Polypharmacy, whose problem, whose responsibility?

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Health Quality and Safety Commission
University of Otago, Christchurch
Pegasus Health
Canterbury Clinical Network

RNZCGP QS Hamilton July 2015
The desire to take medicine is perhaps the greatest feature which distinguishes man from animals.

William Osler
The Menu

• Definitions
• Measurement & variation
• Balancing the benefits and harms of starting and stopping multiple medicines
• Approaches, tools and experiences
• Where to start, Who to involve
• Quality and and Safety questions
Case Study - Agnes

• 72 year old presents with a split forehead and broken glasses haven fallen at home in bathroom can’t remember what happened
• Lives alone, Recent period in bed with Influenza like illness associated with diarrhoea and vomiting
• She feels dizzy and thirsty and has a headache but keen to get stitched up and home to bed
According to Health One her LTCs

- Angina
- Hypertension
- Atrial fibrillation
- Heart failure
- Renal impairment
- Diabetes type 2
- Osteoarthritis
- Gout
- Hypothyroidism
- Indigestion
- Depression and anxiety
- Insomnia, Restlessness
- COPD
- Polypharmacy
- P2AT
- Allergies to Penicillin and Adhesives
Her Regular Medications Include:

- Enalapril
- Frusemide
- Digoxin
- Metoprolol
- Isosorbide MN
- Metformin
- Insulin
- Warfarin
- Aspirin
- Ibuprofen
- Spironolactone
- Atorvastatin
- Allopurinol
- Thyroxine
- Tramadol
- Paracetamol
- Omeprazole
- Venlafaxine
- Quetiapine
- Spiriva
- Seretide
- Plus 3 or 4 she buys? what
Polypharmacy¹

• Appropriate polypharmacy

• Problematic polypharmacy:
  – Prescribing of many medicines (eg 5+) or addition of one medicine to a regimen that doesn’t confer benefit

Consequences

• Adverse drug events:\(^1\)
  – 13% with two medicines; 58% with five medicines to 82 % with seven or more
• Poor adherence, geriatric syndromes such as urinary incontinence, cognitive impairment, falls, drug-drug interactions\(^1\)
• 5-8% hospital admissions assoc. with medication\(^2\)

Atlases
Taxonomy of variation

- Effective care
- Preference-sensitive care
- Supply-sensitive care

Variation

Jack Wennberg: ‘unwarranted variation’

‘Variation in the utilization of health care services that cannot be explained by variation in patient illness or patient preferences.’
Measuring Variation

‘We can only be sure to improve what we can actually measure’ Lord Darzi

Tin openers and dials
• Concept from Carter and Klein
• Tin openers open up cans of worms
• Dials measure things
This is not a league table

- High is not necessarily better
- Low may not be worse
- The middle might not be right
Inter-PHO variation

People 65+ on 11+ meds, by PHO
## Individual GP Data

*patients > 75y

#this is a subset of patients on > 5 meds

### Polypharmacy Report on Total Patients aged 75 years and over from 1st Oct 2008 to 31st Mar 2009

#### Small Group 03

<table>
<thead>
<tr>
<th>Name</th>
<th>No. enrolled pts &gt; 75y</th>
<th>No. pts* on &gt;5 meds(%)</th>
<th>No. pts* on &gt;10 meds#(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>52</td>
<td>13 (25%)</td>
<td>4 (8%)</td>
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<tr>
<td>612</td>
<td>188 (31%)</td>
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<td>44 (10%)</td>
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<td>202</td>
<td>75 (37%)</td>
<td>19 (9%)</td>
<td></td>
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<tr>
<td>256</td>
<td>68 (27%)</td>
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<td>138 (31%)</td>
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<td>16 (8%)</td>
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<tr>
<td>243</td>
<td>72 (30%)</td>
<td>13 (5%)</td>
<td></td>
</tr>
</tbody>
</table>

No pts > 75y in the PHO are 50596

Of these there are 15168 patients on > 5 meds(30%) and 6151 patients on > 10 meds(12%).
Contrasting perspectives on having too much of a good thing
“Why then, can one desire too much of a good thing?”

