Polypharmacy Quick Reference Guidance for Clinicians

October 2012

Developed by The Model of Care Polypharmacy Working Group

Quality and Efficiency Support Team
Scottish Government Health and Social Care Directorates

Contents

Acknowledgements

We would like to take the opportunity to acknowledge the following individuals and groups that have worked collectively to develop this guidance:

Model of Care Polypharmacy Working Group:
Alpana Mair, , Kate Wood, Martin Wilson, Miles Witham, , Niles Michael, Graham McPhee, John Cromarty

Identification of Patients and Data for Improvement

Thomas Ross, Michelle Watt, Steve Kendrick, Mark Sanderson, Bruce Guthrie, Noreen Downes, Joyce Mitchell, Alpana Mair, Libby Morris

In addition would like to thank the following groups and individuals for their in the input:

The Scottish Primary Care Advisors Group, iSPARRA team, LTCAS, Gregor Smith, Joint Improvement Team, HIS, Steve Gilbert, Graham Kramer, and Simon Hurding.

Cover image: foto76 / FreeDigitalPhotos.net

Section 1: General Principles

1.1 Why is Reviewing Polypharmacy Important?

Necessary polypharmacy is a feature of modern therapeutics. It is not without risk and elderly or frail patients are especially vulnerable. Four out of five people aged over 75 years take a prescription medicine and 36 per cent are taking four or more. Patients on multiple medications are more likely to suffer side effects from their medicines, which is more related to the number of co-morbidities than the patient's age. This is accompanied by a clear and steady increase in the number of patients admitted to hospital with side effects from their medicines. Additionally, patients admitted with one drug side effect are more than twice as likely to be admitted with another.

This brief guidance summarises information to enable prescribers to undertake a comprehensive (level 3) medication review involving patients and/or carers. It will aid prescribers to balance the recommendations of multiple and potentially conflicting guidelines and thus make safe and sensible prescribing decisions. Prescribers should have read the full guidance before using this summary.

What should be happening under QOF?

As part of the GP contract, medication review is covered under medicines indicator 11 and 12, detail is shown below:

Medicines 11 A medication review is recorded in the notes in the preceding 15 months for all patients being prescribed four or more repeat medicines (Standard 80%)

Medicines 12 A medication review is recorded in the notes in the preceding 15 months for all patients being prescribed repeat medicines (Standard 80%)

For frail adults, a level 3 medication review is recommended.

1.2 Which patients should be targeted?

There are many different ways of identifying patients who might benefit from a targeted medication review, including by:

- Age
- Counts of numbers of repeat drugs
- Numbers of co-morbidities
- Care home residence or being housebound
- Functional status
- A combination of these

1.3 Data collection and evaluation

NHS Boards will be asked to report on the following data for local and national evaluation:

- **Number of patients reviewed from list given, CHI numbers and date of review**

By linking the CHI to other data sources it will be possible to evaluate the impact of medication reviews on health outcomes and prescribing costs.

Section 2: Clinical Guidance

2.1 Drug review process

This review should be undertaken in the context of holistic care considering each medication and its impact on the individual clinical circumstances of each patient. As part of this it is important to consider the cumulative effects of medications.

Number	CRITERIA / CONSIDERATIONS	PROCESS/GUIDANCE		References / Further reading or Examples
1	**Is there a valid and current indication? Is the dose appropriate?**	Identify medicine and check that it does have a valid and current indication in this patient with reference to local formulary. Check the dose is appropriate (over/under dosing?)		**e.g.** PPIs- use minimum dose to control GI symptoms - risk of *c.difficle* and fracture **e.g** quinine use- see MHRA advice re safety **e.g**. long term antibiotics
2	**Is the medicine preventing rapid symptomatic deterioration?**	Is the medicine important/essential in preventing rapid symptomatic deterioration? If so, it should usually be continued or only be discontinued following specialist advice.		**e.g.** Medications for Heart failure, medications for Parkinson's Disease are of high day to day benefit and require specialist input if being altered. review of doses may be appropriate e.g. digoxin
3	**Is the medicine fulfilling an essential replacement function?**	If the medicine is serving a vital replacement function, it should continue.		**e.g.** thyroxine and other hormones
4	**Consider medication safety Is the medicine causing: -Any actual or potential ADRs? -Any actual or potentially serious drug interactions?**	**Contraindicated drug or high risk drugs group?**	Strongly consider stopping	See High Risk Drug section e.g is the patient on a high risk combination " triple Whammy" Ref. "STOPP" List BNF Sections to Target
		Poorly tolerated in frail patients? For guidance on frailty see Gold National Framework	Consider stopping	
		Particular side effects?	May need to consider stopping	
5	**Consider drug effectiveness in this group/person?**	For medicines not covered by steps 1 to 4 above, compare the medicine to the 'Drug Effectiveness Summary' which aims to estimate effectiveness.		Ref. Drug Effectiveness Summary Ref NNT/NNH Medication used for dementia patients- see Gold SF
6	**Are the form of medicine and the dosing schedule appropriate? Is there a more cost effective alternative with no detriment to patient care?**	Is the medicine in a form that the patient can take supplied in the most appropriate way and the least burdensome dosing strategy? Is the patient prepared to take the medication? UKMI Guidance on choosing medicines for patients unable to swallow solid oral dosage forms should be followed.		Consideration should be given to the stability of medications. Ensure changes are communicated to the patients' Pharmacist: *Would this patient benefit form Chronic medication Service*?
7	**Do you have the informed agreement of the patient/carer/welfare proxy?**	Once all the medicines have been through steps 1 to 6, decide **with the patient/carer/or welfare proxies** what medicines have an effect of sufficient magnitude to consider continuation/discontinuation.		

