2015

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

Publication Details

Jordan, M., Blaze, J., Hall, J. & Mullan, J. (2015). An assessment of the appropriate use of medicines in older patients with impaired kidney function, in a general practice setting. 2015 Primary Health Care Research Conference: Program & Abstracts (p. 1). Australia: Primary Health Care Research and Information Service.

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

Abstract
Poster presentation at 2015 Primary Health Care Research Conference, Adelaide, Australia, 29-31 July.

Disciplines
Medicine and Health Sciences | Social and Behavioral Sciences

Publication Details
Jordan, M., Blaze, J., Hall, J. & Mullan, J. (2015). An assessment of the appropriate use of medicines in older patients with impaired kidney function, in a general practice setting. 2015 Primary Health Care Research Conference: Program & Abstracts (p. 1). Australia: Primary Health Care Research and Information Service.

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

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

Margaret Jordan[1,2], Jeff Hall[1], Julie Blaze[1], Judy Mullan[2]

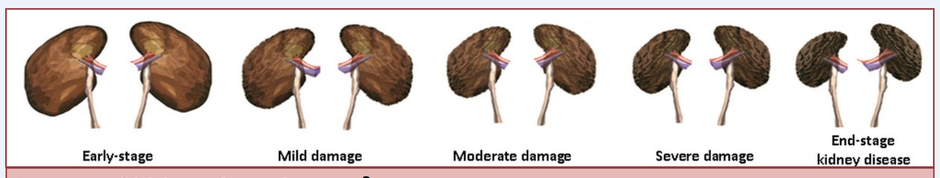
1.Bulli Medical Practice 2.University of Wollongong

Background

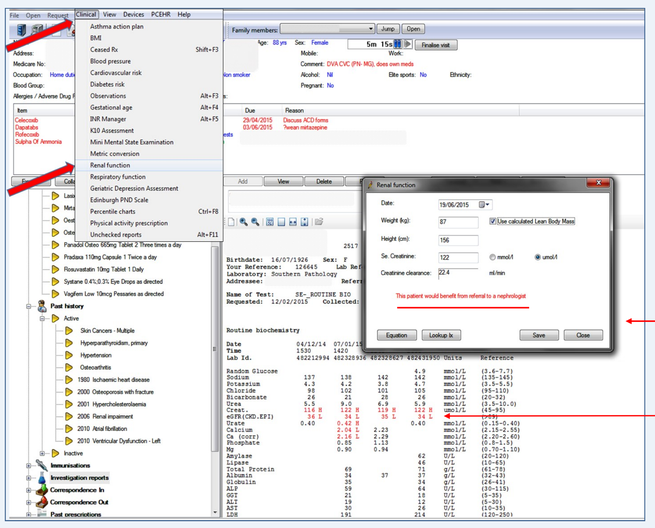
Kidney function declines with age. Many medicines require care when used in older people. GPs' self-reported errors[1] and medication-related hospital admissions[2] suggest that management could be improved.

Estimates of kidney function

	Glomerular filtration rate	Creatinine clearance
Known as:	eGFR	eCRCl
Availability:	Routinely reported by labs	Calculated using: * medical software * MDCalc©
Intended use:	Staging in kidney disease	Guides drug dosing
Clinical significance:	eGFR <60mL/minute/1.73m^2 - marker of CKD (stage 3a)	Reduce drug dose/ precautions with: * some medicines if < 60mL/min * many medicines if < 50mL/min



Stages of kidney impairment[3]



How GPs can assess kidney function:

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

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;

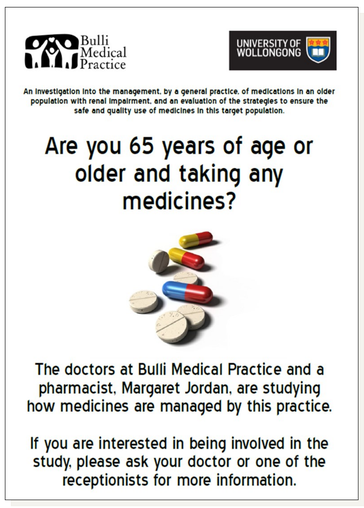
in this general practice, by engaging a clinical pharmacist.

Methods

After consent, patients' records were retrospectively reviewed by the pharmacist, for 2 years for:

* measures of kidney function (serum creatinine, eGFR); and
* medications that require caution in reduced kidney function.

Estimates of kidney function were compared and medicines were assessed for appropriateness, based on current recommendations for dosing and monitoring when kidney function is reduced.



Reference

1. Makeham, M, Kidd, M, et al., Lessons from the TAPS study: knowledge and skills errors. Australian Family Physician, 2008. 37(3): pp. 145.
2. Howard, R, Avery, A, et al., Which drugs cause preventable admissions to hospital? A systematic review. British Journal of Clinical Pharmacology, 2007. 63(2): pp. 136-147.
3. http://www.kidney.org.au/HealthProfessionals/DetectingCKD/tabid/632/Default.aspx

The researchers gratefully acknowledge the RACGP Foundation for their support of this project

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/1.73m^2 vs 45mL/min, p<0.0001). See Figure.
* Over half (56%) had reduced kidney function requiring caution with medicines

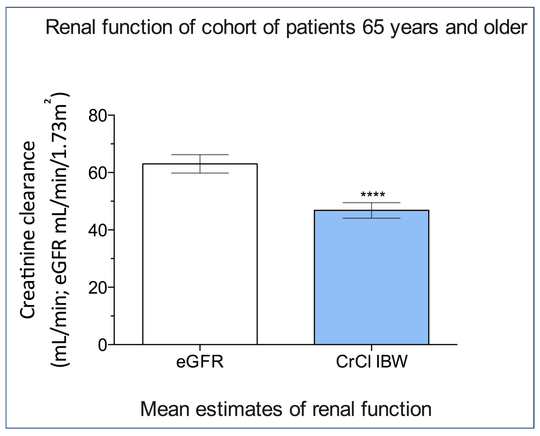


Figure: Means of estimates of kidney function, from reported eGFR and calculated creatinine clearance (using ideal body weight) for patient cohort

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/ 1.73m^2; 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/1.73m^2; eCrCl 25mL/min
* *recommended dose 25- 50mg daily (⅓ dose given)*

Target medicines

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

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

** 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

Presentation

PDF *1399.3 Kb*

Citation

Jordan M, Blaze J, Hall J, Mullan J. (2015). An assessment of the appropriate use of medicines in older patients with impaired kidney function, in a general practice setting. In: 2015 Primary Health Care Research Conference: Program & Abstracts. Primary Health Care Research and Information Service, Australia. phcris.org.au/conference/abstract/8136

MORE FROM THIS CONFERENCE

RELATED TOPIC SEARCHES (2)