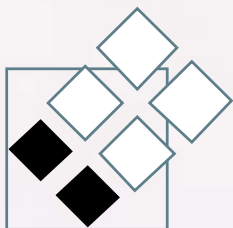


POLYPHARMACY

Quiz Feedback



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better medicine

POLYPHARMACY

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Feedback

We are sorry you did not return a quiz to us. The appropriate use of multiple medicines in evidence-based care exposes our patients to increased risk of drug related problems and doctors must be increasingly alert to this possibility. We suggest that, when prescribing for patients on multiple medicines, doctors consider if:

- Symptoms are medicine related
- Indications for medicines are still current and appropriate
- Monitoring of response and laboratory parameters is up to date
- Problematic drugs and drug combinations are still appropriate
- Lowered risk, with out losing benefits, can be achieved by a simpler regimen
- Evaluation of treatment goals is defined.

Please let us know if there is any way we can make our case studies more useful to you. We want our resources to be helpful with your day-to-day clinical practice. We would be pleased to receive any suggestions that you have.

If you have any questions please email these to us and we will answer via the 'Your Questions Answered' section of our web site.

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Polypharmacy Quiz

- Which one of the following drugs is the most inappropriate in the older person?
 - Amitriptyline
 - Atenolol
 - Paracetamol
 - Paroxetine
 - Oxycodone
- Which one of the following drugs is linked to causing hypothermia in the elderly?
 - Diltiazem
 - Metoprolol
 - Paroxetine
 - Risperidone
- Which one of the following drug reactions is not usually dose related?
 - Constipation with morphine
 - Blurred vision with amitriptyline
 - Dystonic reaction with metoclopramide
 - Nausea with digoxin
 - Dry mouth with oxybutynin
- Which one of the following matches most closely to your definition of polypharmacy? A person taking;
 - One additional drug if it is not indicated
 - 2 – 4 drugs
 - 2 or more drugs
 - 5 or more drugs
 - 6 or more drugs
- Select the one true statement.
 - Amitriptyline is the least sedating TCA
 - Ankle oedema due to verapamil responds to frusemide
 - Diltiazem commonly causes urinary retention
 - Oxybutynin together with methotrimeprazine may aggravate constipation
- What dose of allopurinol is recommended for a patient with severe renal failure?
 - 50 mg daily
 - 200 mg daily
 - 50 mg on alternate days
 - 100 mg on alternate days
- Which one of these drugs can cause urinary retention?
 - Captopril
 - Metoprolol
 - Nortriptyline
 - Paroxetine
 - Verapamil
- If a person is on seven or more drugs what is the estimated risk of an adverse drug event?
 - 10 %
 - 25 %
 - 40 %
 - 60 %
 - 80 %
- Which one of the following drugs is not usually linked to electrolyte disturbances?
 - Bendrofluazide
 - Captopril
 - Paroxetine
 - Verapamil
- If a NSAID was indicated in an older person which of the following is most suitable?
 - Celecoxib
 - Diclofenac
 - Indomethacin
 - Piroxicam
 - Tenoxicam

Key Messages

Background

Drug related problems cause significant preventable morbidity and mortality. Their economic cost is estimated to rank fourth in the developed world, behind cardiovascular disease, cancer and diabetes. Drug related problems include adverse drug events, adverse drug reactions and drug interactions. Polypharmacy has various definitions and connotations in the literature ranging from the use of 4, 5, 6 or more drugs in combination to the more simplistic addition of just one inappropriate drug to an existing drug regimen. The addition of any drug is one too many if it provides no benefit and causes potential harm. Our definition of polypharmacy for the purpose of this campaign is: “the addition of one or more drugs to an existing regimen which provides no additional therapeutic benefit and/or causes drug related harm”. Elderly people on multiple medications are at particularly high risk of drug related problems.

Goal

The goal of this campaign is to decrease drug related problems in elderly people by reducing prescribing factors associated with increased risk.