2.2 Risk benefits of medication: 'numbers needed to treat' and numbers 'needed to harm'

The **'number needed to treat' (NNT)** is a measure used in assessing the effectiveness of a particular medication, often in relation to a reduction in risk over a period of time. The NNT is the *average* number of patients who require to be treated for one to benefit to be realised compared with a control in a *clinical trial*. It is defined as the inverse of the absolute risk reduction. So if treatment with a medicine for one year reduces the death rate over five years from 5% to 1% (a very effective treatment), the absolute risk reduction is 4% (5 minus 1), and the NNT is 100/4 =25.

NNTs are only estimates of average benefit, and it is rarely possible to know precisely what the likely benefit will be in a particular patient. The 'uncertainty' in the number should be acknowledged since the construction of confidence intervals around NNT does not generally give a valid interval.

'Number needed to harm' (NNH) is a related measure which is the *average* number of people exposed to a medication for one person to suffer an adverse event. Again, a defined end point (e.g. GI bleeding or renal failure) requires to be specified and confounders may require correction of the raw data i.e. in very elderly patients the risk of particular side effects such as confusion and falls may be higher than on average . In discussion, the overall benefit – risk ratio (NNT / NNH) requires to be 'weighed' in the individual patient and may vary considerably in people with polypharmacy depending on absolute risk, life expectancy and vulnerability to adverse drug events.

Example: The reference below illustrates that for benzodiazepines for night sedation NNT is 13 but the NNH is 6
Glass, J. et al. Sedative hypnotics in older people with insomnia: a meta-analysis of risks and benefits. BMJ 2005; 331: 1169
http://www.bmj.com/highwire/filestream/394884/field_highwire_article_pdf/0.pdf

2.3 Indications of shortened life expectancy

Following guidance contained in the prognostic indicators guidance from the Gold Standards Framework incorporated into the 'Living Well/ Dying Well' strategy enables better identification of patients who may need supportive/ palliative care. A full copy is available at: http://www.goldstandardsframework.org.uk/Resources/Gold%20Standards%20Framework/General/Prognostic%20Indicator%20Guidance%20October%202011.pdf

2.4 High Risk Medication: Medication most associated with admission due to adverse drug reaction

In a 2004 UK study the most common drug groups associated with admission due to adverse drug reaction ('ADR') were:

NSAIDs	29.6%	Beta blockers	6.8%
Diuretics	27.3%	Opiates	6.0%
Warfarin	10.5%	Digoxin	2.9%
ACE	7.7%	Prednisolone	2.5%
Antidepressants	7.1%	Clopidogrel	2.4%

Adverse drug reactions as cause of admission to hospital: prospective analysis of 18 820 patients M Pirmohamed et al, BMJ 2004;329:15-19

