Managing Polypharmacy in the Elderly
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Barbara Farrell BScPhm, PharmD, FCSHP
Pharmacist, Bruyère Geriatric Day Hospital
Objectives

Participants will be able to:

• Describe the impact of polypharmacy on patients and the health care system
• Find and use screening tools for inappropriate medications
• Identify common prescribing cascades
• Develop plans to withdraw medications safely
Outline

- Polypharmacy in the elderly
  - Scope
  - Consequences
- Screening tools
- Prescribing cascades
- Strategies to reduce polypharmacy
• Bruyère Geriatric Day Hospital
  – Outpatient
  – Frail, elderly patients
  – Functional assessment, rehabilitation, interprofessional health care (Phm: 0.4 FTE)
  – Patients referred: cognitive changes, falls, pain, safety concerns, caregiver stress
  – Twice/week x 8-12 weeks
  – Patient-focussed care plan
The problems we see in the GDH

• Prescribing cascades and webs
  – Multiple medications (e.g. 25 is not unusual)
  – Medications contributing to cognitive impairment, falls etc.
  – Many medications no longer indicated
• What else?
  – Patients and caregivers unclear about the purpose of medications and confused about how to take them
  – Some conditions undertreated
Polypharmacy

- Increased number of medications (e.g. >5), or use of “inappropriate” choices, doses
- Associated with increasing age and comorbidities
- Scope (CIHI 2011)
  - 2002
    - 59% of seniors had claims for ≥ 5 drug classes
    - 20% had claims for ≥ 10
  - 2009
    - 63% of seniors had claims for ≥ 5 drug classes
    - 23% had claims for ≥ 10
    - 30% of those >85 had claims for ≥ 10
- At Bruyère GDH, average of 15 drugs/person
Prescriptions dispensed:

Ramage-Morin, Stats Canada, Health reports 20(1); Mar 2009
Ontario data

• From 1997-2006 (Bajcar et al)
  – Ontario drug claims ↑ 214%
    • from 13,294,276 to 43,348,670
  – Population growth 65+ was 18.5%
  – Steepest: osteoporosis (2,347%), lipid-lowering (697%)
  – Symptom based medications ↓ (e.g. antibiotics, COPD, analgesics)
  – Claims per person (CPP) ↑ (e.g. cardiovascular from 3.25 to 9.48) as did number of unique classes
  – CPP increases with age and female sex
Elderly are at increased risk

Due to:

• physiologic changes (increased sensitivity to benzodiazepines, analgesics, antihypertensives)
• reduced kidney and liver function (harder to excrete drugs)
• reduced body fat (changes distribution of drugs)
• existing conditions
  – dementia – delirium
  – poor kidney function – CHF
  – poor balance – falls
  – reduced baroreceptor reflex – orthostatic hypotension
What is the impact?

• On people
  – decreased compliance, drug-drug interactions, errors and adverse drug reactions
  – 25% report ADR, 28% ameliorable and 11% preventable – Gandhi et al
  – 23% report ADR after hospital discharge (72% due to medication) – Forster et al

• On health care utilization
  – hospital admissions (preventable, drug-related)

• On cost (CIHI 2008; 6 provinces)
  – one billion from publicly funded programs
  – 17.4% of health care spending (↑15% in 10 years)
Qualitative insights into polypharmacy

• Interviews with GPs (Anthierens et al)
  – Side effects not always recognized
  – Difficult to keep an overview of the exact medication intake (esp. with self medication, compliance)
  – Additional drugs are prescribed when it seems like previous doses didn’t work
  – It’s difficult to get people to stop medications
  – Feel pressured to prescribe according to guidelines though negative impact of polypharmacy may outweigh benefits
  – Other prescribers are involved (reluctant to change)
Patient factors

• Patients may be reluctant to taper ‘old favourites’ e.g. benzodiazepines
• Tendency to view some medications as harmless – multivitamins, Vitamin E, Asa, Gravol, NSAIDS – under-reporting of use
• Compliance may be poor, leading to new drugs added
• Expectation that each issue will be addressed with a prescription
• Lifestyle recommendations are not valued as heavily – e.g. exercise, non-medication pain management, insomnia
Time constraints

• Some models of funding for MDs do not encourage medication reviews
• Time consuming to review all meds, and history behind each one
• Newly inherited patients can have complex histories
• Hospital to community GP – large gap of communication re: medication changes
• New symptoms – drug side effects vs disease process – this requires time to review
Screening and assessment tools
Screening criteria, processes

- Beer’s criteria

- START and STOPP criteria

- Medication assessment processes
  - “Medication Appropriateness Index”, “NO TEARS” tool
  - “Pharmacotherapy Work Up” (indication, effectiveness, safety, compliance)
Using Beer’s and STOPP/START

