

Reviewing prescribing for the elderly using a quality use of medicines approach

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Abstract

Aims: To summarize the educational content and process of an interactive workshop which was designed to teach general practitioners how to review prescribing using a quality use of medicines (QUM) approach.

Method: Summary of the educational content provided at the workshop describing the definition of QUM; an evidence-based summary of problems in prescribing for the elderly; an outline of tools to use in a QUM approach to reviewing prescribing. Educational process comprised introductory lecture and discussion by participants of three case studies of older patients with a clinical pharmacologist and an academic general practitioner.

Results: The application of the QUM approach to one case study of an older patient with hypertension is described. The content and process were enthusiastically received by over 50 attendees. No formal evaluation was conducted other than the general evaluation by the conference organisers.

Conclusion: The QUM approach is a systematic problem-solving approach to reviewing prescribing in the elderly which can be taught through an interactive workshop led by a panel.

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Introduction

What is quality use of medicines?

Quality use of medicines (QUM) is the fourth arm of Australia's National Medicines Policy, which seeks to ensure judicious, appropriate and safe use of medicines in society through partnerships with key stakeholders – government, consumers, health professionals and the pharmaceutical industry.¹ What we do as doctors by way of good prescribing is an essential ingredient for QUM, but the policy makes it clear that doctors are not the only ones with responsibilities.

The World Health Organization defines rational use of drugs as . . .

'When a drug is required, the appropriate drug must be prescribed, it must be available at the right time at a price people can afford, and it must be dispensed correctly. It must be taken in the right dose at the right intervals and for the right length of time. The appropriate drug must

be effective, and of acceptable quality and safety. If any of the requirements in this definition are not met the best possible treatment is not being achieved.'²

The application of QUM goes beyond this definition. As the policy document says,

'The partners consider that all medicines should be used:

- Judiciously – medicines, whether prescribed, recommended, and/or self-selected should be used only when appropriate, with non-medicinal alternatives considered as needed;
- Appropriately – choosing the most appropriate medicine, taking into account factors such as the clinical condition being treated, the potential risks and benefits of treatment, dosage, length of treatment, and cost;
- Safely – misuse, including over-use and under-use, should be minimized; and
- Efficaciously – the medicines must achieve the goals of therapy by delivering beneficial changes in actual health outcomes.'¹

Actions rather than words count with general practitioners. Under the policy, a number of project grants were made to trial the provision of feedback to prescribers. The project of Therapeutics Resource and Educational Network for Doctors (TREND) was a major demonstration project, conducted under the auspices of the Royal Australian College of General Practitioners (RACGP) by a team led by one of the authors

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Table 1 A quality use of medicine approach: five questions⁴

What are the potential problems related to the use of medicines?
What would be your management in this situation?
What additional information is available to assist your prescribing?
Would the extra information change your decision or reinforce it?
What do you tell your patients when you manage this condition or problem?

(AM). In providing comprehensive personalized feedback on prescribing to participants, TREND focused on condition-specific data collected prospectively by the general practitioner and reviewed by a panel of experts comprising a general practitioner, a clinical pharmacologist and a clinical pharmacist.³ From the TREND database of over 60 000 patient encounters recorded by general practitioner participants, the QUM approach has been developed.

‘Translating quality use of medicines (QUM) issues into day-to-day practice means thinking about clinical pharmacology, which provides evidence for the safety and efficacy of drugs. But QUM means more than updating one’s clinical pharmacology. Above all it means working with the patient, and thinking about influences on the patient, the doctor-patient relationship, and external issues such as the availability of the pharmacological or of non-pharmacological alternatives. QUM may also require the general practitioner to close gaps in communication about medication with the pharmacist, clinicians from the hospital or community health services, and other health professionals.’⁴

The QUM approach to reviewing prescribing in practice is a systematic problem solving approach (Tables 1,2) designed to be applied to review of prescribing for common conditions.

Problems in prescribing for the elderly

The educational workshop commenced with a summary presentation on problems in prescribing for the elderly, based on review of geriatric clinical pharmacology.⁵ The main problem in practice is the high risk of adverse effects from medication in the elderly. This is the more likely because polypharmacy is so common, which in turn relates to the high rate of comorbidity in the elderly. Most older patients have more than one medical condition. It is mainly in clinical trials that patients are selected for entry by virtue of having only the condition of interest to the trial!

