Polypharmacy: Guidance for Prescribing in Frail Adults

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Prepared by: Polypharmacy Action Group  Date of Review: June 2015
Lead Reviewer: Dr Martin Wilson, Consultant Physician, Raigmore Hospital  Version: 4.0
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Section 1

Polypharmacy: Guidance for Prescribing In Frail Adults

This guideline provides guidance on how to make safe and sensible decisions on prescribing in two often overlapping situations where extra thought and consideration are needed.

1. When faced with a patient who is either on or has indications to be on multiple medications.

2. When a patient is ‘Frail’ in a medical sense. ‘Frailty’ in this guideline is taken to describe a state where a patient has a reduced ability to withstand illness without loss of function.¹

Research has demonstrated that patients on multiple medications are more likely to suffer drug side effects and that this is more related to the number of co-morbidities a patient has than age.² There is a clear and steady increase in the number of patients admitted to hospital with drug side effects.³ Patients admitted with one drug side effect are more than twice as likely to be admitted with another.²

This guideline provides guidance for the following situations:

1. Patients who are taking very large numbers of medications [>10 prescribed items] and who are either suffering side effects or are unwilling or unable to take such a large number of medications.

2. Patients who have suffered a side effect of a medication and where a decision is needed on whether to restart the drug or avoid.

3. Patients with Indications of Shortened Life Expectancy where life expectancy is shorter than the time that medication would take to give significant effect.

4. Situations where Guidelines suggest ‘Medication Review’ but are not specific as to what is to be done eg Comprehensive assessment of Falls Risk, Anticipatory Care, Care Home Drug reviews.

In each of these situations the guideline summarises the expected effectiveness of several of the main current drug strategies looking at:

1. What benefit various drug strategies hope to achieve

¹ Roackwood CMAJ 1994; 150:489-495.
² Co-morbidity and repeat admission to hospital for adverse drug reactions in older adults: retrospective cohort study M Zhang et al BMJ 2009;338:a275
³ 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. How many patients per annum need to be treated with that drug to obtain benefit in one patient?

3. Where possible an estimation of how long treatment was needed in therapeutic trials to show a significant difference between being on that drug and not being on that drug

With this information prescribers are then advised, in conjunction with patients and where relevant carers, to use this information:

1. Consider stopping medication that would not reasonably be expected to give a benefit within the reasonable expectation of that person’s lifespan.

2. Prioritise which of multiple medications are the most effective when major polypharmacy (>10 prescribed drugs) exists.

3. Consider stopping medication where the risk of side effect now is considered to be now greater than the expected benefit.

**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.

<table>
<thead>
<tr>
<th>CRITERIA / CONSIDERATIONS</th>
<th>PROCESS/GUIDANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Is there a valid and current indication? Is the dose appropriate?</td>
</tr>
<tr>
<td>2</td>
<td>Is the medicine preventing rapid symptomatic deterioration?</td>
</tr>
<tr>
<td>3</td>
<td>Is the medicine fulfilling an essential replacement function?</td>
</tr>
<tr>
<td>4</td>
<td>Consider medication safety Is the medicine causing: -Any actual or potential ADRs? -Any actual or potentially serious drug interactions?</td>
</tr>
<tr>
<td>5</td>
<td>Consider drug effectiveness in this group/person?</td>
</tr>
<tr>
<td>6</td>
<td>Are the form of medicine and the dosing schedule appropriate? Is there a more cost effective alternative with no detriment to patient care?</td>
</tr>
<tr>
<td>7</td>
<td>Do you have the informed agreement of the patient/carer/welfare proxy?</td>
</tr>
</tbody>
</table>
Drug Effectiveness Summary

This chart included as an appendix summarises the expected effect of various commonly prescribed drug strategies represented in terms of Number Needed to Treat per annum to achieve a desired effect.

In most cases this demonstrates that these strategies can be very effective if given to enough people for a long enough period of time.

Where possible emphasis has been given to trials that include older age groups. Where possible metanalysis and reviews of multiple trials from reputable sources eg Cochrane have been used to try and obtain the best estimates of overall effect. [List of trials]

It is recognised that no data in any trial or metanalysis will ever give an exact figure for an individual patient. It is reasonable to assume however that the figures given give a reasonable estimate of the order of magnitude of effect.

It is noted that patients in drug trials will tend on average to be younger, fitter and have less co-morbidity than those not in trials.

The drugs included were chosen as:

1. Drugs commonly associated with admission due to adverse drug reaction.
   or
2. Drugs commonly prescribed in patients with multiple co-morbidity?

Medicines and Falls in Hospital Summary Sheet

This document is included as an appendix to this guidance with the kind permission of the authors. Information on particular medications and their association with falls risk is hard to obtain and data tend to be sparse. The authors were keen to highlight that this information is limited by the lack of enough good research on this subject, it is however an excellent place to start if looking for information in this area.

Direct link here
Section 2

Further Information Inserted as Hyperlinks within Guidance Document

Indications Of Shortened Life Expectancy

We suggest following guidance contained in the prognostic indicators guidance from the Gold Standards Framework incorporated into the ‘Living Well/Dying Well’ strategy. A full copy of this is available as an [appendix](#): 

Main groups
Three triggers that suggest that patients are nearing the end of life are:

1. The Surprise Question: ‘Would you be surprised if this patient were to die in the next few months, weeks, days’?
2. General indicators of decline - deterioration, increasing need or choice for no further active care.
3. Specific clinical indicators related to certain conditions. The guidance highlights flexible criteria with some overlaps, especially with those with frailty and other co-morbidities.
   a. Cancer – rapid or predictable decline
   b. Organ Failure – erratic decline
   c. Frailty/ Dementia – gradual decline

The Gold Standards Framework gives specific information as to what tends to indicate poor prognosis in a number of conditions.

For example:

Frailty
Frailty is well defined as a ‘reduced ability to withstand illness without loss of function’.

The Gold Standards Framework defines this further as individuals who present with multiple co-morbidities with significant impairment in day to day living and:

- Deteriorating functional score, e.g. performance status – Barthel/ ECOG/ Karnofksy
- Combination of at least three of the following symptoms:
  - weakness
  - slow walking speed
  - significant weight loss
  - exhaustion
  - low physical activity
  - depression.

Back to text
Drugs That Can Be Associated With Rapid Symptomatic Decline If Stopped

Drugs in this group may be in need of review but commonly will require specialist advice or cautious stepwise withdrawal.

- ACE inhibitors in heart failure [left ventricular impairment].
- Diuretics in heart failure.
- Steroids.
- Drugs for heart rate or rhythm control [beta blockers; digoxin].

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.
- Amdiarone.
- Disease modifying antirheumatic drugs.

High Risk Drug Group

The following are highlighted as being particularly high risk combinations and should be avoided where possible and clearly justified when considered necessary. This list is NOT exhaustive, and the safety of other drugs has to be considered depending on individual circumstances.

**NSAID**

+ angiotensin Converting Enzyme Inhibitor [ACE] or angiotensin-II receptor antagonist [ARB] + Diuretic ['Triple Whammy' combo]
+ eGFR <60 mL/min/m²
+ diagnosis heart failure
+ warfarin
+ age >75 without PPI

**Warfarin**

+ another antiplatelet. It is noted that although specific indications for this exist, in a frail group of patients the risk is high and combination should be challenged unless specifically noted as having taken account of patient frailty/polypharmacy.
  + NSAID
  + macrolide
  + quinolone
  + metronidazole
  + azole antifungal (inc miconazole oromucosal gel or buccal tablets)

**Heart Failure diagnosis**

+ ploglitazone
+ NSAID
+ tricyclic antidepressant

**ACE inhibitor + angiotensin-II receptor antagonist [ARB/ sartan]**

Recent metanalysis has supported previous concerns that this combination increases risk of Renal Failure without improvement in mortality. This is a particularly concerning combination in frail adults and should be avoided.
Drugs That Are Tolerated Poorly In Frail Patients

Similar to above, although sometimes necessary, the following groups are noted to be poorly tolerated and associated with adverse events [especially falls]. It is particularly important to clarify if patients on the following have a **Valid and Current Indication** and are still felt to be effective. **Attention is still needed when considering stopping these see Drugs that can be associated with rapid symptomatic decline if stopped.**

- Digoxin in higher doses 250microgram +
- Antipsychotics [although note caution re rapid symptomatic decline]
- Tricyclic antidepressants
- Benzodiazepines particularly long term
- Anticholinergics
- Phenothiazines [eg prochlorperazine]
- Combinations painkillers [eg co-codamol v paracetamol].

