



# ***Optimising medicines***

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Pharmac Seminar Series  
Medicines in Healthcare  
August 2015

# 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.*

Minimum 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 - Psycho-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 alendronate [*pharmacodynamic*]
  - Warfarin – glucosamine [*pharmacokinetic*]
- Renal impairment
  - Triple whammy – ACE inhibitor / diuretic / NSAIDs
- Gastrointestinal dysfunction
  - Prescribing cascade [alendronate, NSAID – omeprazole]
- Gout
  - Prescribing cascade [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 ...

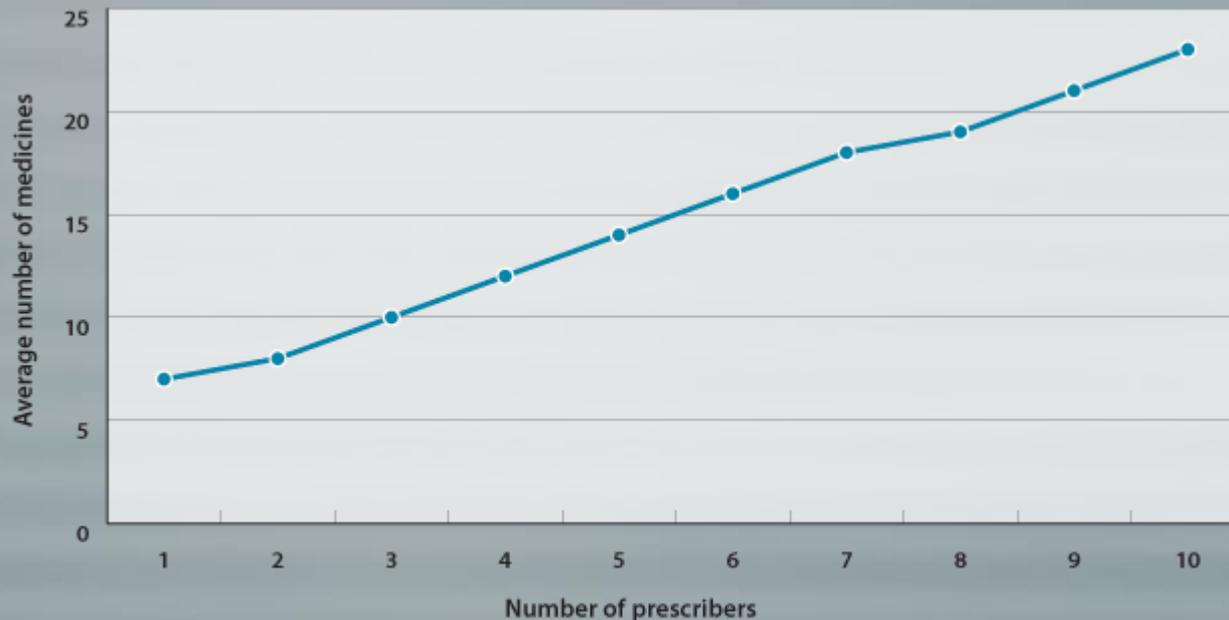
- *“I do not want two diseases – one nature-made, one doctor-made”* [Napoleon Bonaparte, 1820]
- Drug related morbidity and mortality – the 3<sup>rd</sup> most costly disease [After cancer and cardiovascular]
- About half of people over 65 years old have at least 3 coexisting chronic conditions. About 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

# The Art of Not Doing, Well



*“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%)