As You Like It Act 4, scene 1
Drivers for Polypharmacy

• Multi-morbidity and the application of multiple single disease guidelines
• Availability of more treatments, more prescribers
• Overdiagnosis & Overtreatment
• Patient and public expectation
• Accountability frameworks
• Growing use of alternative medicines
Preventing Overdiagnosis Conference 2015
September 1st – 3rd

September 27, 2014 by admin Leave a Comment

Following the sell-out 2014 conference, we are pleased to announce a third Preventing Overdiagnosis conference to be held in Bethesda Maryland, US Just 10 miles North of Washington DC. The 2015 conference is sponsored by the National Cancer Institute.

Registration is open. Sign up to our mailing list and receive notifications.

Location – The Natcher building is situated within the NIH headquarters, Bethesda, Maryland just 10 miles from the centre of Washington DC.

You will find all the visitor information you need HERE
Whose are the players?

- P
- P
- P
- P
- P
- P
- p
- p
Whose responsibility?

- Patients and families
- Prescribers and their teams
- Pharmacists and their teams
- Planners & Purchasers
- Professional Organisations
- Policy makers & politicians
- Press
- Pharma
(Too) Many checklists are available

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Table 1 (continued)

<table>
<thead>
<tr>
<th>Name of Indicator</th>
<th>Description</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescribing and monitoring indicators</td>
<td>Of the 30 indicators developed by this US consensus panel some drug-disease combinations represent quality rather than safety. The ratio of indicatorsuderived from the primary prevention of cardiovascular disease was 0.95, with 17% of the time.</td>
<td>Weiss EM et al (2015). Medication prescribing and monitoring errors in primary care: a report from the Practice Safety Network. Health Quality Safety in Healthcare vol 22, no 3, e075- e077.</td>
</tr>
<tr>
<td>Scottish indicators - inappropriate prescribing in older patients</td>
<td>15 RAND UCL IClinician-derived indicators that were developed in Scotland and tested on general practice data from 1.7 million patients. A composite indicator was found to be the most reliable measure of a practice's performance.</td>
<td>Guthrie B et al (2011). High risk prescribing in primary care: patients particularly vulnerable to adverse drug events: cross-sectional population indicators analysis in Scottish general practice. BMJ Open. vol 1, no 1, e000074.</td>
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<tr>
<td>STOPP/START criteria</td>
<td>A detailed set of 57 indicators developed by consensus methods in Ireland. They have been validated extensively in the UK setting. Many of the STOPP criteria were included in the RCSP indicator set.</td>
<td>Gallagher P et al (2009). STOPP (Screening Tool to Alert doctors to Right Treatment) and START (Converting Tool to Alert doctors to Right Treatment) consensus validated. International Journal of Clinical Pharmacology and Therapeutics, vol 46, pp 7-21.</td>
</tr>
</tbody>
</table>

Source: Compiled by The Authoring Society and Dr Charles Sparer

In the Irish Republic, two of criteria have been developed to assess whether medicine have been inappropriately prescribed or omitted (Callaghan et al 2008). The Screening Tool of Older Person's Prescriptions (STOPP) and Screening Tool to Alert doctors to Right Treatment (START) STOPP comprises 61 clinically significant criteria for potentially inappropriate prescribing in older people. Each criterion is accompanied by a concise explanation as to why the prescribing practice is potentially inappropriate. START consists of 22 evidence-based prescribing indicators for commonly encountered diseases in older people. In the United Kingdom, a set of prescribing safety indicators has been developed specifically for use in general practice (Avery et al 2011).

One study of prescriptions issued to a population of Irish patients over the age of 70, using 30 STOPP indicators, found that 36 per cent of patients received a prescription which was deemed potentially inappropriate (Callaghan et al 2010).

As with any tool, however, their validity is affected by the local availability and cost of medicines, relevant clinical practice guidelines, and the emergence of new evidence and treatments.