**Abbreviation Definitions**

**NNT** Number needed to treat to avoid a single additional adverse outcome. Needs to refer both to what adverse outcome is avoided and over what time scale. [Calculated as 1/ARR]

**ARR** Absolute risk reduction, the absolute difference in adverse outcomes between groups.

**RRR** Relative risk reduction, the relative difference between outcomes between groups.

**Drugs Most Associated With Admission Due To Adverse Drug Reaction [ADR]**

In 2004 UK study most common drug groups associated with admission due to ADR were:

1. NSAIDs 29.6%
2. Diuretics 27.3%
3. Warfarin 10.5%
4. ACE 7.7%
5. Antidepressants 7.1%
6. Beta blockers 6.8%
7. Opiates 6.0%
8. Digoxin 2.9%
9. Prednisolone 2.5%
10. Clopidogrel 2.4%
Information on Particular Drug Side Effects

Combination Antiplatelet Therapy with Warfarin

Taking warfarin as baseline ie one risk of bleeding in a recent large study is as follows

- Aspirin: 0.93 [0.88 to 0.98]
- Clopidogrel: 1.06 [0.87 to 1.29]
- Aspirin + Clopidogrel: 1.66 [1.34 to 2.04]
- Warfarin + Aspirin: 1.83 [1.72 to 1.96]
- Warfarin + Clopidogrel: 3.08 [2.32 to 3.91] 13.9% bleed/patient year
- Warfarin + Aspirin + clopidogrel: 3.70 [2.89 to 4.76] 15.7% bleed/patient year

Bleeding was defined as admission to hospital with bleeding related episode or death with bleed.

Average Age in trial 70

Main indication. 82 854 patients surviving hospitalisation with atrial fibrillation.

Stroke occurrence lowest in warfarin only group.

Potential Dangers in Lower Hb A1Cs

Researchers analysed data from nearly 48,000 primary care patients whose treatment had been stepped up their hypoglycaemic treatment. Hb A1c around 7.5% had the lowest mortality. Risk of death rose significantly on both sides of this reference group, reaching a hazard ratio of 1.52 (1.32 to 1.76) for patients in the bottom 10th of HbA1c concentration (median 6.4%), and 1.79 (1.56 to 2.06) for patients in the top 10th (median 10.5%).

These results are of particular concern for the frailer groups of patients covered by the Polypharmacy Guideline who given the long lead time to obtain benefits from low Hb A1c, may nonetheless suffer adverse outcomes.
Risks of stopping Aspirin in Secondary Prevention

Low dose aspirin is recommended in patients who have suffered myocardial infarction or other vascular event.

Stopping low dose Aspirin in this situation has a risk of increased cardiac events.

This has recently been estimated as increasing risk of non fatal myocardial infarction from 6 per 1,000 patient years to 10 per 1,000 patient years. This gives a number needed to harm (from non–fatal myocardial infarction) from stopping aspirin of about 250 per year.

Drugs and Dehydration

STOP

- ACE inhibitors
- angiotensin- II receptor antagonists
- NSAIDs
- Diuretics
- 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.

In all patients but in particular frail adults this is useful information to give to patient; relative; carer; care home staff.

The above list is not exhaustive and adults on less commonly prescribed medications (such as Lithium) may need similar advice.

Information cards are now available that can be given to patients or their carers directly to summarise this advice. More information on this is available as an appendix to this guidance or through this link.
Anticholinergic effects of commonly prescribed medication.

Anticholinergics are well recognised as being problematic in frail adults. Predominantly the concern has been around impaired cognition and falls risk. Recent research also points to a link to mortality increasing with the number and potency of anticholinergic agents prescribed.

In addition to commonly recognised anticholinergic medicines several other medicines have significant anticholinergic effects.

The following table shows anticholinergic weighting of a number of common drugs. The higher the number the stronger the effect. The chart is intended to raise awareness of anticholinergic effects rather than being used as a day to day tool.

**Anticholinergic risk scale**

<table>
<thead>
<tr>
<th>1 Point</th>
<th>2 Points</th>
<th>3 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>b. Quetiapine</td>
<td>b. Nortriptyline</td>
<td>b. Amitryptyline</td>
</tr>
<tr>
<td>c. Mirtazapine</td>
<td>c. Baclofen</td>
<td>c. Imipramine</td>
</tr>
<tr>
<td>d. Paroxetine</td>
<td>d. Cetirizine</td>
<td>d. Chlorpheniramine</td>
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<tr>
<td>e. Trazodone</td>
<td>e. Loratadine</td>
<td>e. Hydroxyzine</td>
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<tr>
<td>g.</td>
<td>g. Loperamide</td>
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<tr>
<td>h.</td>
<td>h. Prochlorperazine</td>
<td></td>
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<tr>
<td>i.</td>
<td>i. Tolterodine</td>
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</tbody>
</table>
Rationalisation of Antipsychotics in Patients with Dementia - Good Practice Guide for Reduction/ Cessation of Treatment

Patients who have dementia and who have been on antipsychotics for more than 3 months and have stable symptoms should be reviewed with a view to reducing or stopping antipsychotic medication. Antipsychotics are associated with an increased risk of falls, delirium, cerebrovascular events and all-cause death

**Priority groups** for reducing antipsychotic medication include:
- People in care homes- the prescription of antipsychotics for Behavioral and Psychological Symptoms of Dementia (BPSD) is most common in patients in care homes, who are also more frail than other populations
- People with vascular dementia- the risk of cerebrovascular events associated with antipsychotic medication may be higher in this population
- People with dementia who also have a history of cardiovascular disease, cerebrovascular disease or vascular risk factors. The risk of cerebrovascular events associated with antipsychotic medication may be higher in this population

**When not to stop** antipsychotic medication:
- Patients who have a co-morbid mental illness that is treated with antipsychotic medication, such as schizophrenia, persistent delusional disorder, psychotic depression or bipolar affective disorder should not have antipsychotic medication reduced without specialist advice.

**Reduction of antipsychotics:**
- As with initiation of medication, reduction should be carried out slowly with monitoring of effect.
- Start with a reduction of 25% of the total daily dose.
- If the current dose is low, e.g. at the suggested starting dose, the medication may be stopped without tapering the dose.

**Review the effect** after one week to assess for:
- The re-emergence of the initial “target” symptoms
- Discontinuation symptoms such as nausea, vomiting, anorexia, diarrhoea, rhinorrhoea, sweating, myalgia, paraesthesia, insomnia, restlessness, anxiety and agitation. These symptoms are more common with abrupt withdrawal of antipsychotic medication and generally begin within 1 to 4 days of withdrawal and abate within 7 to 14 days.
- If either of the above occurs the clinician should make an assessment of the risks and benefits of re-instating the previous dose of antipsychotic. Further attempts to reduce the antipsychotic should be made one month later with smaller decrements, for example 10% of the total daily dose.
- If there are no particular problems after week 1 then the dose should remain the same with further review after week 4 (for risperidone and haloperidol) or fortnightly (for Quetiapine).
- If the reduction has been tolerated without any of the effects described above then reduce by a further 25% and repeat the process.
- There will be practical issues when reducing the dose, for example the availability and form of small doses of medication. It is recommended that this is discussed with a pharmacist.
• It is suggested that once the total daily dose is reduced to the recommended starting dose for the individual antipsychotic, it may be stopped.

Specific Considerations for patients on LITHIUM

Although Lithium is not a commonly prescribed drug those of the elderly population that are prescribed it are a group particularly vulnerable to the adverse effects given the drugs interactions with some commonly prescribed medication.

Clinically important Lithium Interactions include

• **ACE inhibitors** have an unpredictable effect on Lithium levels, there can be up to 400% increase which usually develops over several weeks. A seven fold increased risk of hospitalisation for lithium toxicity has been reported in the elderly with the NEW use of ACE inhibitors in older adults on Lithium. Angiotensin II receptor antagonists are likely to be of similar risk.