Compounding the problems of polypharmacy is non-compliance. The ideal is for doctor and patient

Table 2 Drug related problem checklist¹⁰

Untreated indications
Improper drug selection
Subtherapeutic dosage
Failure to receive the drugs
Overdose
Adverse drug events
Drug interactions
Drug use without valid indication

to have agreed goals for treatment – this is called concordance. Many factors can make it more difficult for the elderly to comply: poor eyesight, arthritis in the hands, cognitive impairment, difficulty in getting to the doctor or pharmacist and economic difficulties. Some of the following may help an elderly patient with their compliance: a simple dosage regimen – once or twice daily is to be preferred. It is worth helping the patient find cues to medication taking, which may be tooth brushing, walking the dog, and mealtimes, provided meals are regular. A ‘dosette box’ or ‘blister pack’ can assist some patients. Most of all, regular checks are needed, preferably by asking the patient to bring all medicines being taken to a consultation, the so-called brown paper bag approach.⁶

From a clinical pharmacology perspective the elderly experience both altered pharmacokinetics and altered pharmacodynamics. For practical purposes, the most important aspect of altered pharmacokinetics in the elderly is the reduction in renal function with age. Renal function may be considerably reduced even in patients with a serum creatinine within the normal range. It is essential to use a formula to calculate creatinine clearance.^{5,7} This is relevant for renally excreted drugs such as digoxin, whose dose should be reduced in proportion to the decrease in creatinine clearance. Impaired renal function is also important for nephrotoxic drugs such as aminoglycoside antibiotics, e.g. gentamicin, for drugs with active metabolites such as allopurinol, pethidine and most of the anticholinesterase (ACE) inhibitors. Finally, it is essential to remember that any acute illness can further impair renal function.

Altered pharmacodynamics in the elderly include the changes that occur in sensitivity and density of drug receptors. Drug classes which can be affected include beta-blockers (reduced effect for a given concentration); benzodiazepines (susceptibility to sedative effects); anticoagulants and opioids. Other changes in the body with aging include control of homeostasis. Postural hypotension and temperature control can be important with any of the phenothiazines.

Polypharmacy increases the risk of drug–drug interactions, and this is most likely to occur with cer-

tain common combinations. In our retirement village study⁸ a common combination of concern (in 25% of the resident sample) was use of a nonsteroidal anti-inflammatory drug (NSAID) plus diuretic. Other risky combinations are: NSAID (including a cyclooxygenase 2 (COX-2) inhibitor) plus ACE inhibitor or angiotensin 2 antagonist (A2 antagonist), which carries a risk of hyperkalaemia; NSAID (including a COX-2 inhibitor) plus ACE inhibitor or A2 antagonist plus diuretic – this combination being the ‘triple whammy’ for precipitating acute renal failure;⁹ potassium supplement or potassium-sparing diuretics plus ACE inhibitor or A2 antagonist. Another very risky combination is allopurinol plus diuretic; or allopurinol plus aspirin. It is always important to think about the co-prescribing of psychotropic drugs, where the problem is not an interaction but the documented risk of falls.

Applying the QUM approach

The teaching method requires case studies from general practice and interactive discussion of participants with a panel who have had the opportunity to review the cases prior to the workshop. Ideally the panel should include a resource person from clinical pharmacology to assist the process of reflection by the individual or group and a general practitioner. The QUM workshop has been conducted for the RACGP New South Wales Faculty, within the geriatrics course and also in the general revision course, and as part of the Annual Scientific Convention of the RACGP in Adelaide in 1999; with several urban and rural Divisions of General Practice in Australia, and as part of Wonca Europe Scientific Program in Vienna. Participants in the 2000 Asia Pacific Wonca workshop in Christchurch had the opportunity to interact with both a clinical pharmacologist (EB) and an academic GP (AM).⁵ The discussion reflected upon medication-related issues for three elderly patients from general practice, using as a guide the five questions from a handbook for general practitioners on quality use of medicines (Table 1).⁴

In answering the first QUM question, it is helpful to refer to the checklist of medication-related problems, derived from studies of pharmaceutical care (Table 2).¹⁰

A practical example

The first case discussed and summarized in this paper was Mrs M, an older patient with hypertension.