Proposed pragmatic approach for identifying higher-risk polypharmacy

Any measure of polypharmacy should be interpreted according to the clinical context. It makes sense to consider potential problems from polypharmacy even in patients on small numbers of medicines. In this respect, there is no ideal ‘one size fits all’ definition that can be applied for identifying polypharmacy. Nonetheless, there is potential benet...
Polypharmacy in the Elderly
Reducing Variation has the potential both to improve under and over treatment.
An Alliancing Approach

- Repeated Pan DHB shared education of primary care doctors, nurses and pharmacists
- Individual feedback and peer group discussion
- Involve secondary care clinical teams
- Hospital acute medical admission pill pruner
- Medicines reconciliation and streamline electronic communication
- And more recently....
Pharmacists and Prescriber Teams

- Medicines therapy assessments (MTA)
- Carried out by clinical pharmacists,
- In conjunction with prescribers
- Preferably within a team environment
- Together with medicines reconciliation
- Successful examples already in Midland area
- Recently started in Canterbury
- Elsewhere?
### Individual GP Data

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#this is a subset of patients on > 5 meds

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First law on holes - when you're in one, stop digging!

Denis Healey English politician
Medication Appropriateness Model

1. Remaining life expectancy (tables)
2. Time until benefit
3. Patient’s goals of care
4. Treatment targets (palliative, symptomatic, extend life...)
Medication Appropriateness Model

Holmes et al. Reconsidering Medication Appropriateness for Patients Late in Life. Arch Intern Med; 2006:166,605-09
Upper, Middle, and Lower Quartiles of Life Expectancy for Women and Men at Selected Ages

(A) Life Expectancy for Women

(B) Life Expectancy for Men

A Framework for Deciding Therapy in the Elderly (continued)

Medication Appropriateness Model

1. Remaining life expectancy (tables)
2. Time until benefit
3. Patient’s goals of care
4. Treatment targets (palliative, symptomatic, extend life...)
Back to Agnes

- Enalapril
- Frusemide
- Digoxin
- Metoprolol
- Isosorbide MN
- Metformin
- Insulin
- Warfarin
- Aspirin
- Ibuprofen
- Spironolactone
- Atorvastatin
- Allopurinol
- Thyroxine
- Tramadol
- Paracetamol
- Omeprazole
- Venlafaxine
- Quetiapine
- Spiriva
- Seretide
- Plus 3 or 4 she buys? what
Samuel Reshevsky, at age eight, giving a simultaneous exhibition in France, 1920.
Increased fall risk

- Enalapril
- Frusemide
- Digoxin
- Metoprolol
- Isosorbide MN
- Metformin
- Insulin
- Warfarin
- Aspirin
- Ibuprofen
- Spironolactone
- Atorvastatin
- Allopurinol
- Thyroxine
- Tramadol
- Paracetamol
- Omeprazole
- Venlafaxine
- Quetiapine
- Spiriva
- Seretide
- Plus 3 or 4 she buys? what
Increased bleeding risk

- Enalapril
- Frusemide
- Digoxin
- Metoprolol
- Isosorbide MN
- Metformin
- Insulin
- Warfarin
- Aspirin
- Ibuprofen
- Spironolactone

- Atorvastatin
- Allopurinol
- Thyroxine
- Tramadol
- Paracetamol
- Omeprazole
- Venlafaxine
- Quetiapine
- Spiriva
- Seretide
- Plus 3 or 4 she buys? what
Risk of acute kidney injury

- Enalapril
- Frusemide
- Digoxin
- Metoprolol
- Isosorbide MN
- Metformin
- Insulin
- Warfarin
- Aspirin
- Ibuprofen
- Spironolactone
- Atorvastatin
- Allopurinol
- Thyroxine
- Tramadol
- Paracetamol
- Omeprazole
- Venlafaxine
- Quetiapine
- Spiriva
- Seretide
- Plus 3 or 4 she buys? what
Risk of Serotonin Syndrome

- Enalapril
- Frusemide
- Digoxin
- Metoprolol
- Isosorbide MN
- Metformin
- Insulin
- Warfarin
- Aspirin
- Ibuprofen
- Spironolactone

- Atorvastatin
- Allopurinol
- Thyroxine
- Tramadol
- Paracetamol
- Omeprazole
- Venlafaxine
- Quetiapine
- Spiriva
- Seretide
- Plus 3 or 4 she buys? what
Prescribing cascades

- Enalapril
- Frusemide
- Digoxin
- Metoprolol
- Isosorbide MN
- Metformin
- Insulin
- Warfarin
- Aspirin
- Ibuprofen
- Spironolactone
- Atorvastatin
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- Tramadol
- Paracetamol
- Omeprazole
- Venlafaxine
- Quetiapine
- Spiriva
- Seretide
- Plus 3 or 4 she buys? what
Polypharmacy

‘The single most important predictor of inappropriate prescribing and risk of adverse drug events in older patients is the number of prescribed drugs.’