Quiz Feedback

1. Which one of the following drugs is the most inappropriate in the older person?

	You	Your Peers	GP Panel
Amitriptyline		67 %	+
Atenolol		5 %	
Paracetamol		0 %	
Paroxetine		5 %	
Oxycodone		22 %	

GP Panel comments: Amitriptyline is often implicated in drug related problems in older people because of its marked sedative effect and significant anticholinergic actions. Falls, constipation and urinary retention may result. If it is used it is advisable to stick to the smallest effective dose. An alternative TCA is nortriptyline, which has less sedative, anticholinergic and hypotensive effects than amitriptyline. Nortriptyline and amitriptyline are equally effective for depression or neuropathic pain. Some of the panel were moving more to SSRI use for depressed older people but were aware of the increased risk of hyponatraemia especially for those who are also on diuretics.

A significant percentage of respondents are concerned about the use of oxycodone for older adults. This probably reflects a feeling that opioids are not good drugs for older people. This feeling should not prevent older people being offered opioids when indicated for pain relief. Adverse effects are common with opioids but most (except constipation) settle within a week of initiation or increasing the dose. Morphine is the usual first choice because of the range of preparations available, cost and the depth of experience that practitioners have in its use.

Specialist comments: The increased risk of falls is as great with SSRIs as with TCAs.

2. Which one of the following drugs is linked to causing hypothermia in the elderly?

	You	Your Peers	GP Panel
Diltiazem		5 %	
Metoprolol		4 %	
Paroxetine		3 %	
Risperidone		89 %	+

GP Panel comments: Hypothermia is a recognised adverse effect of the older antipsychotics (e.g. chlorpromazine) but also occurs with risperidone. It is not common and may well be unrecognised in elderly people because of the diminished physiological response of shivering and inability to take action to keep warm. Confusion, decreased physical activity or chest infection may be the only presenting features.



3. Which one of the following drug reactions is not usually dose related?

	You	Your Peers	GP Panel
Constipation with morphine		16 %	
Blurred vision with amitriptyline		5 %	
Dystonic reaction with metoclopramide		64 %	+
Nausea with digoxin		27 %	
Dry mouth with oxybutynin		12 %	

GP Panel comments: Members of the panel had seen dystonic reactions from the use of metoclopramide and this is the only one of the listed drug reactions that is not usually dose related. Approximately one quarter of respondents thought that nausea with digoxin is not dose related but nausea may be a sign of toxicity and may be alleviated by reducing the dose or temporarily stopping digoxin and recommencing at a lower dose.

4. Which one of the following matches most closely to your definition of polypharmacy? A person taking;

	You	Your Peers	GP Panel
One additional drug if it is not indicated		65 %	+
2 – 4 drugs		2 %	
2 or more drugs		2 %	
5 or more drugs		22 %	
6 or more drugs		12 %	

GP Panel comments: Most respondents chose either the conventional description of Polypharmacy as ‘five or more drugs’ or the newer one of ‘one additional drug if it is not indicated’. This reflects the changing emphasis of multiple medicine use as it becomes an accepted, and often encouraged, part of modern medical practice.

5. Select the one true statement.

	You	Your Peers	GP Panel
Amitriptyline is the least sedating TCA		1 %	
Ankle oedema due to verapamil responds to frusemide		3 %	
Diltiazem commonly causes urinary retention		5 %	
Oxybutynin together with methotrimeprazine may aggravate constipation		89 %	+

6. What dose of allopurinol is recommended for a patient with severe renal failure?

	You	Your Peers	GP Panel
50 mg daily		32 %	+
200 mg daily		0 %	
50 mg on alternate days		39 %	+
100 mg on alternate days		25 %	+

GP Panel comments: Most respondents recognised that both oxybutynin (which is used for urinary incontinence caused by bladder instability but not overflow incontinence) and methotrimeprazine (an antipsychotic) have anticholinergic effects which combine to cause constipation.

GP Panel comments: It is good to see that all respondents chose doses of allopurinol of 50 mg per day or less. People with renal impairment who do not have their dose reduced are at increased risk of rare but serious adverse effects.

The management of Gout in patients with renal impairment presents a therapeutic dilemma. Reducing allopurinol too low may result in flare-up of the gout and then the allopurinol dose cannot be immediately raised.