• **Diuretics** also have an unpredictable effect on lithium plasma concentrations with thiazide diuretics associated with an up to 400% increase. This is usually apparent within the first 10 days. Loop diuretics are generally felt to be safer with any effect becoming apparent usually within the first month. They are however not without risk and five-fold increased risk of admission within one month of NEW use of loop diuretics has been reported in the elderly.

• **NSAIDS** - can increase plasma concentrations from 10% to greater than 400% within anything from a few days to several months.

If it is essential to add any of the above medications to an older adult who is taking Lithium it is recommended that lithium levels and renal function are closely monitored.

**Lithium and Dehydration.**

In dehydrated adults for example those suffering from more than minor vomiting/diarrhoea. Lithium should be stopped and restarted when well (eg 24 to 48 hrs eating and drinking normally).

**Withdrawing Antidepressants**

For an uncomplicated single episode of depression gradual reduction and withdrawal of antidepressant could be considered 6 to 9 months after the resolution of symptoms though multiple episodes or episodes with severe symptoms may require longer and advice from a specialist is recommended.
<table>
<thead>
<tr>
<th>DRUG</th>
<th>Valid Indication?</th>
<th>Symptomatic Relief or to prevent rapid symptomatic decline?</th>
<th>Vital Hormone Replacement?</th>
<th>High risk drug combo or poorly tolerated?</th>
<th>NNT per annum and to do what</th>
<th>Stop/Continue + notes</th>
<th>Reason for stopping</th>
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</table>

**DRUG REVIEW SUMMARY**

[Back to text]
Trials Used To Inform Guideline
[Back to Guideline]

Cardiac Trials
Effect of enalapril on survival in patients with reduced left ventricular ejection fractions and congestive heart failure. The SOLVD Investigators NEJM Volume 325:293-302 August 1, 1991 Number 5


The Randomized Aldactone Evaluation Study Investigators. The Effect of Spironolactone on Morbidity and Mortality in Patients with Severe Heart Failure [RALES] Bertram Pitt, M.D., Faiez Zannad, M.D., Willem J. Remme, M.D., Robert Cody, M.D., Alain Castaigne, M.D., Alfonso Perez, M.D., Jolie Palensky, M.S., Janet Wittes, Ph.D. NEJM Volume 341:709-717 September 2, 1999 Number 10

Setoguchi et al Improvements in Long Term Mortality after Myocardial Infarction J of AM College of Cardiology Vol. 51, No. 13, 2008 April

Stroke Secondary Prevention


High-Dose Atorvastatin after Stroke or Transient Ischemic Attack The Stroke Prevention by Aggressive Reduction in Cholesterol Levels (SPARCL) Investigators NEJM Volume 355:549-559 August 10, 2006 Number 6

NICE technology appraisal guidance 210 Clopidogrel and modified-release dipyridamole for the prevention of occlusive vascular events (review of technology appraisal guidance 90) Dec 2010
Warfarin

Hypertension

Statins
MRC/BHF Heart Protection Study of cholesterol lowering with simvastatin in 20 536 high-risk individuals: a randomised placebo controlled trial Heart Protection Study Collaborative Group THE LANCET • Vol 360 • July 6, 2002.

Diabetes

Effects of Intensive Blood-Pressure Control in Type 2 Diabetes Mellitus The ACCORD Study Group (10.1056/NEJMoa1001286) was published on March 14, 2010, at NEJM.org.

**Osteoporosis**


**Renal**


**Bleeding Risk and Antiplatelet Strategies**


**Aspirin in Secondary Prevention**


**Anticholinergics**


**Lithium**


ACE inhibitor use in combination with Angiotensin- 2 Receptor Blockers [Sartans]

The safety of combining angiotensin-converting- enzyme inhibitors with angiotensin-receptor blockers in elderly patients: a population-based longitudinal analysis F McAlister, J Zhang, M Tonelli, S Klarenbach, B Manns, B Hemmelgarn CMAJ, April 5, 2011, 183(6)

Other
Older Patients With Multiple Comorbid Diseases: Clinical Practice Guidelines and Quality of Care Cynthia M. Boyd; Jonathan Darer; Chad Boult; et al. JAMA. 2005;294(6):716-724.

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

**ACE INHIBITORS**

<table>
<thead>
<tr>
<th>Indication</th>
<th>NNT per annum</th>
<th>To do what</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elevated Vascular Risk [Normal LV]</td>
<td>280</td>
<td>Prevent one death [all causes]</td>
<td>Trial ran for 5 years</td>
</tr>
<tr>
<td>Impaired LV Function - mild/moderate</td>
<td>30</td>
<td>Prevent one death [all causes]</td>
<td>Likely symptomatic benefit</td>
</tr>
<tr>
<td>Combination Therapy including ACE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACE + Indapamide</td>
<td>55</td>
<td>Prevent one stroke</td>
<td>Trial ran for 5 years</td>
</tr>
<tr>
<td>Secondary Prevention post MI &gt; 80 yrs [ACE+ BB + ASP+ STAT]</td>
<td>33</td>
<td>Prevent one death</td>
<td>Likely symptomatic benefit</td>
</tr>
<tr>
<td>ACE + Beta blocker for impaired LV</td>
<td>14</td>
<td>Prevent one death</td>
<td>Likely symptomatic benefit</td>
</tr>
<tr>
<td>Impaired LV Mild/moderate ACE + BB</td>
<td>15</td>
<td>Prevent one Death</td>
<td>Likely symptomatic benefit</td>
</tr>
<tr>
<td>Impaired LV Severe ACE + BB + Spiro</td>
<td>7</td>
<td>Prevent one Death</td>
<td>Likely symptomatic benefit</td>
</tr>
<tr>
<td>Chronic Kidney Disease</td>
<td>See Notes</td>
<td>Increase time to dialysis, reduce Cardiovascular Risk</td>
<td></td>
</tr>
</tbody>
</table>

**ASPIRIN**

<table>
<thead>
<tr>
<th>Indication</th>
<th>NNT per annum</th>
<th>To do what</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Prevention</td>
<td>Enormous</td>
<td>No longer recommended</td>
<td></td>
</tr>
<tr>
<td>Post Stroke/ TIA</td>
<td>100</td>
<td>Prevent one stroke or MI or Vascular Death</td>
<td></td>
</tr>
<tr>
<td>CLOPIDOGREL</td>
<td>100</td>
<td>Prevent one vascular event</td>
<td>Equivalent to DYPRIDAMOLE/ASPRIN</td>
</tr>
</tbody>
</table>

**ATRIAL FIBRILLATION**

<table>
<thead>
<tr>
<th>Indication</th>
<th>NNT per annum</th>
<th>To do what</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AF + another risk factor WARFARIN v ASPIRIN</td>
<td>40</td>
<td>Prevent one Stroke- no difference in mortality</td>
<td></td>
</tr>
<tr>
<td>AF (Secondary Prevention after Stroke) WARFARIN v ASPIRIN</td>
<td>16</td>
<td>Prevent one stroke</td>
<td></td>
</tr>
<tr>
<td>ASPIRIN</td>
<td>No effect</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**HYPERTENSION**

**Cardiovascular morbidity and mortality > 80 yrs**

<table>
<thead>
<tr>
<th>Indication</th>
<th>NNT per annum</th>
<th>To do what</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Risk</td>
<td>80</td>
<td>Avoid one cardiovascular event</td>
<td>2 years for effect</td>
</tr>
<tr>
<td>High Risk [Diabetes, vascular disease]</td>
<td>32</td>
<td>Avoid one cardiovascular event</td>
<td>2 years for effect</td>
</tr>
</tbody>
</table>

**Cardiovascular morbidity and mortality > 60yrs**

<table>
<thead>
<tr>
<th>Indication</th>
<th>NNT per annum</th>
<th>To do what</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Risk</td>
<td>107</td>
<td>Avoid one cardiovascular event</td>
<td>4.5 years for effect</td>
</tr>
<tr>
<td>High Risk [Diabetes, vascular disease]</td>
<td>40</td>
<td>Avoid one cardiovascular event</td>
<td>4.5 years for effect</td>
</tr>
</tbody>
</table>