Group 1
• Read the case
• Apply the Beer’s criteria to identify medication problems

Group 2
• Read the case
• Apply the STOPP/START criteria to identify medication problems
Mrs. A

- Widow living alone
- 84 years old
- Severe knee pain limiting mobility
- Often confused, unable to get out of bed
- Has had 3 falls in the last year
- Doesn’t want to go out anymore
- Not always taking meds
- Children think she should no longer be living alone

- Medications found at home (* = in dossette):
  - ASA 81mg daily
  - ibuprofen 400mg bid*
  - dimenhydrinate 50mg qhs
  - lorazepam 1mg qhs*
  - warfarin as directed*
  - metoprolol 50mg bid*
  - amlodipine 10mg daily*
  - ramipril 5mg daily*
  - Lakota capsules qid
  - furosemide 40mg bid*
  - atorvastatin 40mg daily*
  - dextromethorphan syrup
  - lansoprazole 30mg daily*
  - Oxybutynin XL 10mg daily*
  - Vit. B12 1200mcg daily*
  - Slow-K daily*
  - Calcium/Vit D bid*
Impressions

- Were the criteria effective in identifying drug-therapy problems?
- Were there other problems not picked up by these screening tools?
Frequently used to identify inappropriate prescribing
List of medications

Limitations:
- Several drugs no longer available or rarely used
- Recommend avoidance regardless of medical disease
- Recommend avoidance based on presence of medical disease
- Does not address underutilization
• More detailed
• Provides clinical context
• Divided into physiologic systems

• Limitations:
  – Lack evidence for reducing morbidity, mortality or cost
  – Don’t account for many ER visits (e.g. insulin, warfarin)
  – Requires updating as guidelines change
Prescribing Cascades
What is a prescribing cascade?

An adverse drug reaction is interpreted as a new disease and a new medication is started.

An adverse drug reaction is interpreted as a new disease and another new medication is started.

An adverse drug reaction is interpreted as a new disease and yet another new medication is started.
Common prescribing cascades

- Ibuprofen → hypertension → antihypertensive therapy
- Metoclopramide → parkinsonism → Sinemet
- Amlodipine → edema → furosemide
- Gabapentin → edema → furosemide
- Ciprofloxacin → delirium → risperidone
- Lithium → tremor → propanolol
- Bupropion → insomnia → mirtazepine
- Donepezil → urinary incontinence → oxytutynin
- Amiodarone → tremor → lithium
- Venlafaxine → tremor → diazepam
Common prescribing cascades

- Meperidine → delirium → risperidone
- Beta-blocker → depression → antidepressant
- Amitriptyline → decreased cognition → donepezil
- Narcotic → constipation → senokot
- Senokot → diarrhea → imodium
- Lorazepam → morning drowsiness → caffeine
- Enalapril → cough → dextromethorphan
- Furosemide → hypokalemia → Slow K
- Omeprazole → low B12 → B12 supplement
How did Mrs. A’s prescribing cascade happen?

- **About 10 years ago**
  - Atrial fibrillation; metoprolol and warfarin
  - Husband died; lorazepam

- **3-5 years ago**
  - Knee pain: ibuprofen
  - Hypertension; ramipril
  - Cough; dextromethorphan
  - Hypertension; amlodipine
  - Daughter told her to take ASA for blood pressure

- **Last 2 years**
  - Ankle swelling; furosemide
  - Potassium low; potassium
  - Nausea; dimenhydrinate
  - Nausea (and taking ibuprofen): lansoprazole
  - B12 levels low; B12 supplement
  - Knee pain: Lakota
  - Nocturia; oxybutynin
  - Osteopenia: calcium/Vitamin D
The prescribing web that resulted

- Ibuprofen
- Ramipril
- Amlodipine
- Furosemide
- Slow K
- Dimenhydrinate
- Oxybutynin
- Lansoprazole
- Vitamin B12
- ASA
- Dextromethorphan
- Lorazepam
Strategies to reduce polypharmacy

- Calculate the pill burden
- Use screening criteria for ‘inappropriate’ medications
- Always consider a new symptom as possibly drug-induced (review chronology of medications)
- Consider stopping/tapering medications
- Consider reducing dose with age
- Do a drug interaction check
- Review goals of care and treatment targets
- Prescribe strategically (e.g. reduce pill burden, simplify regimen, use meds for more than one purpose)
Rocking the boat – stopping medications

- Medications can be stopped without causing harm
  - Garfinkel – successful discontinuation in 81%
- But, symptoms or withdrawal reactions can happen
- Get started with medication where there is:
  - Risk of harm with no known benefit
  - Little chance ADWE
  - Unclear or no indication
  - Indication but unknown or minimal benefit
  - Benefit but side effect or safety issues
Getting buy in

• Start a medication review with questions like:
  – What questions do you have about your medications?
  – What medications do you feel most strongly about keeping?
  – What medications do you wonder about how well they’re working for you?

