Optimising medicines

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Pharmac Seminar Series
Medicines in Healthcare
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This session

- Process components of medicines management and optimisation
  - Medicines Therapy Review & Assessment
  - “Deprescribing” – why and how
  - Implementing changes to medication
“Medicines review”

“A word means just what I choose it to mean – neither more nor less” [Humpty Dumpty, Alice through the Looking Glass]

- Clinical advisory pharmacist perspective

  Taking responsibility, and being accountable for, identifying and resolving drug therapy problems for individuals, and thereby optimising medicines-related health outcomes through the reduction of drug-related morbidity and mortality.

Minimium medicines for optimal outcomes
Medicines review

- Applying population-driven evidence to the individual

"Evidence-based medicine is the integration of best research evidence with clinical expertise and patient values"

[Sackett & Straus BMJ 1996;312:71-2.]

- Patient factors - Psyco-social then medical factors

- But firstly we must know the evidence .... and how to apply it

"We are drowning in information while starving for wisdom"

[E.O.Wilson]
Medicines Assessment

- Exacerbating factors
- Standard therapy?
  - If not, why not
- Standard dosing?
  - If not, why not
  - Renal
  - BP, HR
- Interactions
- Adverse effects
  - Targets, monitoring ....
Mr LF – 68 years old

- **Conditions = 6**
  - NSTEMI / PCI 2008
  - AF 2009
  - Heart failure 2012
  - Diabetes 2011
  - Dyspepsia 2011
  - COPD 2010
  - Depression 2014
  - # colles 2011
  - Gout 1998
  - Osteoarthritis 1997
  - Mild hyponatraemia, muscle aches, memory

- **Medicines – guidelines = 19**
  - Warfarin mdu
  - Aspirin 100 mg daily
  - Cilazapril 5 mg daily
  - Metoprolol 95 mg daily
  - Digoxin 0.125 mg daily
  - Atorvastatin 40 mg daily
  - Furosemide 40 mg daily
  - Metformin 850 mg twice daily
  - Gliclazide 80 mg twice daily
  - Omeprazole 20 mg daily
  - Symbicort® 200/6 mcg x 2 twice daily
  - Tiotropium 18 mcg daily
  - Escitalopram 20 mg daily
  - Alendronate 70 mg weekly
  - Allopurinol 300 mg daily
  - Diclofenac 75 mg daily
  - Paracetamol 1 gm four times daily
  - OTC Glucosamine 1500 mg daily
Exacerbating factors

- Exacerbating issues?
  - NSAID and heart failure
  - Coffee and AF
    - (NSAID / dyspepsia)

- Resolving these?
Optimisation

- Standard (guideline driven) therapy?
  - If not, why not

- Standard dosing?
  - If not, why not (renal, metabolism – CYP etc)
Optimisation - Interactions

- **Increased bleeding risk**
  - warfarin, aspirin, diclofenac, escitalopram, ?
    paracetamol, potentially aldendronate \[\text{pharmacodynamic}\]
  - Warfarin – glucosamine \[\text{pharmacokinetic}\]

- **Renal impairment**
  - Triple whammy – ACE inhibitor / diuretic / NSAIDs

- **Gastrointestinal dysfunction**
  - Prescribing cascade \[\text{alendronate, NSAID – omeprazole}\]

- **Gout**
  - Prescribing cascade \[\text{furosemide – gout treatment}\]

- And please don’t use colchicine for gout, tramadol for pain, or diltazem for AF
Optimisation - Adverse effects

- Heart failure /CVD
  - NSAID
- Muscle aches
  - ? Statin
- Memory
  - ? Statin
- Hyponatraemia
  - PPI, ACE Inhibitor, diuretic, SSRI
19 different medicines – is this polypharmacy?