**Cerebrovascular morbidity and mortality > 80 yrs**

<table>
<thead>
<tr>
<th>Indication</th>
<th>NNT per annum</th>
<th>To do what</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Risk</td>
<td>122</td>
<td>Avoid one cerebrovascular event</td>
<td>2 years for effect</td>
</tr>
</tbody>
</table>

NNT are a guide; they do not give exact figures for individuals patients. Older people have increased absolute event rates, thus NNT to prevent one event may be lower in older people – conversely NNH are likely to be higher – see weighing the benefit / risk in NNT.
**STATINS**

<table>
<thead>
<tr>
<th>NNT per annum</th>
<th>To do what</th>
<th>No difference in Mort to 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>MI or Angina</td>
<td>80 to 170</td>
<td>Major Coronary Event.</td>
</tr>
<tr>
<td>Post Stroke</td>
<td>165</td>
<td>One Cardiovascular Event</td>
</tr>
<tr>
<td>[Atorvastatin 80 v Placebo]</td>
<td></td>
<td>No difference in Mort to 5 years</td>
</tr>
</tbody>
</table>

**Tight HbA1c Control Strategies**

**Microvascular Risk**

- **ADVANCE [HbA1c7.3% v 6.5%]**
  - NNT = 333
  - One microvascular event [predominantly retinal]
  - Trial ran 5 years

- **UKPDS [HbA1C 7.9% v 7%]**
  - NNT = 200
  - One microvascular event [predominantly retinal]
  - Trial ran 10 years

**Macrovascular Risk**

- No difference at 10 years

**Metformin**

<table>
<thead>
<tr>
<th>NNT per annum</th>
<th>To do what</th>
<th>No difference in Mort to 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overweight /obese Diabetic</td>
<td>50</td>
<td>One MI or Diabetes event or Death</td>
</tr>
<tr>
<td>Standard &lt; 140 BP control in diabetes any means</td>
<td>57</td>
<td>One Stroke or major diabetes event or death</td>
</tr>
<tr>
<td>Tight BP control in diabetes</td>
<td>500</td>
<td>Prevent one stroke</td>
</tr>
</tbody>
</table>

**Number needed to harm for this strategy**

- NNT = 50

**Osteoporosis [Alendronate + Calcium/VitD]**

<table>
<thead>
<tr>
<th>NNT per annum</th>
<th>To do what</th>
<th>No difference in Mort to 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>2y Prevention Vertebral #</td>
<td>65</td>
<td>430</td>
</tr>
<tr>
<td>2y Prevention Hip #</td>
<td>75 - 79 years</td>
<td>45</td>
</tr>
<tr>
<td>70 -74 years</td>
<td>45</td>
<td>180</td>
</tr>
<tr>
<td>75 - 79 years</td>
<td>45</td>
<td>180</td>
</tr>
<tr>
<td>80 - 84 years</td>
<td>60</td>
<td>105</td>
</tr>
<tr>
<td>85 - 89 years</td>
<td>55</td>
<td>45</td>
</tr>
<tr>
<td>90+years</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

**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
  - +diabetes heart failure
  - +Warfarin
  - +age >75 without PPI

- **Heart Failure**
  - +pioglitazone +NSAID
  - +Tricyclic antidepressant

- **Warfarin**
  - +another antiplatelet.
  - +NSAID
  - +Macrolide
  - +Quinolone
  - +Metronidazole
  - +azole antifungal

- **ACE + ARB**

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

- anticonvulsants for epilepsy
- antipsychotic and mood stabilising drugs (eg lithium)
- drugs for the management of Parkinson’s Disease
- amiodarone
- disease-modifying antirheumatic drugs.
- Drugs (eg ACEI) for Left Ventricular Systolic Dysfunction.

**ARB = Angiotensin 2 Receptor Blocker ‘Sartan’**

**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
  - Benzodiazepines particularly long term
  - Anticholinergics
  - Phenothiazines [eg prochlorperazine]
  - Combinations painkillers [eg codeinomol v paracetamol]

**Drugs to STOP if dehydrated**

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

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.

NNT are a guide; they do not give exact figures for individuals patients. Older people have increased absolute event rates, thus NNT to prevent one event may be lower in older people – conversely NNH are likely to be higher – see weighing the benefit / risk in NNT.
Medicines and Falls in Hospital: Guidance Sheet

All patients should have their drug burden reviewed with respect to its propensity to cause falls. The history should establish the reason the drug was given, when it started, whether it is effective and what its side effects have been. An attempt should be made to reduce the number and dosage of medications, and ensure they are appropriate and not causing undue side effects.

Falls can be caused by almost any drug that acts on the brain or on the circulation. Usually the mechanism leading to a fall is one or more of:

- **sedation**, with slowing of reaction times and impaired balance
- **hypotension**, including the 3 syndromes of paroxysmal hypotension – orthostatic hypotension, vasovagal syndrome and vasodepressor carotid sinus hypersensitivity
- **bradycardia, tachycardia or periods of asystole**

Falls may be the consequence of recent medication changes, but are usually caused by medicines that have been given for some time.

This guidance was prepared by:
Dr Adam Darowski, Consultant Physician, Clinical Lead, The FallSafe Project
Dr Jeremy Dwight, Consultant Cardiologist
Dr John Reynolds, Consultant in Clinical Pharmacology
John Radcliffe Hospital, Oxford, March 2011

This guidance has been approved by the British Geriatrics Society.

Key to tables overleaf:

![Traffic Light]

- **Red** High risk: can commonly cause falls alone or in combination
- **Amber** Moderate risk: can cause falls, especially in combination
- **Yellow** Possibly causes falls, particularly in combination
- **Green** National Institute for Health and Clinical Excellence (NICE) guidelines
DRUGS ACTING ON THE BRAIN (PSYCHOTROPIC DRUGS)

There is good evidence that stopping these drugs can reduce falls (1). Taking such a medicine roughly doubles the risk of falling. There is no data on the effect of taking two or more such tablets at the same time (2).

Sedatives, antipsychotics and sedating antidepressants cause drowsiness and slow reaction times. Some antidepressants and antipsychotics also cause orthostatic hypotension.

<table>
<thead>
<tr>
<th>MEDICATION GROUP</th>
<th>COMMONLY USED MEDICATIONS WITHIN THE GROUP</th>
<th>EFFECTS ON FALLS RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sedatives:</td>
<td>Temazepam, Nitracepam, Diazepam, Lorazepam</td>
<td>Drowsiness, slow reactions, impaired balance. Caution in patients who have been taking them long term.</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>Chlorzepoxide, Flurazepam, Lorazepam, Oxazepam, Clonazepam</td>
<td></td>
</tr>
<tr>
<td>Sedatives: “Zs”</td>
<td>Zopiclone, Zolpidem</td>
<td>Drowsiness, slow reactions, impaired balance.</td>
</tr>
<tr>
<td>Sedating antidepressants (tricyclics and related drugs)</td>
<td>Amitriptyline, Dosulepin Imipramine, Doxepin Clomipramine, Lofepramine, Nortriptyline, Trimipramine Mirtazapine, Mianserin Trazodone</td>
<td>All have some alpha blocking activity and can cause orthostatic hypotension. All are antihistamines and cause drowsiness, impaired balance and slow reaction times. Double the rate of falling.</td>
</tr>
<tr>
<td>Monoamine oxidase inhibitors (MAOIs)</td>
<td>Phenelzine, Isocarboxazid, Tranylcypromine</td>
<td>MAOIs are little now used; all (except moclobemide) cause severe orthostatic hypotension.</td>
</tr>
<tr>
<td>Drugs for psychosis and agitation</td>
<td>Chlorpromazine, Haloperidol, Fluphenazine, Risperidone Quetiapine, Olanzapine</td>
<td>All have some alpha receptor blocking activity and can cause orthostatic hypotension. Sedation, slow reflexes, loss of balance.</td>
</tr>
<tr>
<td>Selective serotonin reuptake inhibitor (SSRI) antidepressants</td>
<td>Sertraline, Citalopram, Paroxetine, Fluoxetine</td>
<td>Cause falls as much as other antidepressants in population studies. Several population studies have shown that SSRIs are consistently associated with an increased rate of falls and fractures, but there are no prospective trials. The mechanism of such an effect is unknown. They cause orthostatic hypotension and bradycardia only rarely as an idiosyncratic side effect. They do not normally sedate. They impair sleep quality.</td>
</tr>
</tbody>
</table>

