Medications & the Older Adult

APPROACH WITH CAUTION?

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Disclosures:

Presenter: Debbie Kwan

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Outline

- Older adults and polypharmacy
- Impact of medication-related problems
- What can we do
Seniors and ER visits

- Medication-related causes?
Medication-related Emergency Room visits:

- Common culprits
  - Insulin
  - Opioids
  - Anticoagulants
  - Digoxin
  - Antihistamine/cold products
- Many are preventable

Budnitz et al., JAMA 2006
Zed et al, CMAJ 2008; 178: 1568-9
**Common drug therapy problems:**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Implication / Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overuse</td>
<td>Acetaminophen</td>
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<tr>
<td>Underuse</td>
<td>Warfarin</td>
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<tr>
<td></td>
<td>(subtherapeutic INR)</td>
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<tr>
<td>Not following instructions</td>
<td>Side effects;</td>
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<tr>
<td></td>
<td>Lack of effect</td>
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<tr>
<td>Drug interactions</td>
<td>+++</td>
</tr>
</tbody>
</table>
What is polypharmacy?

Using more drugs than is medically necessary.
Prescriptions dispensed:

Ramage–Morin, Stats Canada, Health reports 20(1); Mar 2009
Why are seniors at risk?

- Age-related changes:
  - Pharmacokinetic
  - Pharmacodynamic

- Lack of guidelines:
  - Underrepresented group
  - Time to benefit
Comorbidity & lack of evidence

- **Comorbidity:**
  - dementia $\rightarrow$ delirium
  - poor renal function $\rightarrow$ CHF
  - poor balance $\rightarrow$ falls etc.

- **Underrepresented in clinical trials:**
  - 3/155 RCTs - exclusively elderly
  - Proportion of patients $>$ 65 similar to clinical practice:
    - 4/37 pioglitazone, 4/22 risedronate, 3/29 rosuvastatin, 9/67 valsartan

- Study populations skewed towards healthy, older subjects

Plos ONE 7(3):e33559.doi:10.1371/journal.pone.0033559
Medication Discrepancies

Prescribed regimen ≠ Actual use

- 51% - taking meds not recorded
- 29% - no longer taking a recorded medication
- 20% - different dose

Predictors of discrepancies:
- advanced age
- polypharmacy

Bedell, Arch Intern Med 2000; 160: 2129 - 2134
What can WE do?
Improving the quality of medication use:

What works:

✓ Pharmacist review of medications
✓ Multidisciplinary team review of medications

It all starts with a good history!

Maher et al., Expert Opin Drug Saf 2014
Gathering the Best Possible Medication History (BPMH)

- Use multiple sources of information
- Ask the right questions
- Record information
What conditions should prompt a medication review?

- Confusion
- Delirium
- Falls
- Heart failure
- Orthostatic hypotension
- Frequent ER visits!
Sources of Information

- Caregiver/family
- Family Health Team
- Specialists
- Community Pharmacy(ies)
- Drug Profile Viewer (DPV)
- Hospital Discharge/Chart
- Medication list
- Walk In Clinic
- Medication Vials

Adapted with permission from Dr. Olavo Fernandes
ASK the right questions

- Prescription
- Non-prescription
- Herbals, Vitamins, Supplements
- Topicals
- Samples
- Illicit
- “Borrowed”
Record and share information:

Knowledge is the best medicine

Medication Record

knowledgeisthebestmedicine.org

# Medication Schedule

Name: ____________________________  
Last Updated: ________________________

<table>
<thead>
<tr>
<th>Time</th>
<th>What medication am I taking?</th>
<th>Why am I taking this medication?</th>
<th>What does the medication look like?</th>
<th>How and when am I taking this medication?</th>
<th>Who prescribed the medication?</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning</td>
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<td>Evening</td>
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<tr>
<td>Bedtime</td>
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</tbody>
</table>

Keep your information in a secure place and remember that electronic communications, including email, may not be secure.
Optimizing Medication Use

Customizing
Mildred

- 82 yr, T2 diabetes, Hypertension
- 2 blister packs - 17 medications
- Doesn’t like to take meds (per son)
- c/o dizzy, confused
- Worsening nausea
  - poor appetite
- Several falls
  - Afraid to go out
Finding the balance

- Treat symptom or disease
- Avoid harm
Goals of therapy:

- **Maintain and/or improve:**

<table>
<thead>
<tr>
<th>Us:</th>
<th>Patients:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical functioning</td>
<td>ADLs (&quot;bathing&quot;)</td>
</tr>
<tr>
<td>Psychological function</td>
<td>Cognition, depression (&quot;think clearly&quot;)</td>
</tr>
<tr>
<td>Social functioning</td>
<td>Social activities; Support systems (&quot;see my family&quot;)</td>
</tr>
<tr>
<td>Overall health</td>
<td>General health perception (&quot;not feel tired&quot;)</td>
</tr>
</tbody>
</table>
Strategies for reducing Polypharmacy:

1. Can this be caused by a drug?
2. Which drugs are still providing benefit?
3. Deprescribe
4. Reduce pill burden

Kwan, Farrell. Pharmacy Practice Apr/May 2013
1. Can this be caused by a drug?
## Screening Tools:

<table>
<thead>
<tr>
<th>BEERS 2012</th>
<th>STOPP</th>
</tr>
</thead>
</table>
| **Origin** | • consensus list (Dr. M. Beers 1991) – nursing home  
  • 2012 update – evidence-based |
|            | • consensus list (2004)  
  • address gaps in earlier Beers versions |
| **Format** | Medications divided into tables:  
  1. Avoid  
  2. Inappropriate  
  3. Caution |
|            | • 65 criteria for inappropriate prescribing divided by physiological system |
Geriatric presentations that can be caused by drugs:

<table>
<thead>
<tr>
<th>Presentation</th>
<th>Examples of Drug-related causes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falls</td>
<td>Sedatives, hypnotics, anticholinergics, antihypertensives</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>Anticholinergics, benzodiazepines, antihistamines, tricyclic antidepressants</td>
</tr>
<tr>
<td>Incontinence</td>
<td>Alpha blockers, Sedatives (e.g. benzodiazepines), Diuretics</td>
</tr>
<tr>
<td>Constipation</td>
<td>Anticholinergics, opioids, calcium channel blockers, Ca supplements</td>
</tr>
<tr>
<td>Delirium</td>
<td>Antidepressants, antipsychotics, antiepileptics</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>Antibiotics, proton pump inhibitors, SSRIs</td>
</tr>
<tr>
<td>GI bleeding</td>
<td>NSAIDs, oral anticoagulants</td>
</tr>
</tbody>
</table>
Dangerous drug interactions:

Digoxin + azithromycin  
Dig toxicity

ACEI, ARB, spironolactone + TMP-SMX  
Hyperkalemia

Glyburide + TMP-SMX  
Hypoglycemia

Warfarin + ciprofloxacin  
Hemorrhage

Check all antibiotics for Drug Interactions -> monitor and follow-up!

Back to Mildred:

- Compare medications with BEERS and STOPP criteria
- Potentially inappropriate medications:
  - **Lorazepam** – falls, dizziness, cognitive impairment
  - **Metformin** (recent dose increase) - nausea
  - **Omeprazole** – risks of long term therapy
A closer look at Mildred’s medication history:

- ↑ Metformin -&gt; nausea -&gt; metoclopramide
- Ibuprofen -&gt; GI upset -&gt; omeprazole

Could these be prescribing cascades?
Prescribing Cascades
What is a prescribing cascade?

One drug is used to treat the side effect of another ..... 

And another... 

And another....
Examples of Prescribing cascades

- NSAIDs → hypertension → antihypertensive
- NSAIDS → heartburn → H2RA or PPI
- PPI → low B12 → B12 supplement
- Risperidone → parkinsonism → benztropine
- Amlodipine → edema → furosemide
- Gabapentin → edema → furosemide
- Furosemide → hypokalemia → Slow K
- Buproprion → insomnia → lorazepam
- Donepezil → urinary incontinence → oxybutynin
- Oxybutynin → decreased cognition → donepezil

www.bpac.org.nz
Rochon et al BMJ 1997; 315: 1096
Risks of unrecognized prescribing cascades

Self-management:

- Narcotic $\rightarrow$ constipation $\rightarrow$ senna
- Senna $\rightarrow$ diarrhea $\rightarrow$ loperamide (e.g. Imodium™)
- Lorazepam $\rightarrow$ morning drowsiness $\rightarrow$ caffeine
- ACEI (e.g. ramipril, enalapril) $\rightarrow$ cough $\rightarrow$ dextromethorphan
2. Which drugs are still providing benefit?

- **Medication history** (symptom onset in relation to medication starts or changes):
  - MedsCheck

- **Interprofessional approach:**
  - **Symptom improvement?** (e.g. Pain):
    - Efficacy of drug vs. non-drug therapy
  - **Signs?**
    - Consider therapeutic goals in the elderly (e.g. BP, A1C)
    - Be prepared for uncertainty/lack of evidence
  - **Problem “resolved”**
    - E.g. PPI for NSAID induced GERD
3. “Deprescribe”

- Prioritize drugs for tapering and stopping unnecessary medications
- Develop a plan
- Coordinate and communicate with prescriber and patient
Medications can be stopped without causing harm
- 81% successful discontinuation (Garfinkel et al, 2010)

But, adverse drug withdrawal events or reactions can happen (ADWE)

Start with medications 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

Arch Intern Med 2010; 170: 1648-54
Adverse drug withdrawal events (ADWE)

“A clinically significant set of symptoms or signs caused by the removal of a drug”

Can be:
1. Physiological - tachycardia (beta-blocker); rebound hyperacidity (PPI)
2. Symptoms of underlying condition - arthritis pain after stopping an NSAID
3. 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’
Getting buy in

- Ask:
  - 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?

