The Problem of Polypharmacy

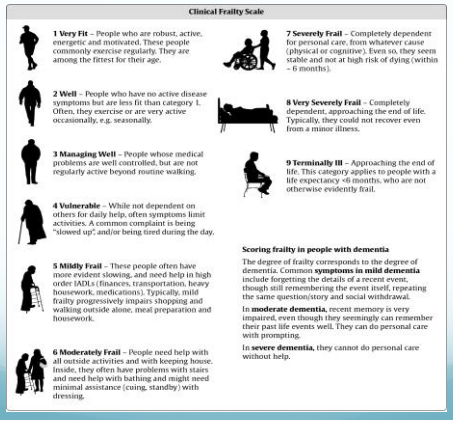
Is your patient taking too many medications?

Outline and Objectives

- Define the population we're talking about
- How does polypharmacy happen and why is it a problem?
- What are some reasons to "de-prescribe"?
- How beneficial are preventative medications?
- Helpful tools
- Deprescribing and specific medications

Who is elderly?

- >65 years old? >80 years old?
  - Depends who you're asking!
- Consider frailty
  - See scale next page



Clinical Frailty Scale

1 Very Fit – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.

2 Well – People who have no active disease symptoms but are less fit than category 1. Often, they exercise or are very active occasionally, e.g. seasonally.

3 Managing Well – People whose medical problems are well controlled, but are not regularly active beyond routine walking.

4 Vulnerable – While not dependent on others for daily help, often symptoms limit activities. A common complaint is being "slowed up", and/or being tired during the day.

5 Mildly Frail – These people often have more evident slowing, and need help in high order IADLs (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.

6 Moderately Frail – People need help with all outside activities and with keeping house. Inside, they often have problems with stairs and need help with bathing and might need minimal assistance (cuing, standby) with dressing.

7 Severely Frail – Completely dependent for personal care, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).

8 Very Severely Frail – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.

9 Terminally Ill – Approaching the end of life. This category applies to people with a life expectancy <6 months, who are not otherwise evidently frail.

Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

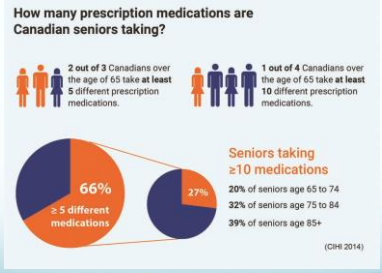
In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

What is polypharmacy?

- 5 or more meds?
  - CIHI = about 66% of people over 65 are taking 5 or more medications
- 10 or more meds?
  - 26% in community
  - More that ½ of patients in LTC
- Any unnecessary medications
- Any unwanted side-effects
  - Any new symptom in the elderly should be considered a medication side-effect, until proven otherwise

Polypharmacy in Canada



How Does Polypharmacy Happen?

- Prescribing cascades (see following slides)
- No medication reviews – same meds for years
  - "If it ain't broke..." mentality
- Multiple practitioners involved/ Multiple medical conditions
- Clinical Practice Guidelines
- 'Squeaky wheel' patient vs. time-constrained practitioner
  - A pill for every new symptom
- People live longer now = multiple medical conditions
- Internet/TV ads (prescription, OTC, herbal/natural)

Prescribing Cascades

- Case study
- 85yr old widower living at home on new metformin after a recent A1C of 7.5 gets prescribed metoclopramide for nausea or feeling unwell = effective (stays on long-term)
  - Leads to parkinsonism (well-known side-effect)
  - Amantadine for parkinsonism
    - Highly anticholinergic – can cause constipation, delirium, dry eyes/mouth, urinary retention, drowsiness, falls
  - Laxatives for constipation, tamsulosin for urinary retention (hypotension/falls side-effect)
  - Levodopa/Carbidopa for continuing parkinsonism
    - Causes hallucinations/delirium
  - Dementia diagnosis! Prescribe a cholinergic drug (donepezil)
    - Syncope side-effect = fall!
- Fall with hip fracture = hospital, then long term care!