Medicines and Falls in Hospital: Guidance Sheet 2
### Drugs acting on the brain (psychotropic drugs) - continued

<table>
<thead>
<tr>
<th>MEDICATION GROUP</th>
<th>COMMONLY USED MEDICATIONS WITHIN THE GROUP</th>
<th>EFFECTS ON FALLS RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serotonin and norepinephrine reuptake inhibitor (SNRI) antidepressants</td>
<td>Venlafaxine, Duloxetine</td>
<td>As for SSRIs but also commonly cause orthostatic hypotension (through noradrenaline re-uptake blockade).</td>
</tr>
<tr>
<td>A combination of an SSRI and a noradrenaline re-uptake inhibitor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opiate analgesics</td>
<td>All opiate and related analgesics – Codeine, Morphine, Tramadol</td>
<td>Sedate, slow reactions, impair balance, cause delirium.</td>
</tr>
<tr>
<td>Anti-epileptics</td>
<td>Phenytoin</td>
<td>Phenytoin may cause permanent cerebellar damage and unsteadiness in long term use at therapeutic dose. Excess blood levels cause unsteadiness and ataxia.</td>
</tr>
<tr>
<td></td>
<td>Carbamazepine, Phenobarbitone</td>
<td>Sedation, slow reactions. Excess blood levels cause unsteadiness and ataxia.</td>
</tr>
<tr>
<td></td>
<td>Sodium valproate, Gabapentin</td>
<td>Some data on falls association.</td>
</tr>
<tr>
<td></td>
<td>Lamotrigine, Pregabalin, Levatiracetam, Topiramate</td>
<td>Insufficient data to know if these newer agents cause falls.</td>
</tr>
<tr>
<td>Parkinson’s disease (PD): Dopamine agonists</td>
<td>Ropinirole, Pramipexole</td>
<td>May cause delirium and orthostatic hypotension.</td>
</tr>
<tr>
<td>Parkinson’s disease (PD): MAO-I-B inhibitors</td>
<td>Selegiline</td>
<td>Causes orthostatic hypotension. The subject of drugs and falls in PD is difficult, as falls are so common, and orthostatic hypotension is part of the disease. In general only definite drug related orthostatic hypotension would lead to a change in medication.</td>
</tr>
<tr>
<td>Muscle relaxants</td>
<td>Baclofen, Dantrolene</td>
<td>Sedative. Reduced muscle tone. No falls data on muscle relaxants. Tend to be used in conditions associated with falls.</td>
</tr>
</tbody>
</table>
Drugs acting on the brain (psychotropic drugs) - continued

<table>
<thead>
<tr>
<th>MEDICATION GROUP</th>
<th>COMMONLY USED MEDICATIONS WITHIN THE GROUP</th>
<th>EFFECTS ON FALLS RISK</th>
</tr>
</thead>
</table>
| Vestibular sedatives
Phenothiazines     | Prochlorperazine                            | Dopamine antagonist – may cause movement disorder in long term use. Alpha receptor blocker and antihistamine. |
| Vestibular sedatives
Antihistamines     | Cinnarazine, Betahistine                     | Sedating. No evidence of benefit in long term use. |
| Sedating antihistamines for allergy | Chlorphenamine, Hydroxyzine, Promethazine, Trimeprazine | No data, but sedation likely to contribute to falls. Long half lives. |
| Anticholinergics acting on the bladder | Oxybutinin, Tolterodine, Solifenacin | No data, but have known Central Nervous System (CNS) effects. |
DRUGS ACTING ON THE HEART AND CIRCULATION

Maintaining consciousness and an upright posture requires adequate blood flow to the brain. This requires an adequate pulse and blood pressure. In older people a systolic blood pressure of 110mmHg or below is associated with an increased risk of falls.

Any drug that reduces the blood pressure or slows the heart can cause falls (or feeling faint or loss of consciousness or “legs giving way”) (3). In some patients the cause is clear — they may be hypotensive, or have a systolic drop on standing. Others may have a normal blood pressure lying and standing, but have syncope or pre-syncope from carotid sinus hypersensitivity or vasovagal syndrome. Stopping cardiovascular medication reduces syncope and falls by 50%, and reduces the prevalence of these four syndromes (4, 5).

<table>
<thead>
<tr>
<th>MEDICATION GROUP</th>
<th>COMMONLY USED MEDICATIONS WITHIN THE GROUP</th>
<th>EFFECTS ON FALLS RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha receptor blockers</td>
<td>Doxazosin, Indoramin, Prazosin, Tamsulosin, Terazocin, Alfuzosin</td>
<td>Used for hypertension or for prostatism in men. They commonly cause severe orthostatic hypotension. Stopping them may precipitate urinary retention in men.</td>
</tr>
<tr>
<td></td>
<td>Sedating antidepressants</td>
<td>See ‘sedating antidepressants’ in the ‘drugs acting on the brain’ table. Orthostatic hypotension.</td>
</tr>
<tr>
<td></td>
<td>Drugs for psychosis and agitation</td>
<td>See ‘drugs for psychosis and agitation’ in the ‘drugs acting on the brain’ table. Orthostatic hypotension.</td>
</tr>
<tr>
<td>Centrally acting alpha 2 receptor agonists</td>
<td>Clonidine, Moxonidine</td>
<td>May cause severe orthostatic hypotension. Sedating.</td>
</tr>
<tr>
<td>Thiazide diuretics</td>
<td>Bendroflumethiazide, Chlorthalidone, Metolazone</td>
<td>Cause orthostatic hypotension, weakness due to low potassium. Hyponatraemia.</td>
</tr>
<tr>
<td>Loop diuretics</td>
<td>Furosemide, Bumetanide</td>
<td>Dehydration causes hypotension. Low potassium and sodium</td>
</tr>
<tr>
<td>Angiotensin converting enzyme inhibitors (ACEIs)</td>
<td>Lisinopril, Ramipril, Enalapril, Captopril, Perindopril</td>
<td>These drugs rely almost entirely on the kidney for their elimination and can accumulate in dehydration or renal failure.</td>
</tr>
<tr>
<td></td>
<td>Fosinopril, Trandiolapril, Quinapril</td>
<td>Excreted by liver and kidney.</td>
</tr>
</tbody>
</table>
Drugs acting on the heart and circulation - continued

<table>
<thead>
<tr>
<th>MEDICATION GROUP</th>
<th>COMMONLY USED MEDICATIONS WITHIN THE GROUP</th>
<th>EFFECTS ON FALLS RISK</th>
</tr>
</thead>
</table>
| Symptomatic hypotension in systolic cardiac failure | • ACEIs and beta blocker have a survival benefit in systolic cardiac failure and should be maintained whenever possible.  
• NICE recommends: stop nitrates, calcium channel blockers and other vasodilators. If no evidence of congestion, reduce diuretics. If problem persists, seek specialist advice.  
• The mortality risk from a fall at age 85 is about 1% per fall. The frequency of falls determines the balance between risk and benefit. Most cardiac failure in older people is diastolic (preserved left ventricular function). ACEIs and beta blockers have little survival benefit in diastolic failure. | |

