The use of therapeutic flags to assist GPs prescribing for older persons

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BACKGROUND
Prescribing for older persons can present challenges for general practitioners.

METHODS
Forty-one GPs used a series of statements about appropriate drug use (therapeutic flags) to review the medications of 727 older patients.

RESULTS
Following the review, 14.5% of prescribed medications were changed including 6% stopped. Another 7% were associated with other activities such as monitoring of therapy as recommended by guidelines. General practitioners regarded therapeutic flags as informative and suggested they should be integrated with prescribing software.

DISCUSSION
Therapeutic flags may assist the provision of quality medication to older patients.

Drugs are used inappropriately in the elderly,[1–3] in part because of a lack of awareness.[4] This can lead to adverse medication related events and morbidity.[5,6] Structured medication reviews can detect and address these problems.[7]

Prescribing criteria are available to evaluate the appropriateness of prescribing.[8–11] Criteria produced in Australia[1,12] have not been updated since production in the early 1990s. Prescription writing computer programs in Australia highlight drug interactions and carry warnings that appear when prescribing certain drugs. Such resources rarely target unnecessary drugs or the under utilisation of needed medications,[13] nor are they flexible enough to account for a patient's clinical state.[3]

The National Prescribing Service, Therapeutic Guidelines and the Australian Medicines Handbook *Drug Choice Companion – Aged Care* provide detailed information about prescribing. General practitioners in Australia can refer patients to a pharmacist for a medicines review.

Therapeutic flags (TFs) are a series of succinct statements to prompt GPs about drug related issues in older persons in specific clinical settings. Their content is distilled from Australian prescribing guidelines and evidence based literature, while accommodating the scant clinical pharmacology research involving older persons[14] by incorporating input from, and peer review by, geriatricians and GPs obtained during a number of research projects.[15–18] Referenced notes called 'quiktips' provide more detailed information to support the TFs.

Methods

A committee consisting of geriatricians, pharmacists and GPs reviewed the TFs. They were piloted in a geriatric rehabilitation hospital and by 10 GPs from a division of general practice. One hundred and forty-four TFs and 63 quiktips were approved for use in the audit.

The TFs were delivered in a manual for use as a one-off medication review audit in The Royal Australian College of General Practitioners (RACGP) Quality Assurance and Continuing Education Program during the period 2000–2001. This manual indexed a list of drugs with a short explanation of each TF and instructions for completion of the audit.

General practitioners were recruited initially through Queensland divisions of general practice and subsequently nationally through the RACGP. They were asked to obtain consent from elderly patients, preferably over 75 years of age and taking four or more medications. Each drug entered onto the audit data collection form (*Figure 1*) was checked to see if there was a TF for that drug and if it was considered clinically relevant.

Figure 1. Example of a completed therapeutic flags audit form

Date: 24/9/02   **Patient code number:** Mrs EW

No.	All medications (name, strength)	Dose/ frequency	Reason prescribed/condition/comments/ investigations/specialist involvement
1	Enalapril	10 mg/d	Hypertension
2	Simvastatin	10 mg/d	Cholesterol
3	Paracetamol	1 g prn	Osteoarthritis
4	Dilantin	1 tds	Seizures
5	Cartia	1 d	
6	Timoptol 0.25 eye drops	Use bd	Glaucoma
7	Ventolin inhaler	prn	Occasional wheeze
8			

Audit

Medication	Flag	Flag no	Quiktip read
Dilantin	Phenytoin without folate and vitamin D level	106	25

RELEVANT INFORMATION: Limited exposure to sunlight as well

Date 24/9/00	▤ Medication issues (tick all that apply)			Other
☐Adverse effects	☐Duplication	☐Dosage/formulation	▤Need investigations	
☐Interaction	☐Compliance	☐Better Rx available	☐Indication resolved	
☐Contraindication	☐Frequency/timing	☐Additional Rx required	☐? indication/ need	

Date 26/9/00	▤ Action plan			Other
▤Investigations/tests	☐Change drug	☐Increase dose/use	☐Change to prn	
☐Review diagnosis	▤Add drug	☐Wean gradually	☐Education	
☐Monitor	☐Decrease dose/use	☐Change timing	☐Compliance aid	
☐Cease drug	☐Change 2^0 to flag	☐Refer/research	☐Not actioned	

Date 1/11/00	▤ Output		
▤Medication change per plan	☐No action	☐Patient opposed to plan	☐Change diagnosis
☐Plan actioned but not involving medication change		☐Outcome/plan deferred	☐Change reversed

Details/remarks: Folate, calcium. PTH within limits. Vitamin D lower and added

Medication	Flag	Flag no	Quiktip read
Timoptol	Without assessment of lung function	125	66

RELEVANT INFORMATION: Wheeze may have commenced since timoptol

Date 24/9/00	▤ Medication issues (tick all that apply)			Other
▤Adverse effects	☐Duplication	☐Dosage/formulation	☐Need investigations	
☐Interaction	☐Compliance	☐Better Rx available	☐Indication resolved	
☐Contraindication	☐Frequency/timing	☐Additional Rx required	☐? indication/need	

Date 26/9/00	▤ Action plan			Other
☐Investigations/tests	☐Cease drug	☐Increase dose/use	☐Change to prn	
☐Review diagnosis	☐Add drug	☐Wean gradually	☐Education	
☐Monitor	☐Decrease dose/use	☐Change timing	☐Compliance aid	
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▤Medication change per plan	☐No action	☐Patient opposed to plan	☐Change diagnosis
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Details/remarks: Change to betoptic. Specialist advised

General practitioners categorised such TFs in terms of the issue raised, an action plan, and their action (output) based on patient consultation. They were also asked to complete a questionnaire. They paid $100 for the audit.