People 65+, 5+ long term meds appears to be stabilising
But the rate increases with age
Key findings

• 2012-14: 5+ meds 0.5% decrease (34.9%); 11+ meds unchanged at 4.2%

• The rate of dispensing increased significantly with age for long-term medicines (2014).

Age-specific rates of long-term medicine use:

<table>
<thead>
<tr>
<th></th>
<th>65-74</th>
<th>75-84</th>
<th>85+</th>
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<tbody>
<tr>
<td>5+</td>
<td>25.9%</td>
<td>43.6%</td>
<td>55.9%</td>
</tr>
<tr>
<td>11+</td>
<td>2.7%</td>
<td>5.6%</td>
<td>8.0%</td>
</tr>
</tbody>
</table>
Including for some of the most problematic medicines

Age-specific rates of antipsychotic and benzodiazepine medicine use:

<table>
<thead>
<tr>
<th></th>
<th>65-74</th>
<th>75-84</th>
<th>85+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antipsychotic</td>
<td>1.7%</td>
<td>2.8%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Benzodiazepine / zopiclone</td>
<td>8.7%</td>
<td>12.8%</td>
<td>18.8%</td>
</tr>
</tbody>
</table>
Tools

Atlas:

• National analysis by DHB
• Indicators
• Best practice and pathway links

Resources:

• Guides, case studies, journal articles
  (www.hqsc.govt.nz/atlas)

Tool for primary care

• ‘Find my patient’ primary care queries
Canterbury and the Atlas

Antipsychotics for people aged 65+

Benzodiazepines for people aged 65+
Does this type of multidisciplinary alliancing approach work?
Review

• Are the data complete and accurate?
• Is there uncertainty or ambiguity in the evidence?
• Are there quality issues?
• Is there inequity for patients?
• Is there inefficient use of resources?
• What environmental and population factors are relevant?
• How much variation should you expect?
Replicate the method

<table>
<thead>
<tr>
<th>Indicator #1:</th>
<th>People aged 65 and over dispensed five, six or seven unique long-term medications</th>
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</thead>
<tbody>
<tr>
<td>Numerator</td>
<td>Count of distinct master National Health Index (NHI) numbers.</td>
</tr>
<tr>
<td></td>
<td>Age at end of quarter ≥ 65.</td>
</tr>
<tr>
<td></td>
<td>Date of death not before end of quarter.</td>
</tr>
<tr>
<td></td>
<td>Number of distinct chemicals (excluding those below) dispensed in quarter that were also dispensed in previous quarter = 5, 6 or 7.</td>
</tr>
<tr>
<td>Denominator</td>
<td>New Zealand population, using Statistics New Zealand population projections for the relevant years.</td>
</tr>
<tr>
<td>Comments</td>
<td>Exclusions from analysis of unique chemicals:</td>
</tr>
<tr>
<td></td>
<td>• dermatologicals</td>
</tr>
<tr>
<td></td>
<td>• special foods</td>
</tr>
<tr>
<td></td>
<td>• sensory organs</td>
</tr>
<tr>
<td></td>
<td>• respiratory devices.</td>
</tr>
</tbody>
</table>
Actions

• Guidance for prescribers reviewing and stopping medication
• Specific evidence and guidance on antipsychotic use
• Improve sharing of patient information
• Facilitate prescribers’ analysis of their own data
• All involved in prescribing work together
Find my patients

• PMS queries to identify patients from own practice
  – Integrated with MedTech and MyPractice
• Developed as immediate solution
• Patient information remains secure in practice
• Queries:
  – Gout and serum urate testing
  – Polypharmacy: 5+, 8+, 11+, antipsychotics and benzodiazepines
HQSC Atlas Find My Patients tool for Medtech32 without CBIT

Choose the query or patient list you wish to download from the dropdown box and press Run / Download. Patients will be displayed below and you can then apply filters. You can then apply existing alerts or recalls to these patients. Double click on "Patient Name" to see basic demographics, date last seen and contact phone numbers. Some queries can take 5-10 minutes to run in larger practices. For further filtering options consider the CBIT tool.