Mrs M is a 68-year-old retired receptionist who lives with her son, daughter-in-law and their two children. She has not smoked since the birth of her first grandchild 15 years ago. She enjoys a beer at the bowling club once

a week. Her father died of an acute myocardial infarction at age 70 and her elder brother is being treated for hypertension. Her mother died after a series of strokes aged 80. She had hypertension and diabetes mellitus type 2. Her body mass index is 28.

On three separate occasions at different times of the day you have measured her blood pressure to be between 160/100 and 165/105. She has no history of renal disease and her physical examination is otherwise normal. You have discussed lifestyle contributors to hypertension, but can find little of concern apart from the salt in her diet from processed foods. Her fasting blood sugar level was 4.1 mmol/L, total cholesterol 5.0, high-density lipoprotein 2.4 and triglycerides 1.6. She is not on hormone replacement therapy.

You and the patient decide, in view of her blood pressure readings and family history, that pharmacological treatment is necessary. You discuss the options.

What are the potential problems related to the use of medicines?

The main medication issue is which drug to select for first line treatment, in a patient with cardiovascular risk factors. Apart from a family history from her male sibling and father with cardiovascular risk factors – it was thought the maternal history of strokes was probably not significant in view of the mother's age. Drugs from all the main antihypertensive classes are effective in lowering blood pressure, but side-effects are class-dependent.

- Diuretics may impair glucose tolerance, increase blood cholesterol and may cause hypokalemia. So the patient needs monitoring of blood biochemistry when on diuretics. However, this is mainly in high doses: very low and low doses of thiazide diuretics cause fewer metabolic problems.
- Beta-blockers are contraindicated in asthma and in patients with Raynaud's disease or claudication, and may impair exercise tolerance and decrease quality of life. Anticholinesterase inhibitors (ACE-Is) are associated with a high incidence of cough and rarely with angioedema, but are clearly indicated in patients with diabetes, and in those with congestive heart failure or left ventricular dysfunction.
- Calcium antagonists may cause peripheral edema and constipation.
- Alpha blockers frequently cause postural hypotension.

The patient's history should give information regarding other conditions and/or other medications or dietary oddities, such as high licorice intake, to help with the choice of antihypertensive drug.

Some participants were keen to check alcohol consumption more carefully. This was because the bowling club seemed to be an important part of this

patient's life and to clarify issues of possible relevance to the patient, for example, in the family set-up.

It is worth checking whether the patient is taking Korean ginseng which could decrease the effectiveness of antihypertensive treatment.

What would be your management in this situation?

The first choice should be with a thiazide diuretic and second choice would be an ACE-I. The patient may well need both, in which case it is preferable to prescribe the two drugs separately rather than in one of the newer combinations, as this retains flexibility of dose titration. This should be the rule at least until good control has been achieved (blood pressure < 140 mmHg systolic and < 90 mmHg diastolic) or if it becomes apparent that the patient has difficulty in adhering to the two drugs required. The patient's blood pressure may benefit from a diet with no added salt and avoiding processed foods (with unrecognized high salt content). This may be more beneficial in older patients than in younger ones.

What additional drug information is available to assist your prescribing?

The most recent international guidelines are from the World Health Organization and the International Society of Hypertension – WHO–ISH Guidelines 1999.¹¹ A practical summary of how to choose anti-hypertensives can be accessed from the website of the National Prescribing Service Limited (NPS), which is an independent source of information to support QUM in Australia (www.nps.org.au).¹²

Would the extra information change your decision or reinforce it?

General practitioners currently most often prescribe ACE-I or calcium-channel blockers even for uncomplicated hypertension, so they would find the information interesting.

What do you tell your patients when you manage this condition or problem?

The patient needs to understand that life-long therapy is usually needed for high blood pressure to be controlled and to understand why. Many people do not realize that blood pressure cannot be cured by a course of treatment. She can be assured that controlling her blood pressure is the best way to reduce the risk of heart attack and stroke, such as have already occurred in her family.

For some patients compliance aids can help, with drugs taken only once a day wherever possible. A special card may be helpful as a reminder if more than one drug is needed. Regular follow-up is essential, which may be with a nurse to take the blood pressure. Reinforcement of specific dietary advice is essential with a focus on lasting change to get to the ideal body mass index range. The patient needs to understand the relationship of weight to food intake and energy expenditure. Brisk walking to and from the bowling club may be acceptable regular exercise for this lady.

Conclusion

The QUM approach to reviewing prescribing in the elderly produced a lively and focused interaction which was enthusiastically received by participants from many countries.

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