Prescribing Cascades

- Hydrochlorothiazide for newly diagnosed hypertension
  - Causes hyperuricemia = gout
  - Over-the-counter NSAID taken without prescriber's knowledge (of course) = ibuprofen = stomach pain and more hypertension
  - Another antihypertensive added and a PPI (e.g. pantoprazole) for stomach
  - NSAID stopped after gout clears, but patient remains on antihypertensives and PPI indefinitely
    - BP too low now = FALLS!

Prescribing Cascades

- Cholinesterase inhibitor for dementia (e.g. donepezil)
  - Leads to incontinence
  - Anticholinergic prescribed, e.g. Oxybutynin (many side-effects –constipation, dizziness, drowsiness, delirium, worsening dementia, falls)
- Amlodipine for hypertension
  - Causes edema
  - Furosemide prescribed – causes low potassium
  - Potassium supplement prescribed – cause heartburn
  - PPI (e.g. pantoprazole) for heartburn

What is "de-prescribing"?

- From www.deprescribing.org "the planned and supervised process of dose reduction or stopping medication that may be causing harm or no longer providing benefit"

Why De-Prescribe?

- Decreased appetite
- Swallowing difficulties
- Weight loss
- Crushed pills -taste bad!
- Taste perversion as a medication side-effect

Why De-Prescribe?

- How much money are medications and supplements costing your patients?
- Is it money well-spent?

Why De-Prescribe?

- Patient wishes to take less pills
  - Past/present personal beliefs
  - Avoid "doctor knows best" syndrome
    - Discounts patient preferences
- Dementia/cognitive decline
  - Complex medication regimen
  - Forgetfulness
  - Actively refusing medications
    - Sometimes skipping doses can cause more harm than stopping the medication (e.g. some antidepressants)

Why De-Prescribe?

- Decreased life expectancy = may want to stop "preventative" meds that are only beneficial in the long-term
- Side effects – any symptom should be considered a adverse effect of a medication unless proven otherwise, especially in the elderly as they are more susceptible
- Can't monitor any more (e.g. warfarin)
- More drugs = more drug interactions!

Why De-Prescribe?

- Been on medication long-term
  - Many preventative medications are mostly beneficial in the 1st year of treatment
- One incident = treated for life
  - E.g. one seizure post-stroke, one depressive episode long ago after a loss
- No longer sure why it was originally prescribed
- Decreased kidney or liver function

How Does Advancing Age Change the Way Drugs Work?

- Liver function decreases = increases amounts of drugs in the body (e.g. metoprolol, calcium channel blockers, nortriptyline)
- Body fat increases = prolonged effects of fat-soluble drugs (e.g. diazepam, amitriptyline)
- Body water decreases = increased levels of some drugs (e.g. digoxin, alcohol, levodopa, morphine)
- Renal function decreases = increased levels of many drugs
- Neurotransmitters and receptors (and the way they bind to the receptor) can change with age = elderly are more sensitive to cardiovascular meds, opioids, psych meds, more…
- Impaired homeostasis = increased effects of blood pressure meds (orthostatic hypotension) because of impaired reflex tachycardia and impaired temperature and electrolyte regulation

Guidelines, Studies, and the Elderly

- Clinical trials generally try to recruit healthy individuals with only the problem they are trying to study and exclude patients with multiple health issues because it would complicate the study results
  - For example, a study of antidepressants would have mainly young, healthy adults with a diagnosis of depression and no other health conditions
- There are few studies that include older people and very few that include the "oldest old" (>80yrs)
  - Can we generalize the results of these studies and use them to guide the treatment of our old and complicated patients?

Guidelines, Studies, and the Elderly

- The elderly are not well represented in drug trials, but they use the most medications
  - 15% of the population accounts for 60% of public drug spending
- There are clinical practice guidelines for every chronic condition

Guidelines, Studies, and the Elderly

- A long follow-up in a study is considered to be 5 years
  - Many of our current cardiovascular medications came onto the market about 20 years ago
  - We are going to see more and more people who have been on these medications for far longer than they were ever studied for

Preventative Medications - Big Benefits?