• Find out:
  – How long? What does the drug do? How do they take it? Have they had any problems with it?

• Try to go one at a time
  – Involve the patient in choosing and monitoring
Adverse drug withdrawal events (ADWE)

• “A clinically significant set of symptoms or signs caused by the removal of a drug”
• Can be:
  – Physiological withdrawal reaction - tachycardia (beta-blocker); rebound hyperacidity (PPI)
  – Symptoms of the underlying condition - arthritis pain after stopping an NSAID
  – New symptoms - excessive sweating with stopping SSRI
• Increased risk with:
  – Longer duration, higher doses, short half-life
  – History of dependence/abuse
  – Lack of patient ‘buy-in’ (may feel abandoned)
## Drugs that often have ADWEs

<table>
<thead>
<tr>
<th>DRUG</th>
<th>MONITORING</th>
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</thead>
<tbody>
<tr>
<td>ß-Blockers</td>
<td>↑ HR, ↑ BP, angina</td>
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<tr>
<td>Diuretics</td>
<td>↑ pedal edema, chest sounds, SOBOE, ↑ weight</td>
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<tr>
<td>-furosemide</td>
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<tr>
<td>-HCTZ</td>
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<tr>
<td>Hypnotics</td>
<td>poor sleep, ↑ anxiety, agitation, tremor</td>
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<tr>
<td>-lorazepam</td>
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<tr>
<td>-zopiclone</td>
<td></td>
</tr>
<tr>
<td>PPIs, Domperidone</td>
<td>Rebound heartburn, indigestion</td>
</tr>
<tr>
<td>Narcotics</td>
<td>↑ pain, ↑ PRN use, mobility changes, insomnia, anxiety, diarrhea</td>
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<tr>
<th>DRUG</th>
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<tbody>
<tr>
<td>NSAIDs</td>
<td>↑ pain, ↑ PRN use, mobility changes</td>
</tr>
<tr>
<td>Amlodipine</td>
<td>↑ BP</td>
</tr>
<tr>
<td>Gabapentin (for pain)</td>
<td>↑ pain, ↑ PRN use, mobility changes</td>
</tr>
<tr>
<td>Digoxin</td>
<td>palpitations, ↑ HR</td>
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<tr>
<td>Anti convulsants</td>
<td>anxiety depression seizures</td>
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</table>
# Drugs that often have ADWEs

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<tr>
<th>DRUG</th>
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<tbody>
<tr>
<td>Anti-depressants</td>
<td>Early:</td>
</tr>
<tr>
<td>- citalopram</td>
<td>- chills, malaise</td>
</tr>
<tr>
<td>- venlafaxine</td>
<td>- sweating</td>
</tr>
<tr>
<td>- mirtazapine</td>
<td>- irritability</td>
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<tr>
<td>- amitriptyline</td>
<td>- insomnia</td>
</tr>
<tr>
<td></td>
<td>- headache</td>
</tr>
<tr>
<td></td>
<td>Late:</td>
</tr>
<tr>
<td></td>
<td>- depression recurrence</td>
</tr>
<tr>
<td>Nitro Patch</td>
<td>angina, ↑ BP</td>
</tr>
<tr>
<td>Steroids</td>
<td>anorexia, ↓ BP, nausea, weakness, ↓ blood sugars</td>
</tr>
</tbody>
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<tr>
<th>DRUG</th>
<th>MONITORING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baclofen</td>
<td>agitation, confusion, nightmares, ↑ spasms or rigidity</td>
</tr>
<tr>
<td>Anti-psychotics</td>
<td>- insomnia</td>
</tr>
<tr>
<td></td>
<td>- restlessness</td>
</tr>
<tr>
<td></td>
<td>- hallucinations</td>
</tr>
<tr>
<td></td>
<td>- nausea</td>
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</table>
Drugs that rarely have ADWEs

- colace
- iron
- calcium
- vitamins (E, B12, multiple vitamins, folic acid….)
- bisphosphonates
- fibrates
- glucosamine
Steps to consider

- Know when to stop and when to taper slowly
- Involve the patient in the decision (consider incentives)
- Offer safer alternative therapies
- Get the patient/family involved in the monitoring
- Involve team members (nurse, pharmacist, dietician, social worker, physiotherapist, occupational therapist etc.)
- Include non-pharmacological approaches (sleep hygiene, recreational services)
- Provide reinforcement
Steps to consider