Results

Eighty-two GPs ordered and paid for the audit materials; 41 returned audit results. Older, female and rural GPs were over represented in the study (Table 1). Twenty-two participants practised in Queensland, eight in New South Wales, four each in Victoria and Western Australia, and one each in South Australia and the Northern Territory.

The 41 GPs reviewed 4112 medications prescribed for 727 patients (average 5.7 drugs/patient). A TF was determined by GPs to be relevant on 1272 occasions and for just over 20% of drugs prescribed. The average number of drugs prescribed per patient by any one GP varied from 1.6 to 13.6, with 31 of the 41 GPs prescribing between four and eight drugs per patient. The average number of drugs prescribed for each TF applied by individual GPs varied from 21–27.

The reasons GPs applied TFs were: a concern that the patient was experiencing an adverse drug effect (345), need for investigations such as blood pressure measurement or biochemistry (361), no evident indication for therapy or indication suspected to have resolved (323), dosage or formulation issues (172), availability of better therapy (143), timing or frequency issues (79), drug interactions (47), contraindications (25), need for additional therapy (23), concerns about compliance (17), and drug duplications (14). Action plans selected were: conduct investigations (349), cease or wean a drug (299), monitor the situation such as observing for a suspected medication side effect or disease management issue (166), decrease dose (160), change the drug (108), provide patient education (103), change to as necessary use (72), increase dose (53), add a drug (30), review diagnosis (28), change timing (18), refer (16), and implement a medication compliance aid (5).

After the audit, 597 of the 4221 drugs (14.5%) were changed including 5.9% stopped. Other changes comprised 126 decreased dose, 54 changed to as necessary, 87 changed to a different drug, 48 dose increased, 23 drugs added, and 15 changes in the timing of administration (Table 2). General practitioners were encouraged to create their own TF, and did so on 75 occasions where there was no relevant TF.

Table 1. Comparison of study GPs with the Australian cohort[19]

	% study GPs	% national cohort*
Men	56	67
Women	44	33
Metropolitan	56	75.6
Rural	44	24.4
Age		
<35	6	14.5
35–50 or 35–55	50	61.3
>50 or 55	44	24.2

* From census data of 24 176 GPs

Table 2. Examples of therapeutic flags, numbers of times applied in the audit and consequent medication changes

Flag	Explanation, or guideline recommendations	Comment	Times applied	Med change
ACE inhibitors low dose in CCF if higher doses have not been tried	Up titrate to highest tolerance dose of ACE inhibitors for patients with heart failure	GPs followed recommendations that suggest pushing to the highest tolerated ACE Inhibitor dose in persons with heart failure	13	8
Antidiabetic drugs without glucose, microalbumin, lipids and BP monitoring	Regular blood glucose analysis, 3 monthly glycated haemoglobin, annual urine microalbumin and blood lipids and regular BP analysis	In most cases doses were adjusted, in another insulin added. Drug changes included the addition of a statin and an increased dose of an ACE inhibitor	33	9
Antihypertensive therapy without recent evidence of hypertension	Hypertension sometimes resolves	In 18 cases a drug was ceased, but later reinstated in two	40	20
Anti-Parkinson drugs without confirmed benefit	There are many other conditions that can produce movement disorders		4	4
COX-2 inhibitor with diuretic, poor renal function or hypertension	COX-2 inhibitors, like traditional NSAIDS, compromise renal function and reduce the effectiveness of diuretics	Often the drug was changed to paracetamol	30	15
Histamine H2 antagonists used regularly for dyspepsia	Long term therapy may not always be effective or necessary	GPs invariably ceased the drug or changed to 'as needed' use when prompted	50	33

There was no resulting change in medication on 607 of the 1272 occasions even after a TF was applied because of reassessment of the diagnosis (6), action being deferred to await stabilisation or diagnostic tests (60), patient opposition to the action plan (95), and the reversal of a medication change (22).

Some TFs were applied infrequently (52/144 less than four times). These included the use of nandrolone, methyldopa, NSAID suppositories, lithium without serum determinations, anticholinergics for Parkinson disease, tricyclic antidepressants for incontinence, antipsychotics for movement disorder, and long half life NSAIDS.

Thirty-three GPs returned a questionnaire. Half reported they regularly conduct a detailed review of their own prescribing and about two-thirds had experienced medicines reviews by a pharmacist. Twenty-four found the TF audit extremely or very informative as well as relevant to clinical practice, 28 rated the quality of information as good or excellent, and 19 found it easy or somewhat easy to perform. The audit took 15–30 minutes per patient and seven respondents considered being busy a barrier to undertaking the audit.

Discussion

One can only speculate on why over half the GPs who ordered and paid for the audit did not return them. These results may not be generalisable; the doctors were self selected and the study could not establish a casual relationship. Yet it is possible the TFs prompted prescribing initiatives that were judged by GPs to be beneficial to their patients.

Automating the association of TFs with drug names or conditions electronically might make this process less onerous, allow a more comprehensive coverage of prescribing issues, minimise the delivery and operational cost of TFs as an audit or medication review resource, and allow efficient delivery of updated material.

Conflict of interest: none.

Implications of this study for general practice

- Prescribing for older persons can present challenges for GPs.
- Therapeutic flags may assist GPs prescribing for older patients.
- They are suitable for electronic delivery at the point of prescribing.

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