<table>
<thead>
<tr>
<th>Angiotensin receptor blockers (ARBs)</th>
<th>Losartan, Candesartan, Valsartan, Irbesartan, Olmesartan, Telmisartan, Eprosartan</th>
<th>May cause less orthostatic hypotension than ACEIs. Excreted by liver and kidney.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta blockers</td>
<td>Atenolol, Sotalol - Renally excreted. May accumulate.</td>
<td>Can cause bradycardia, hypotension, carotid sinus hypersensitivity, orthostatic hypotension and vasovagal syndrome.</td>
</tr>
<tr>
<td></td>
<td>Bisoprolol, Metoprolol, Propranolol, Carvedilol, Timolol, eye drops</td>
<td>Can cause bradycardia, hypotension, carotid sinus hypersensitivity, orthostatic hypotension and vasovagal syndrome.</td>
</tr>
<tr>
<td>Antianginals</td>
<td>Glyceryl trinitrate (GTN)</td>
<td>A common cause of syncope due to sudden drop in blood pressure.</td>
</tr>
<tr>
<td></td>
<td>Isosorbide mononitrate, Nicorandil</td>
<td>Cause hypotension and paroxysmal hypotension.</td>
</tr>
<tr>
<td>Calcium channel blockers that only reduce blood pressure</td>
<td>Amlodipine, Felodipine, Nifedipine, Lercandipine</td>
<td>Cause hypotension and paroxysmal hypotension.</td>
</tr>
<tr>
<td>Calcium channel blockers which slow the pulse and reduce blood pressure</td>
<td>Diltiazem, Verapamil</td>
<td>May cause hypotension or bradycardia.</td>
</tr>
</tbody>
</table>
| Other antidyssrhythmics | Digoxin, Amiodarone, Flecaïnide | May cause bradycardia and other arrhythmias.  
Data on digoxin and falls probably spurious due to confounding by indication. |
Drugs acting on the heart and circulation - continued

<table>
<thead>
<tr>
<th>MEDICATION GROUP</th>
<th>COMMONLY USED MEDICATIONS WITHIN THE GROUP</th>
<th>EFFECTS ON FALLS RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetylcholinesterase inhibitors (for dementia)</td>
<td>Donepezil, Rivastigmine, Galantamine</td>
<td>Cause symptomatic bradycardia and syncope.</td>
</tr>
</tbody>
</table>

References

2. Darowski A, Chambers SCF and Chambers DJ. Antidepressants and falls. Drugs and Aging 2009 26 (5) 381-394
3. Darowski A and Whiting R. Cardiovascular drugs and falls. Reviews in Clinical Gerontology 2011, 21 (2) 170-179
Why is it important to identify people nearing the end of life?

‘Earlier identification of people nearing the end of their life and inclusion on the register leads to earlier planning and better co-ordinated care’

(GSF National Primary Care Snapshot Audit 2010)

About 1% of the population die each year. Although some deaths are unexpected, many more in fact can be predicted. This is inherently difficult, but if we were better able to predict people in the final year of life, whatever their diagnosis, and include them on a register, there is good evidence that they are more likely to receive well-coordinated, high quality care.

This updated fourth edition of the GSF Prognostic Indicator Guidance, supported by the RCGP, aims to help GPs, clinicians and other professionals in earlier identification of those adult patients nearing the end of their life who may need additional support. Once identified, they can be placed on a register such as the GP’s OOF / GSF palliative care, hospital flagging system or locality register. This in turn can trigger specific support, such clarifying their particular needs, offering advance care planning discussions prevention of crises admissions and proactive support to ensure they ‘live well until they die’.

Predicting needs rather than exact prognostication. This is more about meeting needs than giving defined timescales. The focus is on anticipating patients’ likely needs so that the right care can be provided at the right time. This is more important than working out the exact time remaining and leads to better pro-active care in alignment with preferences.

Definition of End of Life Care

General Medical Council, UK 2010

People are ‘approaching the end of life’ when they are likely to die within the next 12 months. This includes people whose death is imminent (expected within a few hours or days) and those with:

- Advanced, progressive, incurable conditions
- General frailty and co-existing conditions that mean they are expected to die within 12 months
- Existing conditions if they are at risk of dying from a sudden acute crisis in their condition
- Life-threatening acute conditions caused by sudden catastrophic events.

Three triggers that suggest that patients are nearing the end of life are:

1. The Surprise Question: ‘Would you be surprised if this patient were to die in the next few months, weeks, days’?
2. General indicators of decline - deterioration, increasing need or choice for no further active care.
3. Specific clinical indicators related to certain conditions.

Typical Case Histories

1) Mrs A - A 69 year old woman with cancer of the lung and known liver secondaries, with increasing breathlessness, fatigue and decreasing mobility. Concern about other metastases. Likely rapid decline

2) Mr B – An 84 year old man with heart failure and increasing breathlessness who finds activity increasingly difficult. He had 2 recent crisis hospital admissions and is worried about further admissions and coping alone in future. Decreasing recovery and likely erratic decline

3) Mrs C – A 91 year old lady with COPD, heart failure, osteoarthritis, and increasing signs of dementia, who lives in a care home. Following a fall, she grows less active, eats less, becomes easily confused and has repeated infections. She appears to be ‘skating on thin ice’. Difficult to predict but likely slow decline
Summary of suggested three steps for earlier identification

**Step 1**
Ask the Surprise Question
Would you be surprised if the patient were to die in next months, weeks or days?

- NO
- Don’t Know
- YES

**Step 2**
Do they have General Indicators of Decline?

- YES
  - Don’t Know
  - Reassess regularly

- NO
  - Reassess regularly

**Step 3**
Do they have Specific Clinical Indicators?

- YES
  - Begin GSF Process
    - Identify: Include the patient on the GP’s GSF/QOF palliative care register or locality register if agreed. Discuss at team meeting.
    - Assess: Discuss this with patient and carers, assess needs and likely support and record advance care planning discussions.
    - Plan: Plan and provide proactive care to improve coordination and communication.

- NO
  - Reassess regularly

How to use this guidance - what next?

**GSF Needs Based Coding**

This guidance aims to clarify the triggers that help to identify patients who might be eligible for inclusion on the register (supportive/palliative care/ GSF/ locality registers). Once identified and included on the register, such patients may be able to receive additional proactive support, leading to better co-ordinated care that also reflects people’s preferences. This is in line with thinking on shared decision-making processes and the importance of integrating advance care planning discussions into delivery of care. It is based on consideration of people’s needs rather than exact timescales, acknowledging that people need different things at different times. Earlier recognition of possible illness trajectories means their needs can be better anticipated and addressed. Specific tasks for each stage are part of the GSF Programmes in different settings, to enable better proactive coordinated care.

More details of Indicators – the intuitive surprise question, general and specific clinical

Step 1  
The Surprise Question

For patients with advanced disease of progressive life limiting conditions - Would you be surprised if the patient were to die in the next few months, weeks, days?

- The answer to this question should be an intuitive one, pulling together a range of clinical, co-morbidity, social and other factors that give a whole picture of deterioration. If you would not be surprised, then what measures might be taken to improve the patient’s quality of life now and in preparation for possible further decline?

Step 2  
General Indicators

- Decreasing activity – functional performance status declining (e.g. Barthel score) limited self-care, in bed or chair 50% of day) and increasing dependence in most activities of daily living
- Co-morbidity is regarded as the biggest predictive indicator of mortality and morbidity
- General physical decline and increasing need for support
- Advanced disease - unstable, deteriorating complex symptom burden
- Decreasing response to treatments, decreasing reversibility
- Choice of no further active treatment
- Progressive weight loss (>10%) in past six months
- Repeated unplanned/crisis admissions
- Sentinel Event e.g. serious fall, bereavement, transfer to nursing home
- Serum albumen <25g/l
- Considered eligible for DS1500 payment

Functional Assessments

Barthel Index describes basic Activities of Daily Living (ADL) as ‘core’ to the functional assessment. E.g. feeding, bathing, grooming, dressing, continence, toileting, transfers, mobiliy, coping with stairs etc.
- PULSE ‘screening’ assessment - P (physical condition); U (upper limb function);
- L (lower limb function); S (sensory); E (environment).
- Karnofsky Performance Status Score 0-100 ADL scale
- WHO/ECOG Performance Status 0-5 scale of activity.