An age old problem …

- “I do not want two diseases – one nature-made, one doctor-made” [Napoleon Bonaparte, 1820]

- Drug related morbidity and mortality – the 3rd most costly disease [After cancer and cardiovascular]

- About half of people over 65 years old have at least 3 coexisting chronic conditions. About one in five have 5 or more

- 5 to 15% of hospitalisations are drug-related
Polypharmacy

- **BPAC definition:**
  - “The addition of one or more drugs to an existing regimen which provides no additional therapeutic benefit and/or causes drug related harm”.

- It’s all about risk vs benefit … for the individual
More prescribers = more medicines

**Figure:** Average number of medicines prescribed per patient (Jul 2011 - Mar 2012) for all patients aged over 75 years in New Zealand, by number of prescribers (BPJ Issue 47)
De(e)-Prescribing – why?

- Disease mongering
- Extrapolation of study populations
- Treating risk factors as diseases

“Don’t treat risk factors. Don’t even treat disease. Treat patients, and treat them as individuals”
Professor John Campbell, 2005
“It is an art of no little importance to administer medicines properly: but, it is an art of much greater and more difficult acquisition to know when to suspend or altogether to omit them.”

Philippe Pinel Treatise on Insanity
Barriers to Addressing Polypharmacy

- Time consuming
- Patient factors — a difficult conversation
- Medico-legal — opposing guidelines, specialists
- May appear contradictory — greatest benefit for those at greatest risk
- Accusations of ageism
- Lack of information on:
  - Treatment benefits in the very elderly
  - Time until benefits accrue [statins]
  - Risk-benefit from an individual’s perspective [antithrombotics]
- Discontinuation syndrome, rebound [PPIs], recurrence
- Pay for performance
Evidence – de-prescribing

- Three studies; mean age 80 years old
- No adverse clinical consequences after stopping
  - Aspirin
  - Antihypertensives
  - Nitrates
  - Statins
  - Furosemide
  - Potassium
  - Hypoglycaemics
  - Gastric acid suppressants
  - Sedatives
  - Antipsychotics
  - Antidepressants
- Reduced mortality (21 vs 41%)
- Less acute care referrals (12 vs 30%)

Bain K et al., JAGS. 2008; 56: 1946-52; Garfinkel D et al., IMAJ. 2007; 9: 430-34; Garfinkel D, Mangin D. Arch Intern Med. 2010; 170: 1648-54
<table>
<thead>
<tr>
<th>Drug Group</th>
<th>Patients Using Drug, No.</th>
<th>DD Suggested, No. (%a)</th>
<th>DD Actually Performed, No. (%)</th>
<th>Specific Compliance, %b</th>
<th>Eventual DD Success Rate, %c</th>
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<tr>
<td>Antihypertensives</td>
<td>95d</td>
<td>58 (61)</td>
<td>50 (53)</td>
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<td>84</td>
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<tr>
<td>β-Blockers</td>
<td>26</td>
<td>15 (58)</td>
<td>11 (42)</td>
<td>73</td>
<td>67</td>
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<tr>
<td>Calcium channel blockers</td>
<td>22</td>
<td>13 (59)</td>
<td>11 (50)</td>
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<td>Disothiazide</td>
<td>11</td>
<td>11 (100)</td>
<td>10 (91)</td>
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<td>ACE inhibitors</td>
<td>32</td>
<td>9 (28)</td>
<td>8 (25)</td>
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<td>α-Blockers</td>
<td>8</td>
<td>6 (75)</td>
<td>2 (25)</td>
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<tr>
<td>Nitrates</td>
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<td>Furosemide</td>
<td>18</td>
<td>14 (78)</td>
<td>13 (72)</td>
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<td>79</td>
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<td>Aspirin</td>
<td>24</td>
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<td>Statins</td>
<td>26</td>
<td>18 (69)</td>
<td>14 (54)</td>
<td>78</td>
<td>72</td>
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<td>Sulfonylurea</td>
<td>6</td>
<td>5 (83)</td>
<td>5 (83)</td>
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<td>100</td>
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<td>Metformin</td>
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<td>5 (45)</td>
<td>3 (27)</td>
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<tr>
<td>H₂ blockers</td>
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<td>8 (100)</td>
<td>6 (75)</td>
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<tr>
<td>Omeprazole</td>
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<td>35 (97)</td>
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<td>SSRIs</td>
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<td>11 (33)</td>
<td>85</td>
<td>77</td>
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<tr>
<td>Other antidepressants</td>
<td>12</td>
<td>10 (83)</td>
<td>9 (75)</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>8</td>
<td>3 (37)</td>
<td>3 (37)</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Levodopa-carbidopa</td>
<td>10</td>
<td>7 (70)</td>
<td>5 (50)</td>
<td>71</td>
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Tools - appropriateness