- What do you consider to be a beneficial preventative medication? ASA? Cholesterol? Blood pressure? Warfarin? Osteoporosis medications?
- How much benefit do you think it *actually* gives?
  - Patients believe % benefits are much higher than they actually are, BUT so do clinicians!
  - Knowing the numbers is helpful in shared decision-making
- What are the risks?
  - Most patients and clinicians underestimate risks
- At what point do we consider stopping preventative medications?
  - MOST form M1 or M2?
  - What if patient wishes for no life-prolonging measures?

SHARED DECISION MAKING (SDM)

KEY ELEMENTS:

1. **Invite** patient's/family's participation
2. **Explain** clinical issue, nature of decision
3. Present **alternatives**
4. Discuss **pros & cons** of alternatives
5. Relay inherent **uncertainties**
6. Assess **understanding**
7. Examine **barriers** to follow-through with plan
8. Ascertain patient/family's **preference**
9. **Clarify** agreement/plan
10. Ask patient/family for additional **questions**

Adapted from Braddock JAMA 1999
Shields, et al. *Ann Fam Med* 2005

ASK
- Invite participation
- Assess baseline understanding
- Use open-ended questions

INFORM
- Explain clinical issue, nature of decision, alternatives, pros/cons, uncertainties

ASK
- Assess understanding of discussion
- Examine barriers to plan
- Ascertain patient/family preference
- Clarify/formalize plan
- Ask if there are additional questions

TIPS to TEACH:
- Timing (Ensure enough!)
- Eye level / Eye contact
- Avoid jargon
- Check for patient/family understanding
- Hearken/Heed thy patient

GOALS:
- Optimize understanding of clinical issue
- Enable patient/family to make informed decisions
- Provide opportunities to ask questions

Risks vs. Benefits

- Cardiovascular risk calculators – many available!
  - E.g. www.chd.bestsciencemedicine.com
    - There are 3 different calculators for cardiovascular event risk. They are very easy to use – plug in risk factors (age, smoker, etc.) and then see benefits from various interventions (lifestyle modifications and meds)
- Limitations: only goes up to age 74 and can only get numbers for one intervention at a time
  - CANNOT use for people over 80 due to lack of evidence
  - Only an ESTIMATE (+/- 5%)

More Examples...

- www.sparctool.com for benefits of anticoagulants to reduce stroke risk in A. Fib
- 75+yr old woman who has had a prior stroke
  - Baseline risk of stroke/embolism in the next year = 10%
  - Add ASA = risk decreases to 8%
  - Add warfarin/newer anticoagulant = risk decreases to 2-3%

More Examples...

- Google "Frax risk assessment tool" for fracture risk
- 80yr old slender female (BMI 22) with a history of a prior osteoporotic fracture
  - Baseline annual risk = 32% for major osteoporotic fracture, 14% for hip
- www.thennt.com has % benefits of various therapies
  - For our patient, the benefit of a bisphosphonate (e.g. alendronate) would be to reduce her risk over 3 years by 5% for a vertebral fracture and 1% for a hip fracture
    - Baseline risks go down to 27% and 13% respectively

More Tools for Shared Decision Making

- Mayo clinic decision aids: www.shareddecisions.mayoclinic.org
- The Ottawa Hospital Research Institute decision aid list: https://decisionaid.ohri.ca/AZlist.html
- www.lessismoremedicine.com has a whole list of shared decision making tools and aids
- Patient/Caregiver resource: www.betterhealthwhileaging.net

Polypharmacy Initiatives

- Provincially there is the "Shared Care Polypharmacy Initiative" through the BC Medical Association
  - First phase was in residential care
- PATH is "Palliative and Therapeutic Harmonization" – Nova Scotia
  - Belief that frail elderly do not benefit from aggressive preventative treatments, like younger and healthier people
  - Guidelines on Hypertension, Hyperlipidemia, and Diabetes
- Websites: www.choosingwiselycanada.org, www.deprescribing.org, and www.lessismoremedicine.com

What is "de-prescribing"?