- One at a time
  - Involve the patient
Quick wins:
Drugs that rarely have ADWEs

- ASA
- bisphosphonates
- calcium
- docusate
- fibrates
- glucosamine
- iron
- statins
- vitamins (E, B12, multiple vitamins, folic acid)
Examples of drugs that can have ADWEs:

<table>
<thead>
<tr>
<th>DRUG</th>
<th>MONITORING</th>
</tr>
</thead>
<tbody>
<tr>
<td>ß-Blockers</td>
<td>↑ HR, ↑ BP, angina, anxiety</td>
</tr>
<tr>
<td>Diuretics</td>
<td>↑ pedal edema, chest sounds, SOBOE, ↑ weight</td>
</tr>
<tr>
<td>-furosemide, -HCTZ</td>
<td></td>
</tr>
<tr>
<td>Hypnotics</td>
<td>poor sleep, ↑ anxiety, agitation, tremor</td>
</tr>
<tr>
<td>-lorazepam, 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>
</tr>
<tr>
<td>NSAIDs</td>
<td>↑ pain, ↑ PRN use, mobility changes</td>
</tr>
<tr>
<td>Anti-depressants -e.g citalopram, -venlafaxine</td>
<td>Early: chills, malaise , sweating, irritability, insomnia, headache</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>Insomnia, restlessness, hallucinations, nausea</td>
</tr>
</tbody>
</table>

Graves et al., Arch Intern Med 1997; Bain et al., JAGS 2008
Deprescribing: Steps to consider

- Stop vs. taper
- Patient buy-in
- Offer safer alternatives
- Involve patient/family / interprofessional team with coordination and monitoring
- Emphasize non-pharmacological approaches
- Follow-up and provide reinforcement
4. Reduce pill burden
Medication Non-Adherence

- 50% prevalence in the elderly
- Adherence ↓ as # of medications ↑
- Barriers:
  - Too many pills
  - Complex schedules
  - Cost
- Intentional non-adherence

Hajjar ER, Am J Ger Pharm 2007; 5(4): 345-51
Improving Medication Adherence:

- Multi factorial
- Reduce pill burden
  - Combination products
  - Engage in “deprescribing”
    - tapering vs. stopping
- Simplify medication schedules (timing, tablet splitting, alternate strengths)
Mildred

- **Metformin** dose reduced -> metoclopramide stopped
- **Omeprazole** tapered and discontinued
- **Lorazepam** – gradual taper x several months

- 1 pill pack
- BID dosing
Tips:

- Obtain an accurate medication history
- Ask can it be caused by a drug?
  - Geriatric presentations
  - Prescribing cascades
- Involve and inform patient and circle of care about changes to therapy
- Monitor for adverse drug withdrawal events
- Simplify medication schedules
Free online resources:

- Drug interactions: www.Medscape.com
- Clinical search engine: www.TRIPdatabase.com
- Drugs and the elderly:
  - BEERS: www.americangeriatrics.org
  - Therapeutics Initiative – UBC: www.ti.ubc.ca
  - Rx Files (selected info free): www.rxfiles.ca
- Medication Reconciliation toolkit
  http://www.saferhealthcarenow.ca/EN/Interventions/medrec/Pages/default.aspx
THANK YOU!

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Acknowledgement: Dr. Barbara Farrell, Bruyere Research Institute, Ottawa
Selected References

Polypharmacy and the Elderly:

- Am J Ger Pharmacother 2007;5(4): 345-351
- NEJM 2003;348:1556-1564
- CMAJ 2004;170:345
- J Am Ger Soc 1999;47:30-9
- Pharmacoepid Drug Safety 2002;11:97-104
- Arch Intern Med 2004;164;1567-1572
- Drugs Aging 1999;15:15-28
- Clinics Ger Med 2007;23:371-390
- CMAJ 2008;178:1563-9
- Am J Ger Pharmac 2011;9:234-40
- Pharmacy Practice 2013 (Apr/May): 20-25
Selected References

- Beers criteria
  - JAGS 2012;DOI:10.1111/j.1532-5415.2012.03923.x
- STOPP/START criteria
  - Clin Pharm Ther 2011;89:845-54
- Adverse drug withdrawal events
  - JAGS 2008;56:1946-1952
  - Arch Intern Med 1997;157:2205-2210
- CIHI report
  - Health Care in Canada: a focus on seniors and aging
- Lack of evidence
  - Plos ONE 7(3):e33559.doi:10.1371/journal.pone.0033559
- Scope
  - Ramage-Morin, Health Reports 2009