- **Beers Criteria**
  - Explicit ‘drugs’ criteria

- **Medicines Appropriate Index**
  - Explicit drugs
    - Is there an indication (including duration for that indication)
    - Is the drug effective for the condition
    - Is the dosage correct (including instructions, practicality)
    - Any clinically significant interactions
    - Any unnecessary drug (class) duplication
Tools – de-prescribing

- STOPP …. And START
- Mangin and Garfinkel
PLEASE DO

- **Patient or family views?** What do they want?
- **Long term benefits?** Balanced against life expectancy
- **Evidence of benefit** for the medicine in *this* age group, with *this* level of disability / frailty
- **Adverse effects present?** Especially CNS, falls, gastrointestinal, which may be subtle and mistaking for ‘ageing’
- **Symptom control?** Is there still an indication?
- **Excessive dosage?** There is less need for tight glycaemic and blood pressure control in the very elderly
- **Discontinuation feasible?** If so, how – taper dose or stop abruptly
- **Document, plan, share, monitor**
What if Mr LF was 87 years old and frail?

- Has been admitted to hospital three times in the last 12 months with COPD and / or heart failure
- Has presented to general practice for patching up after a particularly bad fall
- Is becoming increasingly forgetful / disorientated (no longer fit to drive)
- Family would like him to go into residential care
First drugs to de-prescribe?

- Generally - secondary prevention
  - *Those the person isn’t taking*
  - *Those with no clear indication* (GI, supplements)
  - Blood pressure lowering
  - Anticholinergics
  - Antihyperglycaemics
  - Bisphosphonates
  - Psychotropics
- Do not stop those controlling symptoms
First drugs to de-prescribe?
Have a go with Mr LK

- Warfarin mdu
- Aspirin 100 mg daily
- Cilazapril 5 mg daily
- Metoprolol 95 mg daily
- Digoxin 0.125 mg daily
- Atorvastatin 40 mg daily
- Furosemide 40 mg daily
- Metformin 850 mg twice daily
- Gliclazide 80 mg twice daily
- Omeprazole 20 mg daily
- Symbicort® 200/6 mcg x 2 twice daily
- Tiotropium 18 mcg daily
- Escitalopram 20 mg daily
- Alendronate 70 mg weekly (has had 8 years)
- Allopurinol 300 mg daily
- Diclofenac 75 mg daily
- Paracetamol 1 gm four times daily
- OTC Glucosamine 1500 mg daily
But how to stop

- **Tapering dose vs abrupt stop**
  - **Tapering** [if not an acute ADR]
    - β-blockers [metoprolol, atenolol, carvedilol]
    - Psychotropics [benzodiazepines, antipsychotics, antidepressants]
    - Proton pump inhibitors [omeprazole]
    - Coffee
- **Abrupt stopping**
  - Alendronate
  - Supplements e.g. potassium chloride
  - Antihyperglycaemics
  - Statins
  - Nitrates

- **Depends**
  - Blood pressure lowering medicines
  - Anticholinergics
Case: Fiona - Deprescribing
Mrs K

- 77 year old widow
- Lives with her daughter’s family in suburban home
- Full-time carer
- Fully mobile + significant cognitive impairment
- Referral for medicines management from community pharmacy via GP(PN)
- Reason for referral – adherence difficulties due to patient’s refusal to swallow tablets
Mrs K Problem List

