medicines

Appropriateness of medicines:

• 64% of medicines used in patients with impaired kidney function were managed appropriately for degree of kidney impairment

WHY WORRY ABOUT KIDNEY FUNCTION?

Case 1 (from review)

85 year-old female; medical history of hypertension, osteoarthritis, vascular disease, haematuria, osteopenia, atrial fibrillation and history of stroke

Commenced dabigatran 150mg (an anticoagulant) twice daily; to reduce her risk of stroke.

Admitted to hospital with upper GIT haemorrhage.

eGFR 31 – 42 mL/min/ 1.73m²; eCrCl 23–30mL/min.

Dabigatran contraindicated

Case 2 (from review)

88 year old female; medical history of diabetes, heart failure, polymyalgia rheumatic; osteopenia

Commenced pregabalin 75mg twice daily (neuropathic pain)

Confused, drowsy; two falls in 2 days.

eGFR 40mL/min/1.73m²; eCrCl 25–30mL/min

recommened dose 25–50mg daily (% dose given)

Target medicines

From the analysis of appropriateness of medicines, GPs developed the list of TARGET medicines; for “recall & review” of patients

<table>
<thead>
<tr>
<th>Medicines and groups</th>
<th>Use with reduced kidney function</th>
</tr>
</thead>
<tbody>
<tr>
<td>anticoagulants (non-vitamin K antagonists)</td>
<td>apixaban (Eliquis™) dabigatran (Pradaxa™) rivaroxaban (Xarelto™)</td>
</tr>
<tr>
<td>Low dose; risk of adverse effects</td>
<td></td>
</tr>
<tr>
<td>antidiabetics*</td>
<td>gliclazide (Glibizide™) gliclazide (Glibizide™)</td>
</tr>
<tr>
<td>Risk of low blood sugar</td>
<td></td>
</tr>
<tr>
<td>Targeted for people with comorbidities</td>
<td></td>
</tr>
<tr>
<td>metformin</td>
<td>Low dose; risk of adverse effects</td>
</tr>
<tr>
<td>digoxin</td>
<td>Monitor kidney function and potassium</td>
</tr>
<tr>
<td>Digoxin levels at 6 hours after last dose</td>
<td></td>
</tr>
<tr>
<td>statins e.g. simvastatin 80mg</td>
<td>Contra-indicated</td>
</tr>
<tr>
<td>pregabalin (Lyrica™)</td>
<td>Lower starting doses and maximum dose</td>
</tr>
<tr>
<td>Adverse effects+++</td>
<td></td>
</tr>
</tbody>
</table>

* newer antidiabetic agents (SGLT2 inhibitors) also require caution but were not used in this practice

Relevance to research and practice needs

Although the majority of medicines are managed appropriately, the engagement of the pharmacist has helped identify medicines to target in this “high-risk” population.

Feedback, recall and review are underway to improve the quality use of these medicines within this general practice.
appropriate; medicines identified as requiring more attention included non-vitamin K oral anticoagulants, pregabalin, digoxin, nitrofurantoin, simvastatin, metformin and allopurinol.

Relevance to policy, research and/or practice needs

This general practice manages medicines in a high-risk population appropriately in most instances. Following research will be to assess the implementation of practice changes for kidney assessment and management of specific medicines.

Presentation type
Poster
Session theme
Research collaboration

Citation