- From www.deprescribing.org "the planned and supervised process of dose reduction or stopping medication that may be causing harm or no longer providing benefit"

Where to Begin???

- **Patient goals and wishes = 1st consideration!**
  - "Comfort Care" directive vs. "all possible interventions"
    - Longevity vs. dignity
  - Frailty Scale – sometimes used as an indicator of when to drastically decrease medications
  - Patient wish to take less medication or lifelong aversion to "pills," but now unable to express wishes
  - Address family/caregiver concerns re: "giving up"

Where to begin???

- Current symptoms? Look for adverse drug effects:
  - Feeling 'unwell' or nauseous/poor appetite
  - Trouble with balance/stability/falls
  - Drowsiness/Fatigue
  - Constipation
  - Diarrhea
- No obvious symptoms?
  - Avoid the 'ain't broke, don't fix it' mentality

Where to begin???

- Lists of inappropriate medications in the elderly:
  - Beers Criteria
  - STOPP/START Criteria
  - www.Prescrire.org - drugs to avoid
- Canadian deprescribing resources:
  - www.medstopper.com
  - www.deprescribing.org
    - Has patient handouts too

Deprescribing obstacles

- Multiple prescribers
  - 'Geri-psych' or other specialist, like a nephrologist prescribed a medication, so GP won't touch it
- Patient/Family
  - "physician/specialist long ago told me I would need to take it for the rest of my life"
- Withdrawal reactions
  - If a medication is removed too quickly and a withdrawal reaction occurs, we often mistakenly think that the patient must still NEED the med. Taper and try for one medication at a time
  - Involve the pharmacist! We know which meds need to be tapered and can design tapering regimens

Deprescribing obstacles

- Some conditions involve more medications than others- examples:
  - Fragile CHF
  - End-stage kidney disease
  - Parkinson's disease
  - Lifelong psychiatric disorder, like bipolar or anxiety
- Sometimes stopping is unsuccessful. Be prepared for some meds to be re-started!
  - Follow-up and monitoring are VERY important!!

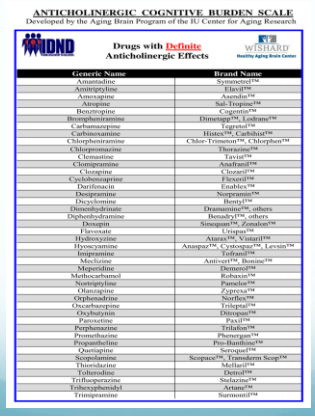
Medication Specifics

Anticholinergics

- An anticholinergic medication is any medication that blocks the neurotransmitter acetylcholine
  - #1 reason for being on a list of 'inappropriate medications in the elderly'
- Worrisome anticholinergic adverse effects in the elderly:
  - Sedation
  - Increased fall risk
  - Dry mucus membranes (eyes, mouth, etc.)
  - Worsening of lower urinary tract symptoms and urinary retention
  - Constipation
  - Cognitive decline
  - Can induce delirium or dementia

Anticholinergics

- Many medications have anticholinergic properties of various degrees and they are ADDITIVE!
  - See list of anticholinergic medications on agingbraincare.org
  - Some are considered STRONG anticholinergics
    - E.g. diphenhydramine, dimenhydrinate, oxybutynin, scopolamine, chlorpheniramine, hydroxyzine, amitriptyline, paroxetine, methotrimeprazine, loxapine, cyclobenzaprine, many more...



ANTICHOLINERGIC COGNITIVE BURDEN SCALE
Developed by the Aging Brain Program of the IU Center for Aging Research