- (Ref. MedTech Long Term Classifications)
  - Senile **dementia** NOS
    - 2013 GPCOG scored 1/9
    - Son has EPOA
  - Hypertension
  - Pernicious anaemia

- PMH (Ref. Referral letter)
  - Motorcycle accident 1984
    - Fracture/disruption of pelvis with subsequent external fixation then total replacement L) hip
    - Fractured L) tibia & fibula with significant residual skin problems requiring grafting

- Carers’ imperative to ↓ Rx to minimum
Mrs K’s Medication

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dosage/Regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amitriptyline</td>
<td>25mg at night,</td>
</tr>
<tr>
<td>Paracetamol</td>
<td>2x500mg twice</td>
</tr>
<tr>
<td>Furosemide</td>
<td>60mg daily</td>
</tr>
<tr>
<td>Aspirin EC</td>
<td>100mg daily</td>
</tr>
<tr>
<td>KCl SR</td>
<td>600mg daily</td>
</tr>
<tr>
<td>Metoprolol CR</td>
<td>95mg daily</td>
</tr>
<tr>
<td>Simvastatin</td>
<td>10mg daily</td>
</tr>
<tr>
<td>Omeprazole</td>
<td>20mg daily</td>
</tr>
<tr>
<td>Multivitamin tablet</td>
<td>1 daily</td>
</tr>
<tr>
<td>Cholecalciferol</td>
<td>1.25mg once</td>
</tr>
<tr>
<td>Vitamin B12 inj</td>
<td>3-monthly (by</td>
</tr>
</tbody>
</table>

What would you do?
What we did:- (Deprescribing)

3. **Stop** potassium supplement (Potassium Chloride SR 600mg) (Potassium found in bananas)

4. **Stop** simvastatin (cholesterol tablet)
   
   *Taper* aspirin to stop  
   Month 1 – aspirin every second day  
   Month 2 – aspirin twice a week (Mon,Fri)  
   Month 3 – stop aspirin

5. **Stop** multivitamin

6. **Taper** omeprazole to stop with symptoms monitoring:  
   Month 1 – omeprazole 10mg daily  
   Month 2 – omeprazole 10mg every second day  
   Month 3 – stop omperazole

**MONITOR:** INCREASED OR EMERGING INDIGESTION/HEARTBURN OR RELATED SYMPTOMS OR BEHAVIOUR E.G. REDUCED APPETITE

**REPORT:** TO DR IF CONCERNS ABOUT ABOVE

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Ph [Redacted] – Clinical Pharmacist
3/12 Follow-up

- **Rx before**
  - Amitriptyline 25mg at night
  - Paracetamol 2x500mg twice daily
  - Furosemide 60mg daily
  - Aspirin EC 100mg daily
  - KCl SR 600mg daily
  - Metoprolol CR 95mg daily
  - Simvastatin 10mg daily
  - Omeprazole 20mg daily
  - Multivitamin tablet daily
  - Cholecalciferol 1.25mg monthly
  - Vitamin B12 1mg inj 3-monthly

- **Rx After**
  - Paracetamol 250mg/5mLx20mL twice daily prn
  - Furosemide 20mg alternate days
  - Zopiclone 3.75mg at night
  - Cholecalciferol 1.25mg monthly
  - Vitamin B12 1mg inj 3-monthly
Critical Success Factors

- Informed and engaged patient (+carers)
- Co-ordinating changes with new prescriptions and blister-pack cycle (↓financial implications for patient)
- Comprehensive review of clinical records to inform decisions
- Effective communication between all team members
Implementing Changes

- Prescribing Decisions/changes impact patients in many ways that can lead to ↓ adherence and outcome
- Consider
  - financial cost of changes
  - Literacy/ability to manage complex actions and consequences
  - Social factors
  - Clinical aspects – e.g. side effects from increased doses or loss of efficacy from reduced doses

- Cases & Solutions