Step 3  
Specific Clinical Indicators - flexible criteria with some overlaps, especially with Those with frailty and other co-morbidities.

a) Cancer – rapid or predictable decline

- Metastatic cancer
- More exact predictors for cancer patients are available e.g. PIPS (UK validated Prognosis in Palliative care Study). PPI, PPS etc. ‘Prognosis tools can help but should not be applied blindly’
- ‘The single most important predictive factor in cancer is performance status and functional ability’ - if patients are spending more than 50% of their time in bed/lying down, prognosis is estimated to be about 3 months or less.

b) Organ Failure – erratic decline

Chronic Obstructive Pulmonary Disease (COPD)

At least two of the indicators below:
- Disease assessed to be severe (e.g. FEV1 <30% predicted)
- Recurrent hospital admissions (at least 3 in last 12 months due to COPD)
- Fuills long term oxygen therapy criteria
- MRC grade 4/5 – shortness of breath after 100 metres on the level of confused to house
- Signs and symptoms of right heart failure
- Combination of other factors – i.e. anorexia, previous ITU/NIV resistant organisms
- More than 6 weeks of systemic steroids for COPD in preceding 6 months.

Heart Disease

At least two of the indicators below:
- CHF NYHA Stage 3 or 4 - shortness of breath at rest on minimal exertion
- Patient thought to be in the last year of life by the care team - The ‘surprise question’
- Repeated hospital admissions with heart failure symptoms
- Difficult physical or psychological symptoms despite optimal tolerated therapy.
Renal Disease
Stage 4 or 5 Chronic Kidney Disease (CKD) whose condition is deteriorating with at least 2 of the indicators below:
- Patient for whom the surprise question is applicable
- Patients choosing the ‘no dialysis’ option, discontinuing dialysis or not opting for dialysis if their transplant has failed
- Patients with difficult physical symptoms or psychological symptoms despite optimal tolerated renal replacement therapy
- Symptomatic Renal Failure – nausea and vomiting, anorexia, pruritus, reduced functional status, intractable fluid overload.

General Neurological Diseases
- Progressive deterioration in physical and/or cognitive function despite optimal therapy
- Symptoms which are complex and too difficult to control
- Swallowing problems (dysphagia) leading to recurrent aspiration pneumonia, sepsis, breathlessness or respiratory failure
- Speech problems: increasing difficulty in communications and progressive dysphasia. Plus the following:

Motor Neurone Disease
- Marked rapid decline in physical status
- First episode of aspirational pneumonia
- Increased cognitive difficulties
- Weight Loss
- Significant complex symptoms and medical complications
- Low vital capacity (below 70% of predicted using standard spirometry)
- Dysphagia, mobility problems and falls
- Communication difficulties.

Parkinson’s Disease
- Drug treatment less effective or increasingly complex regime of drug treatments
- Reduced independence, needs ADL help
- The condition is less well controlled with increasing “off” periods
- Dyskinesias, mobility problems and falls
- Psychiatric signs (depression, anxiety, hallucinations, psychosis)
- Similar pattern to frailty - see below.

Multiple Sclerosis
- Significant complex symptoms and medical complications
- Dysphagia + poor nutritional status
- Communication difficulties e.g. Dysarthria + fatigue
- Cognitive impairment notably the onset of dementia.

c) Frailty / Dementia – gradual decline

Frailty
Individuals who present with Multiple co-morbidities with significant impairment in day to day living and:
- Deteriorating functional score e.g. performance status – Barthel/ECOG/Karnofsky
- Combination of at least three of the following symptoms:
  - weakness
  - slow walking speed
  - significant weight loss
  - exhaustion
  - low physical activity
  - depression.

Dementia
There are many underlying conditions which may lead to degrees of dementia and these should be taken into account. Triggers to consider that indicate that someone is entering a later stage are:
- Unable to walk without assistance and
- Urinary and faecal incontinence, and
- No consistently meaningful conversation and
- Unable to do Activities of Daily Living (ADL)
- Barthel score <3.

Stroke
- Persistent vegetative or minimal conscious state or dense paralysis
- Medical complications
- Lack of improvement within 3 months of onset
- Cognitive impairment / Post-stroke dementia.

Prognostic Indicator Guidance (PIG) 4th Edition Oct 2011 © The Gold Standards Framework Centre In End of Life Care CIC, Thomas K et al
Use of needs based coding

Prognostication or prediction of need.

Prognostication is inherently difficult and inaccurate, even when informed by objective clinical indicators. Most people tend to give undue weight to prognosis and too little to the importance of planning for possible need, especially for those with non-cancer illnesses, frailty and co-morbidities. In order to identify more accurately those patients who need additional pro-active supportive care, the focus should be on a pragmatic, even instinctive, prediction of the rate and course of decline. Some specific tools can help to predict accurately the time remaining for cancer patients but they should be used with caution (BMJ 2011; 343:d5171)

We suggest a move towards earlier consideration and more ‘rainy day thinking’ – bringing an umbrella just in case it rains. This instinctive, anticipatory and ‘insurance-type’ thinking relates more to meeting likely needs and planning ahead, rather than focusing on trying to predict likely timescales, and should ensure appropriate support and care can be mobilised.

If you can anticipate possible deterioration, then you can begin discussions about preferences and needs at an earlier stage. The aim of such advance care planning discussions is to establish patients’ sometimes unvoiced concerns, needs and preferences, enabling more people to live out the final stage of life as they choose (see ACP Guidance on GSF/ EOLC websites). This also means you can introduce practical measures to prevent crises and make referrals for extra help or advice.

Needs Based Coding - the right care at the right time

Patients have differing requirements at varying stages of their illness. The use of needs-based or colour coding can be very helpful in prioritising need. Some clinicians in care homes, GP practices and hospitals use this system to identify their patients’ stage of decline and so predict at an earlier stage their future needs. Although only a rough guide, this helps us focus on giving the right care at the right time, with regular reviews built in to trigger actions at each stage. As a result a needs/support care plan can be developed for each individual.

### Needs Based Coding and Needs Support Matrices

Identifying the stage of illness and anticipating needs and support – to deliver the right care at the right time for the right patient

- **A** – All – stable from diagnosis
- **B** – Unstable, advanced disease
- **C** – Deteriorating, exacerbations
- **D** – Last days of life pathway

*For further details of use of Needs / Support Coding and Matrices as part of the GSF Programmes contact the GSF Centre.*

### Long term conditions

There is a strong correlation between care for patients with long-term conditions and those with advanced disease nearing the end of life. This is especially true for patients with organ failure (heart failure, COPD). Close collaboration with care managers can reduce unplanned admissions and support good end of life care.

Use of this guidance by different teams

### Primary care teams.

Identifying patients, the first step of GSF, is key to developing a Palliative Care Register, which forms part of the QOF palliative care points in the GMS contract.

**The National Primary Care Snapshot Audit (2010) in England demonstrated 3 key findings:**

- Only about 25% of patients who died were included on the GP’s Palliative Care/GSF register
- Only 25% of these had non-cancer conditions
- Most importantly, those patients identified early and included on the register received **better quality coordinated care**

Therefore this affirms the need for earlier recognition and identification of people nearing the end of life where possible, i.e. the 1% of the population who die each year, greater representation of patients with non-cancer, organ failure, and those with frailty and dementia is recommended, including those from care homes.

**Two helpful questions for practice teams to ask:**

1. **What is your register ratio?** The number of patients on your palliative care register over the number who died in your practice (using the 1% rule as an approximation e.g. 5000 population = about 50 deaths/year).
2. **What is your non-cancer/cancer ratio on register?** What percentage of patients on the register has cancer or non-cancer conditions as their main cause of death?

For more details on the QOF points and guidance on Next Stage GSF in Primary care, see the GSF website.

### Care homes

Use of the surprise question and this guidance has been found to help identify residents who are most in need in care homes. This can help focus care and trigger key pro-active support, thereby leading to reduced hospital deaths (e.g. halving of death rate in care homes using GSF in Care Homes Programme).

### Acute hospital teams.

About 25% of all hospital beds are occupied by someone who is dying. The National Audit Office estimates that at least 40% of those people have no medical need to be there. Improved early identification of people in the final year of life helps reduce hospitalisation and accessing supportive and palliative care services. It is extremely helpful if hospital teams notify GPs that a particular patient has advanced disease and might be included on their register.

### Specialist teams.

Specialist palliative care teams play a vital role especially with cancer patients, but there is a need for collaboration with other specialist teams for non-cancer patients to provide optimal care. These include those with dementia, care of the elderly, heart failure, etc. and this guidance may help clarify referrals.