2.5 Numbers needed to treat drug effectiveness summary (see references for additional information)

ACE INHIBITORS			
Indication	**NNT per annum**	**To do what**	**Notes**
Elevated Vascular Risk [Normal LV]	280	Prevent one death [all causes]	Trial ran for 5 years
Impaired LV Function-mild/moderate	30	Prevent one death [all causes]	Likely symptomatic benefit
Combination Therapy including ACE			
ACE + Indapamide	55	Prevent one stroke	Trial ran for 5 years
Secondary Prevention post MI > 80 yrs [ACE+ BB +ASP+ STAT]	33	Prevent one Death	
ACE + Beta blocker for impaired LV	14	Prevent one death	Likely symptomatic benefit
Impaired LV Mild /moderate ACE + BB	15	Prevent one Death	Likely symptomatic benefit
Impaired LV Severe ACE + BB + Spiro	7	Prevent one Death	Likely symptomatic benefit
ASPIRIN Primary Prevention	Enormous	No longer recommended	
ASPIRIN Post Stroke/ TIA	100	Prevent one stroke or MI or Vascular Death	
DYPYRIDAMOLE In addition to ASPIRIN post stroke/TIA	100	Prevent one vascular event	BNF caution in cardiac disease
CLOPIDOGREL post stroke or TIA	Equivalent to Dypridamole + Aspirin	Prevent one vascular event	
ATRIAL FIBRILLATION			
AF + another risk factor WARFARIN v ASPIRIN	40	Prevent one Stroke- no difference in mortality	
AF (Secondary Prevention after Stroke) WARFARIN v ASPIRIN	16	Prevent one stroke	
ASPIRIN	No effect		
HYPERTENSION			BP > 140/90 trial predominantly systolic hypertension
Cardiovascular morbidity and mortality >80 yrs			
Low Risk	80	Avoid one cardiovascular event	2 years for effect
High Risk [Diabetes, vascular disease]	32	Avoid one cardiovascular event	2 years for effect
Cerebrovascular morbidity and mortality > 80 yrs	122	Avoid one cerebrovascular event	2 years for effect
Cardiovascular morbidity and mortality > 60yrs			
Low Risk	107	Avoid one cardiovascular event	4.5 years for effect
High Risk [Diabetes, vascular disease]	40	Avoid one cardiovascular event	4.5 years for effect
HYPERTENSION *(Tayside Day Hospital cohort)*	36	Prevent one death	NNT 30 if also Cardiovascular Disease

STATINS	**NNT per annum**	**To do what**	
MI or Angina	80 to 170	Major Coronary Event.	No difference in Mort to 5 years
Post Stroke [Atrova 80 v Placebo]	165	One Cardiovascular Event	No difference in Mort to 5 years
Tight HbA1c Control Strategies			
Microvascular Risk			
ADVANCE [HbA1c7.3% v 6.5%]	333	One microvascular event [predominantly retinal]	Trial ran 5 years
UKPDS [HbA1C 7.9% v 7%]	200	One microvascular event [predominantly retinal]	Trial ran 10 years
Macrovascular Risk	No difference at 10 years		
Metformin			
Overweight /obese Diabetic	50	One MI or Diabetes event or Death	10 year follow up
Standard < 140 BP control in diabetes any means	57	One Stroke or major diabetes event or death	8 year follow up
Tight BP control in diabetes			
BP 120 v BP 134	500	Prevent one stroke	4 years minimum for effect
Number needed to harm for this strategy	50		

Osteoporosis [Alendronate + Calcium/VitD]	**2y Prevention Vertebral #**	**2y Prevention Hip #**	**Notes for Osteoporosis**
70 -74 years	65	430	NNT per annum to prevent further #
75 - 79 years	45	180	Potential symptomatic benefit re Vertebral #
80 - 84 years	60	105	**Normally 2 years needed to see effect.**
85 - 89 years	55	45	
90+years	40	40	

High Risk Combinations

These combinations are noted to be particularly high risk and should be looked for and stopped at every drug review. **NSAID**

+ACE or ARB + Diuretic ['Triple Whammy' combo]

+eGFR <60

+diagnosis heart failure

+Warfarin

+age >75 without PPI

Heart Failure

+Glitazone +NSAID

+Tricyclic antidepressant

Warfarin

+ another antiplatelet.

+NSAID

+Macrolide

+Quinolone

+Metronidazole

+azole antifungal

Drugs for which specialist advice is strongly advised before altering include:

• anticonvulsants for epilepsy

• antidepressant, antipsychotic and mood stabilising drugs (eg lithium)

• drugs for the management of Parkinson's Disease

• amiodarone

• disease-modifying antirheumatic drugs.

Drugs that are tolerated poorly in frail patients

It is particularly important to clarify if patients on the following have a **Valid and Current Indication** and are still felt to be effective**.**

- Digoxin in higher doses 250 microgram +
- Antipsychotics
- Tricyclic antidepressants
- Benzodiazipines particularly long term
- Anticholinergics
- Phenothiazines [eg prochlorperazine]
- Combinations painkillers [eg cocodamol v paracetamol]

STOP if dehydrated

- ACE inhibitors
- Angiotensin 2 Receptor Blockers
- NSAIDs
- Diuretics
- Spironolactone , Eplerenone
- Metformin

In Dehydrated Adults

For example those suffering from more than minor vomiting/diarrhoea. Restart when well (eg 24 to 48 hrs eating and drinking normally).

Adults with advanced heart failure can decompensate rapidly off drugs and adults with more than minor dehydration in this group need urgent specialist advice.