7. Which one of these drugs can cause urinary retention?

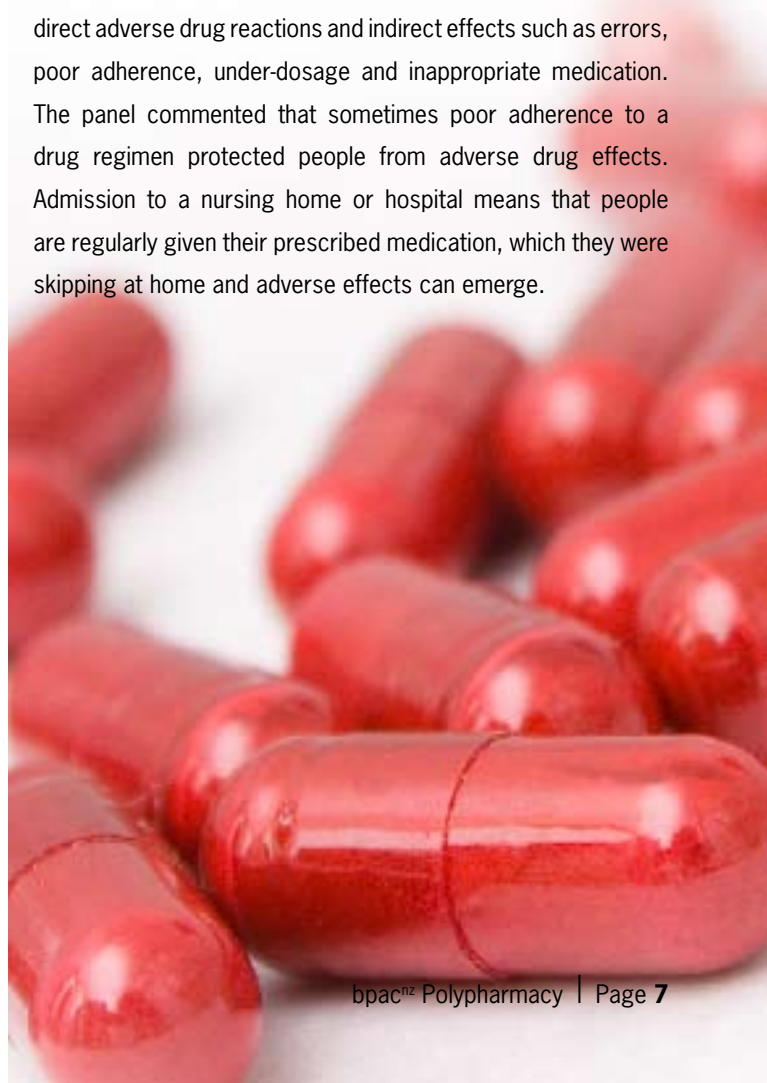
	You	Your Peers	GP Panel
Captopril		0 %	
Metoprolol		0 %	
Nortriptyline		93 %	+
Paroxetine		8 %	
Verapamil		2 %	

GP Panel comments: Nortriptyline, like all TCAs, has anticholinergic effects and can cause urinary retention, especially for older males with some degree of outflow obstruction. It is easy to overlook unwanted effects of medications as causes of presenting symptoms.

8. If a person is on seven or more drugs what is the estimated risk of an adverse drug event?

	You	Your Peers	GP Panel
10 %		2 %	
25 %		0 %	
40 %		2 %	
60 %		6 %	
80 %		89 %	+

GP Panel comments: The responses demonstrate clear understanding of the high risk of adverse drug events associated with multiple drug use. Adverse drug events include direct adverse drug reactions and indirect effects such as errors, poor adherence, under-dosage and inappropriate medication. The panel commented that sometimes poor adherence to a drug regimen protected people from adverse drug effects. Admission to a nursing home or hospital means that people are regularly given their prescribed medication, which they were skipping at home and adverse effects can emerge.