Drugs with Definite Anticholinergic Effects

Generic Name	Brand Name
Amantadine	Symmetrel™
Amitriptyline	Elavil™
Amoxapine	Asendin™
Atropine	Sal-Tropine™
Benztropine	Cogentin™
Brompheniramine	Dimetapp™, Lodrane™
Carbamazepine	Tegretol™
Carbinoxamine	Histex™, Cardulra™
Chlorpheniramine	Chlor-Trimeton™, Chlorphen™
Chlorpromazine	Thorazine™
Clemastine	Tavist™
Clomipramine	Anafranil™
Clozapine	Clozaril™
Cyclobenzaprine	Flexeril™
Darifenacin	Enablex™
Desipramine	Norpramin™
Dicyclomine	Bentyl™
Dimenhydrinate	Dramamine™, others
Diphenhydramine	Benadryl™, others
Doxapin	Sinequan™, Zonalen™
Flavoxate	Urispas™
Hydroxyzine	Atarax™, Vistaril™
Hyoscyamine	Anaspaz™, Cystospaz™, Levsin™
Imipramine	Tofranil™
Meclizine	Antivert™, Bonine™
Meperidine	Demerol™
Methocarbamol	Robaxin™
Nortriptyline	Pamelor™
Olanzapine	Zyprexa™
Orphenadrine	Norflex™
Oxcarbazepine	Trileptal™
Oxybutynin	Ditropan™
Paroxetine	Paxil™
Perphenazine	Trilafon™
Promethazine	Phenergan™
Propantheline	Pro-Banthine™
Quetiapine	Seroquel™
Scopolamine	Scopace™, Transderm Scop™
Thioridazine	Mellaril™
Tolterodine	Detrol™
Trifluoperazine	Stelazine™
Trihexyphenidyl	Artane™
Trimipramine	Surmontil™

Anticholinergics

- **The risk for cognitive impairment in an elderly person using a strong anticholinergic medication for more than 60 days is 100%** (10)
  - There is risk of cognitive impairment even with medications that have weaker anticholinergic effects. This risk increases with *length of time* on the medication(s) and *number* of anticholinergic medications
  - All anticholinergic medications put elderly people who take them at risk of physical, functional, and cognitive decline

Over-the-Counter –not Harmless!

- Many OTC medications are on lists of inappropriate medications in the elderly!
  - Anticholinergics; including some allergy pills, anti-nausea pills, sleeping pills!
  - NSAIDs (e.g. ibuprofen, naproxen)
  - Decongestants in cold and allergy medications
- Elderly people are less likely to be able to read the small print on packaging (just see large print on front of package, like "for arthritis," "for sleep")
  - Potential for improper dosing
  - Elderly more susceptible to adverse events like falls and cognitive impairment, even with normal doses

Over-the-Counter –NOT Harmless!

- E.g. Acetaminophen and liver damage
  - Very easy to overdose and elderly are more susceptible (lower amount can do more damage)
  - Acetaminophen is taken by many people daily for arthritis, but it is in LOTS of other OTC medications. For example, some sleeping pills, cough and cold medications, etc…
    - Many people won't read ingredients – just buy medication based on symptoms it is marketed for
    - Even if they did try to read the ingredients, the writing is SMALL

Antihypertensives

- When taking blood pressure, technique matters!

Things that can lead to inaccurately high BP reading	Average change in Systolic BP
Anxiety	Up to 30mmHg
Talking during measurement	Up to 15mmHg
Full bladder	10-15mmHg
Cuff size too small	Up to 8mmHg
Cuff over clothing	10-40mmHg
Arm below heart level	7-10mmHg
Manual cuff vs. automatic	5-8mmHg
Crossed legs	2-8mmHg

Antihypertensives

- **REMINDER** Taking medications to lower blood pressure is for LONG TERM prevention of cardiovascular events
  - We are so focused on target numbers that we often forget that the goal is not a *number*; but rather the prevention of certain outcomes
- Antihypertensives are of most benefit to patients who have already had a cardiovascular event

Antihypertensives

- Canadian Cardiovascular Society's most recent 2017 guidelines removed recommendations for frail elderly to be allowed higher BP targets. Target is <140/90 for everybody, except diabetes (<130/80)
  - Recommendations exclude people with limited life expectancy, dementia, and those in long-term care
- Intensive treatment (<120/80) is recommended for "high-risk" people, which includes anyone over 75
  - This target most often requires at least 3 medications
  - CONTRAINDICATED in people with a systolic of <110 upon standing

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