### Commissioners/managers.

This guidance could be used as part of an end of life care strategic plan, with improved provision of services for all patients nearing the end of life and introduction of a locality register.
"It should be possible therefore to predict the majority of deaths, however, this is difficult and errors occur 30 per cent of the time... However, the considerable benefits of identifying these patients include providing the best health and social care to both patients and families and avoiding crises, by prioritising them and anticipating need. Identifying patients in need of palliative care, assessing their needs and preferences and proactively planning their care, are the key steps in the provision of high quality care at the end of life in general practice."

(Quality and Outcomes Framework (QOF) Guidance) 2011/12 Guidance

‘It is recommended that people approaching the end of life are identified in a timely way.’
(Draft Recommendation NICE Guidance in End of Life Care 2001)

This is not attempting to answer the question that doctors often ask - 'how long have I got?' Rather, it responds to the underlying sometimes unspoken questions from people facing a new reality 'If I haven't got long, then what should I do and how can you help?'

(Thomas K GSF Centre 2008)

"For many people suffering from a chronic illness, a point is reached where it is clear that the person will die from their condition. Despite this, for many conditions it may be difficult, if not impossible and potentially unhelpful, to estimate prognosis accurately. The Prognostic Indicator Guidance developed as part of the Gold Standards Framework (GSF) provides useful prompts or triggers to a healthcare professional that discussions about the end of life should be initiated, if this has not already happened". (DH End of Life care Strategy 2008 England)

Identification of people with a life-limiting illness when they are starting to need a change in their goals of care contributes to end of life planning and can aid communication with patients and families. It depends on clinical judgement and weighing up a complex of pathology, clinical findings, therapeutic response, co-morbidities, psychosocial factors, and rate of decline. (Gilare P J Palliat Med 2008)

"Using the GSF 'PIG' has helped us to identify these patients earlier than we previously did, especially those with non-cancer, thereby giving them earlier support as they face the end of their lives, leading to fewer crises and hospital admissions." (GP using Next Stage GSF Training Programme 'Going for Gold')

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Development of this guidance paper. This guidance was originally commissioned from the GSF Centre in June 2006 to support GPs include appropriate patients on their GOF Palliative Care Registers i.e. those considered to be in the final 12 months of life. It is regularly revised following extensive consultation with clinical and disease specialist groups, palliative care specialists and GPs in the Royal College of General Practitioners. Particular thanks go to the NHS End of Life Care Programme and University of Edinburgh team for their help. Since publication, this Guidance has been widely used by clinicians in many sectors in the UK and internationally. A list of detailed references is available on request. This is one of several tools available to support improvements in End of Life Care, and further details on best use, IT support and further developments can be obtained from the GSF Centre.

Resources and Further Reading:

National Gold Standards Framework Centre for End of Life Care - Primary care, care homes and other areas: www.goldstandardsframework.org.uk
National Primary Care Snapshot Audit (2009/2010) DH report – Next Stage GSF Primary Care Training www.goldstandardsframework.org.uk/GSFPrimaryCareNHS
NHS End of life Care Programme www.endoflifecareforadults.nhs.uk
GMC End of Life Care www.gmc-uk.org/static/documents/content/End_of_life.pdf
NICE Draft Quality Standards in End of Life Care (for consultation- due Nov 2011) www.nice.org.uk/guidance/qualitystandards/enddevelopment/endoflifecare-to
British Geriatrics Society. www.bgs.org.uk/find/education/2008/0624placements_content.html
Dying Matters and the QIPP Find the 1% campaign – www.dyingmatters.org.uk or National Council for Palliative Care www.ncrie.org.uk
QIPP Department of Health www.endoflifecareforadults.nhs.uk/strategy/policy/mortality-valuation


Renal advisory group of the NFG, British Renal Society, and British Transplant Society. www.britishrenal.org
Barthol Score: Barthel’s index of activities of daily living (BADL) www.patient.co.uk/showdoc/4001664/
SPICT Guidance University of Edinburgh. Supportive and Palliative Care Indicators tool (SPICT) www.palliativecareguidelines.scot.nhs.uk/careplanning/
SPOTLIGHT: Palliative care beyond cancer: Recognising and managing key transitions in end of life care: Boyd K, Murray S BMJ 341

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MEDICINES AND DEHYDRATION: PATIENT INFORMATION CARDS

Dehydration is a significant risk for people who develop vomiting, diarrhoea and fever. It is a particular issue for people taking certain medicines. Therefore, NHS Highland has produced “Sick day rules” cards to highlight medicines that should be stopped during vomiting/diarrhoea/fever.

What do the cards look like?
The cards are credit-card sized and printed on both sides:

Why these medicines?
The list of medicines on the card is not exhaustive but they are highlighted because:

- Diuretics: can cause dehydration or make dehydration more likely in an ill patient.
- ACE inhibitors and angiotension II receptor blockers: in a dehydrated patient, these medicines may impair renal function which could lead to renal failure.
- NSAIDs: when given to a dehydrated patient, these medicines may impair renal function and this could result in renal failure.
- Metformin: dehydration increases the risk of lactic acidosis, a serious and potentially life-threatening side effect of metformin.

Where can I get further information?
For any further queries, please contact: Clare Morrison, Lead Pharmacist (North), NHS Highland, at: clare.morrison2@nhs.net
What questions will I be asked at my medicines review?
At the medicines review, you will be asked about how you are getting on with your medicines. Some of the questions you might be asked at your medicines review include:

- Are you taking all of your medicines?
- Are there any you miss out or forget to take?
- Can you take/use the medicine properly?
- Do you feel you are having any side effects from your medicines?
- Do you have any concerns about your medicines?
- Do you take any other medicines, such as those bought in a pharmacy or supermarket?

Where can I get more information?
For further information about your medicines, please contact:
- Your medical practice.
- Your community pharmacy (chemist).

Produced by the NHS Highland Polypharmacy Action Group

Date of preparation: April 2013
To be reviewed: April 2015

For further information about NHS Highland medicines reviews, please refer to the Policy Page of the NHS Highland Intranet.
Introduction
A medicines review is a meeting with your doctor, pharmacist or nurse to talk about your medicines. Your medicines should be reviewed regularly (usually once a year) to check that they are right for you.

Why are medicines reviews needed?
When you are first prescribed a medicine, your doctor, pharmacist and/or nurse checks that it is the best medicine for you. However, things can change, for example:

- You might have developed a side effect from the medicine.
- Your health might have changed, such as developing a long-term condition.
- You might have started taking other additional medicines.
- The guidelines for treating your condition might have changed.
- You may be taking a large number of medications (known as “polypharmacy”).
- A medication you are on may be no longer essential for your health day to day.

All of these factors can affect whether a medicine remains the best choice for you.

What is “polypharmacy”?
You might have heard your doctor, pharmacist or nurse talk about “polypharmacy”. Polypharmacy just means “lots of pharmacy” or, in other words, taking a large number of medicines.

Medicines reviews are particularly useful for people who take lots of medicines so they are sometimes called “polypharmacy reviews”.

What happens at a medicines review?
You will be asked to make an appointment with your doctor, pharmacist or nurse for a medicines review. The review will take between 10 and 30 minutes.

The review will involve the doctor/pharmacist/nurse gathering information from you and from your medical record. This information will be used to check that you are taking the most appropriate medicines.

You will also be able to ask any questions or raise any concerns you have about your medicines.

It might be necessary for the doctor/pharmacist/nurse to recommend some changes to your medicines. The reasons for these changes will be explained to you and you will be asked for your agreement before any changes are made.

What changes to my medicines might be recommended?
Some common changes your doctor/pharmacist/nurse might recommend to your medicines are:

- A medicine may be changed to a form that is easier to take (eg, once a day rather than three times a day).
- A medicine may be started or changed to a newer version.
- A medicine may be stopped.

Do I need to take anything to my medicines review?
It would be very useful if you could bring all of your medicines with you, including any you have bought in a pharmacy or shop. If you buy vitamins or herbal or homoeopathic remedies, please bring them too.

Medicines often have two names (a generic name and a brand name) so having the medicines with you will prevent any confusion if the doctor/pharmacist/nurse calls the medicine by a different name to the name you normally use.