Choose query or list
- Choose a query
- Run Query
- Enter alerts / recalls

Choose your alert
- Choose an alert
- Check all alerts
- Clear all alerts

Choose your recall
- Choose a recall
- Check all recalls
- Clear all recalls
HQSC Atlas Find My Patients tool for Medtech32 without CBIT

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Choose query or list
- HQSC Gout no uric acid ordered
- HQSC Gout no uric acid tested
- Polypharmacy 5+ meds (some excl)
- Polypharmacy 6+ meds (some excl)
- Polypharmacy 11+ meds (some excl)
- Benzodiazepines
- Antipsychotics

Choose your alert
- Choose an alert
  - Check all alerts
  - Clear all alerts

Choose your recall
- Choose a recall
  - Check all recalls
  - Clear all recalls
<table>
<thead>
<tr>
<th>Patient Name</th>
<th>Ethnicity</th>
<th>Age</th>
<th>Gender</th>
<th>Provider</th>
<th>Alert</th>
<th>Recall</th>
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<tbody>
<tr>
<td>Mast. Alan Adams</td>
<td>European NZ</td>
<td>36</td>
<td>M</td>
<td>SFE</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Miss Susan M Chan</td>
<td></td>
<td>20</td>
<td>F</td>
<td>SFE</td>
<td>☐</td>
<td>☐</td>
</tr>
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<td>Mr Wally Gladstone</td>
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<td>Mrs Jayne Jacobs</td>
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<td>46</td>
<td>F</td>
<td>BETA</td>
<td>☐</td>
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</tr>
</tbody>
</table>

Showing 1 to 5 of 5 entries
Clinical Audit template

The clinical audit process has been tested and refined over time. Its purpose is to encourage teams to reflect and act on the best information available to improve clinical practice. The method can be applied to any aspect of practitioner or practice activity to assist with identifying 'where you are now', 'where you could do better' and 'how to get there'.

**TOPIC**

**Polypharmacy in older people**

*Why is this topic of interest?*

Polypharmacy can refer to the prescribing of many medicines (five or more medicines is often quoted) or to the addition of inappropriate medicines to an existing regime.[1]

Polypharmacy is associated with negative health outcomes including adverse drug reactions, poor adherence and clusters of health problems described as "geriatric syndromes", for example, urinary incontinence, cognitive impairment and impaired balance leading to falls.[2]

Older people (defined here as those aged 65 years and over), especially those with frailty or multiple comorbid conditions, are more susceptible to medicine-related morbidity and mortality.

In older people certain classes of medicines carry a substantially higher risk of adverse effects, including antipsychotics, benzodiazepines and zopiclone. New initiation of a benzodiazepine in persons aged 65 and over can be associated with an increased risk of dementia.[3]

Antipsychotic and benzodiazepine use has also been associated with an increased risk of death[4, 5]. Both are strongly recommended for avoidance in the American Geriatrics Society updated Beers Criteria and STOPP/START criteria.[6, 7]

*What is this audit about?*

This audit consists of a review of 15 people aged 65 years and over who are receiving:

- 5 or more long term medications
- An antipsychotic
- A benzodiazepine

*References*
Take Home Messages

• Common and important cause of morbidity
• Important safety and quality aspects
• Complex to understand and manage
• Variation exists between and within DHBs
• Certain medicines and combinations pose higher risk
• Individual and system level approaches desirable
• Addressing polypharmacy requires time, teamwork, courage, and a commitment to quality improvement
• Clinical Pharmacist MTAs offer promise
One of the first duties of the physician is to educate the masses not to take medicine.

- William Osler -
(1849 - 1919)
Described as the Father of Modern Medicine
The Quality Dilemmas of Polypharmacy

Here’s one for starters......

*If adherence to single disease guidelines contributed to the problem of polypharmacy, will promised NICE multimorbidity guidelines and computer prompts help or hinder?*
Links

- [www.hqsc.govt.nz/atlas](http://www.hqsc.govt.nz/atlas)
- [http://www.npc.nhs.uk/patient_decision_aids/pda.php#BNF](http://www.npc.nhs.uk/patient_decision_aids/pda.php#BNF)