9. Which one of the following drugs is not usually linked to electrolyte disturbances?

	You	Your Peers	GP Panel
Bendrofluazide		3 %	
Captopril		2 %	
Paroxetine		9 %	
Verapamil		87 %	+

10. If a NSAID was indicated in an older person which of the following is most suitable?

	You	Your Peers	GP Panel
Celecoxib		46 %	
Diclofenac		44 %	+
Indomethacin		3 %	
Piroxicam		5 %	
Tenoxicam		3 %	

GP Panel comments: Verapamil is not usually linked to electrolyte disturbance. SSRIs, including paroxetine, are associated with hyponatraemia, especially in patients taking diuretics. Mild hyponatraemia may present with anorexia, headache, nausea or lethargy. If the patient is normovolaemic, it usually responds to restricting fluid intake and reviewing diuretic and SSRI use to achieve a serum sodium of greater than 130 mmol/L.

The panel also stressed that it is important to treat people and not lab results. They are happy with serum sodium levels >130 mmol/L as long as the patient is well. There are of course several other serious causes of hyponatraemia that may need to be considered.

Specialist comments: If urea and creatinine are in the normal range in a patient who has low serum sodium then this is almost certainly a dilutional hyponatraemia. Thiazide diuretics and SSRIs are the major causes of drug induced hyponatraemia.

GP Panel comments: Celecoxib and diclofenac received equal preference as the best choice. This probably reflects the rather confusing situation regarding the relative cardiovascular and gastrointestinal safety of COX-2 inhibitors and the older NSAIDs. Panel members preferred diclofenac for most patients until more guidance becomes available. There is general information on the prescribing of COX-2 inhibitors on the Medsafe web site at: <http://snipurl.com/sa9j> The other agents were not chosen due to their high relative toxicity and long half-life.



Comments from Professor John Campbell

Most of us, as demonstrated by the quiz, have a reasonably clear idea of the pro's and con's of the drugs we use and of the best treatments for symptomatic conditions such as heart failure, depression and arthritis. I find it more difficult to know when to use drugs to prevent further events, such as fractures and cardiovascular events in elderly people. It is the use of these preventive agents particularly, which has led to the increased complexity of the drug regimens of many elderly patients.

Should an 85 year-old woman with a femoral neck fracture, osteoporosis and heart failure be started on alendronate? After all, it takes 91 patients treated for three years to prevent one hip fracture and the mortality in patients with hip fracture who develop post operative heart failure is 92% at one year. What are the treatment objectives in starting a statin in an 80 year-old man with angina and early dementia who is increasingly becoming a burden to himself? What is the blood pressure to aim for in an 85 year-old man when epidemiological studies show that the probability of death is least at a systolic BP of 180mmHg? This BP may simply reflect a well preserved pump, which might still benefit from working against less resistance.

The difficulty in answering these questions is that you simply do not know how trial results apply to your particular, and probably considerably frailer, patients. Such patients are usually excluded from trials. There are some general findings worth bearing in mind when deciding whether to add to an already full drug regimen.

Proven preventive measures tend to be under used in older populations, even allowing for co-morbidities, and some older people who could benefit miss out. Examples include calcium and Vitamin D in rest home residents, beta blockers after myocardial infarction, and warfarin in atrial fibrillation.

Although age increases the attributable risk of most risk factors (meaning you prevent more events with the treatments); the number to treat for benefit remains high. For example, post-stroke statins prevents 9 strokes per 1000 patients per 5 years. There is, of course, the cardiac benefit as well but it may be a further stroke that particularly worries your patient.

Complications in real life are greater than in trials because of higher levels of monitoring of trial populations. Examples include life-threatening hyperkalaemia with spironolactone, bleeding with warfarin. Treatment failures are more common in real life and adherence rates may not be as good (statins for primary prevention – 25.4% adherence at two years).

The prescribing of any of these agents requires knowledge of the patient, the patient's multiple conditions and the patient's attitude and response to medications.

The number of drugs prescribed increases with the number of prescribers. The general practitioner has the key role of advising on the total medication package. This requires not only an assessment of the individual drugs, their benefits and drawbacks, but also an assessment of the additive, interactive and adherence consequences of all the drugs. Current drugs are an important variable to consider when weighing up a new treatment – another drug will alter the existing balance.



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