• Be up front about the need to withdraw slowly and monitor for ADWE, as well as how long ADWE can last
• Keep the message clear & say it often
• Follow up and document the progress
• Make several attempts at withdrawal
• Use a variety of educational media
  – Verbal
  – Written handouts
  – Medication Logs to organize all the information
• Empower patients to avoid future problems
Mrs. A’s medication changes

**Week 1**
- Stop ASA and Lakota
- Decrease dimenhydrinate

**Week 2**
- Switch ibuprofen to acetaminophen
- Physio and exercise
- Stop B12

**Week 3**
- Document BP target
- Begin amlodipine taper
- Begin lansoprazole taper
Mrs. A’s medication changes

**Week 4**
- Stop amlodipine
- Increase acetaminophen dose
- Start lorazepam taper
- Provide sleep hygiene education

**Week 5**
- Switch acetaminophen to small dose hydromorphone
- Taper ramipril
- Start furosemide taper
- Add lactulose

**Week 6**
- Stop ramipril
- Stop furosemide
- Stop Slow K
- Taper oxybutynin
Mrs. A’s medication changes

**Week 7**
- Stop dextromethorphan and dimenhydrinate
- Review and advise re: salt and calcium intake
- Start HCTZ
- Continue lorazepam taper

**Week 8**
- Stop oxybutinin
- Stop lorazepam
- Change lansoprazole to prn
- Provide heartburn education

**Week 9**
- Change metoprolol to bisoprolol
- Combine calcium and Vitamin D
- Stop lansoprazole
After a 10 week Day Hospital stay:

<table>
<thead>
<tr>
<th>Mrs. A’s medications</th>
<th>Mrs. A’s life:</th>
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</thead>
<tbody>
<tr>
<td>– Hydromorphone 0.5mg q12h</td>
<td>– Knee pain much improved</td>
</tr>
<tr>
<td>– Hydrochlorothiazide 12.5mg daily</td>
<td>– Getting out of the house now</td>
</tr>
<tr>
<td>– Bisoprolol 2.5mg daily</td>
<td>– Urgency and nocturia better (up 1-2x/night)</td>
</tr>
<tr>
<td>– Warfarin as directed</td>
<td>– Sleep improved (to bed 10pm, up about 7am)</td>
</tr>
<tr>
<td>– Caltrate Select with Vitamin D twice daily</td>
<td>– Meal times normal (8, noon, 6)</td>
</tr>
<tr>
<td>– Lactulose 15ml daily</td>
<td>– Bruising and gum bleeding gone</td>
</tr>
<tr>
<td></td>
<td>– No heartburn, nausea, cough or swollen ankles</td>
</tr>
</tbody>
</table>
Strategic prescribing for Mrs. A

• Reduce pill burden
  – Medication assessment for continued indication, effectiveness, safety, compliance

• Simplify regimen
  – Combine when possible
  – Reduce medication-taking frequency

• Mrs. A’s results
  – From 17 to 7 medications
  – From 27 to 8 pills/doses per day
  – Now twice daily
Adapting guidelines for the frail elderly

Hypertension
- <80: 140/90 (CHEP)
- >80: 150/80
- Caution if renal dysfunction, CHF, other comorbidities
- Avoid diastolic <60 (65 if CAD)
- Avoid systolic <120
- >80: 120/60 to 150/80

Diabetes
- Choose targets to avoid hypoglycemia

If frail
- HgA1C about 8%? Or 8.5%?
- FBS < 10?
- 2 hour post meal < 14?
Adapting goals at the end-of-life

• Look at the remaining life expectancy and consider time until benefit
• Establish the goals of care and treatment targets
• Focus on symptomatic treatment
• Dial down the preventative treatment
• Weigh the pros and cons of treatment
Conclusion

• Decreasing medication use in the elderly can:
  – Reduce adverse events (e.g. falls, hospitalizations)
  – Reduce pill burden and costs
  – Increase adherence with remaining medications
  – Improve quality of life

• All team members have a role to play in the success of the tapering process

• Taking the first step and developing a plan for medication review and strategic prescribing are key
  – Choose a patient
  – Choose a drug
Tips for working with a pharmacist

• Meet with local community pharmacists
• Develop a plan to help a patient reduce medication use – who will do what?
• Figure out how to get paid
  – Pharmacist (e.g. MedsCheck, MedsCheck follow-up, MedsCheck at home)
  – Family physician (e.g. medication review code, CHF annual review, diabetes quarterly reviews, case coordination?)
References:

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