**Table 2. Success Rate of Drug Discontinuation (DD) According to Types of Drugs**

Drug Group	Patients Using Drug, No.	DD Suggested, No. (% <sup>a</sup> )	DD Actually Performed, No. (%)	Specific Compliance, % <sup>b</sup>	Eventual DD Success Rate, % <sup>c</sup>
Antihypertensives	95 <sup>d</sup>	58 (61)	50 (53)	86	84
β-Blockers ★	26	15 (58)	11 (42)	73	67
Calcium channel blockers	22	13 (59)	11 (50)	85	85
Diuretics	11	11 (100)	10 (91)	91	91
ACE inhibitors	32	9 (28)	8 (25)	89	89
α-Blockers ★	8	6 (75)	2 (25)	33	33
Nitrates ★	5	5 (100)	5 (100)	100	100
Furosemide	18	14 (78)	13 (72)	92	79
Aspirin ★	24	2 (8)	2 (8)	100	100
Statins	26	18 (69)	14 (54)	78	72
Sulfonylurea ★	6	5 (83)	5 (83)	100	100
Metformin ★	11	5 (45)	3 (27)	60	60
H <sub>2</sub> blockers	8	8 (100)	6 (75)	75	75
Omeprazole	18	10 (56)	9 (50)	90	90
Benzodiazepines	36 <sup>e</sup>	36 (100)	35 (97) <sup>e</sup>	97	97
SSRIs	33	13 (39)	11 (33)	85	77
Other antidepressants	12	10 (83)	9 (75)	90	90
Antipsychotics ★	8	3 (37)	3 (37)	100	100
Levodopa-carbidopa	10	7 (70)	5 (50)	71	71

# 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 an blood pressure control in the very elderly*
- **Discontinuation feasible?** *If so, how – taper dose or stop abruptly*
- **DO**ocument, 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

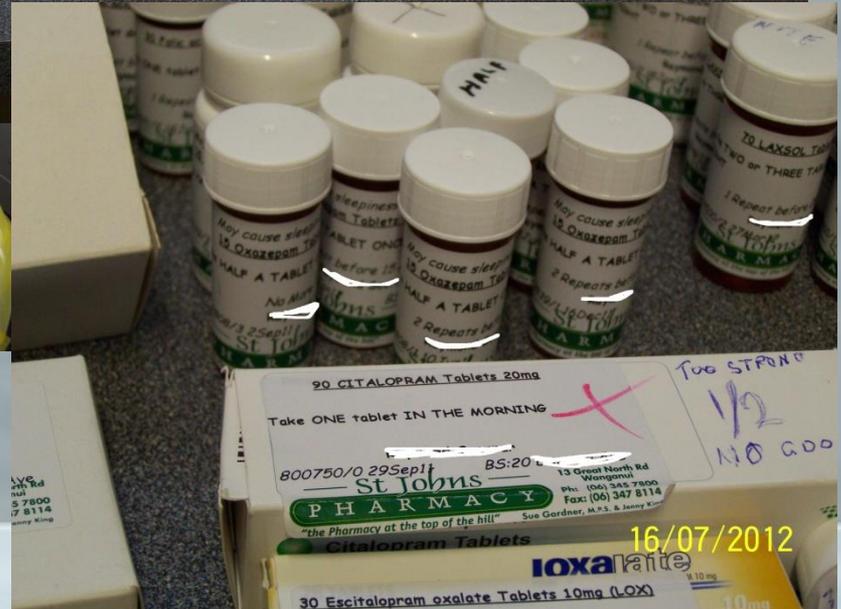
# First drugs to de-prescribe?



30/03/2010



16/07/2012



16/07/2012

16/07/2012

# Have a go with Mr LK

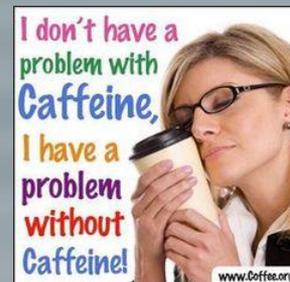


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- Escitalopram 20 mg daily
- Alendronate 70 mg weekly (has had 8 years)
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# But how to stop



- Tapering dose vs abrupt stop
  - Tapering [if not an acute ADR]
    - $\beta$ -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



- 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 1 daily
- Cholecalciferol 1.25mg once monthly
- Vitamin B12 1mg inj 3-monthly (by GP)

**What would *you* do?**



# What we did:- (Deprescribing)



REPORT: TO DR IF CONCERNS ABOUT ABOVE

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

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