Polypharmacy and The Frail Elderly

Brian Steeves, MD

Partnership between
• PATH (Palliative and Therapeutic Harmonization)
• Drug Evaluation Alliance of Nova Scotia
• Dalhousie Academic Detailing Service
• Dr. Brian Steeves, Dr. Cheryl Smith (DNP)

To improve medication appropriateness for the frail elderly

Disclaimer

No Conflict of Interest
Polypharmacy

Polypharmacy describes the administration of more drugs than are clinically indicated (Polypharmacy.ca, 2013)

Background

- Community Residents
  – 2/3 of seniors take 5+ drugs
  – most common drug class is statins
  – nearly ¼ take a potentially inappropriate drug
- LTC Residents
  – 2/3 of seniors take 10+ drugs
  – double the number of community living
  – LOS 2.9 years

Canadian Institute for Health Information. (2012). Drug Use Among Seniors on Public Drug Programs in Canada, 2012

This is the Era of Evidence Based Medicine

- So how good is the evidence for our frail elders?

These characteristics impact treatment outcomes and should be considered when making treatment decisions.
Methods: Evidence Informed Guidelines

- Elders living in Long Term Care (LTC) are systematically excluded from drug trials.

- Are treatment recommendations based on randomized control trial evidence or consensus opinion?
  - 47% of CPG recommendations are based on low level evidence (American Heart Association)

This presentation is directed to Elders living in LTC with severe frailty. It also applies, to a lesser degree, to the very frail living at home.

So who are they and how do we recognize them?

- In the Canadian experience, 70% - 80% of Elders living in LTC have moderate to severe frailty and dementia.
- I expect the numbers are similar in the United States.
- Frailty is important for many reasons. Today, I will show how to recognize and grade frailty and show how this informs decisions on reducing polypharmacy.
Slide 10

- Frailty and multiple co-morbidities are the big killers in our world with cancer making a significant but smaller contribution.
- Frailty is our future. Frailty is an expression of population ageing and is associated with dementia, poor health outcomes and is a predictor of morbidity and mortality. Frailty is quantifiable using a frailty scale or gait speed.
- The system is weighted against elderly non-cancer patients.

Slide 11

Geriatricians in Halifax, Nova Scotia, led by world renowned researcher, Dr. Ken Rockwood, have developed a frailty scale.

Slide 12

Clinical Frailty Scale

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Very Fit</td>
</tr>
<tr>
<td>2</td>
<td>Well</td>
</tr>
<tr>
<td>3</td>
<td>Well with treated co-morbid disease</td>
</tr>
<tr>
<td>4</td>
<td>Vulnerable</td>
</tr>
<tr>
<td>5</td>
<td>Mildly Frail</td>
</tr>
<tr>
<td>6</td>
<td>Moderately Frail</td>
</tr>
<tr>
<td>7</td>
<td>Severely Frail</td>
</tr>
<tr>
<td>8</td>
<td>Very Severely Frail</td>
</tr>
<tr>
<td>9</td>
<td>Terminally Ill: Regardless of frailty category</td>
</tr>
</tbody>
</table>

Frailty

- Identified by Changes in:
  - Memory (thinking)
  - Ability to handle day to day tasks
  - How one stands from a chair or walks
  - Unmanageable symptoms (such as shortness of breath)

- Frailty means:
  - Health is precarious
  - The Elder is more likely to have poor outcomes when stressed by tests, drugs, surgery.
  - More at risk for medication side effects
  - Shortened life expectancy

When frailty is not recognized it leads to the overuse of interventions and drugs. This very much impacts on the quality of life for Elders, often in very serious ways.

Staging Frailty

<table>
<thead>
<tr>
<th>Stage</th>
<th>Memory</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>C</td>
<td>Current news/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>events</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IADLs</td>
</tr>
<tr>
<td>Moderate</td>
<td>U</td>
<td>US President/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prime Minister</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rewearing clothes</td>
</tr>
<tr>
<td>Severe</td>
<td>R</td>
<td>Relatives (1st degree)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADLs impaired such as dressing, bathing, eating</td>
</tr>
<tr>
<td>Very Severe</td>
<td>E</td>
<td>Everything</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non verbal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non ambulatory</td>
</tr>
</tbody>
</table>
The Archives of Internal Medicine published a study by Drs. Doran Garfinkel and Derelie Mangin in October 2010.

- 70 Community dwelling Elders
- Mean age 82.8 years
- 61% had 3 or more co-morbidities
- 26% had 5 or more co-morbidities
- Mean medication per Elder 7.7
- 58% of medications were stopped
- 88% of Elders reported global improvement in health
- No significant adverse events or death

**Intensive therapy leads to:**
Decreased photocoagulation, (no difference in vision)
Decreased albuminuria, (no difference in measures of creatinine or progression to ESRD requiring intervention)
Decreased rates of neuropathy, based on:
  - knee and ankle reflexes
  - biothesiometer readings at lateral malleolus and big toe
  - Measures threshold of appreciation of vibration
  - R-R intervals on EKG

---

**What About Type 2 Diabetes?**

Is tight control of blood sugar of benefit?
Are there harms?
What does the science show?

---

**What is the Harm from Tight Control?**

- Hypoglycemia has immediate consequences:
  - Falls
  - Hospitalization
- Dementia increases the risk for hypoglycemia and hospitalization due to hypoglycemia
- Hypoglycemia unawareness

- The cost and human resources needed to measure and maintain tight control is significant

Four Major Studies on the tight control of blood sugar in Type 2 diabetes had the following conclusions (Note: Much younger population with mean age in 60’s):

**UKPDS** – after 7 years...decreased photocoagulation
- after decades...possible macrovascular benefit (less strokes, heart attacks)

**ADVANCE** – after 5 years less albuminuria
(less protein in urine)

**ACCORD** – after 2 years...increased all cause mortality

**VADT** – No benefit

---

**Targets for Glycemic Control**

<table>
<thead>
<tr>
<th>Random Blood Glucose</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 7</td>
<td>Decrease diabetes treatment</td>
</tr>
<tr>
<td>7 – 9.9</td>
<td>May be acceptable, but risk of hypoglycemia</td>
</tr>
<tr>
<td>10 – 20</td>
<td>Acceptable if there are no symptoms</td>
</tr>
<tr>
<td>Frequent Values Greater Than 20</td>
<td>Increase treatment</td>
</tr>
</tbody>
</table>


---

**Targets for HbA1c**

<table>
<thead>
<tr>
<th>HgbA1c, %</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 6</td>
<td>Decrease or discontinue diabetes treatment</td>
</tr>
<tr>
<td>&gt;6 to &lt; 12</td>
<td>Acceptable if asymptomatic, i.e., individualized target</td>
</tr>
<tr>
<td>&gt;12</td>
<td>Consider increasing diabetes treatment</td>
</tr>
</tbody>
</table>

---
Other liberating clinical pearls

- Most oral medications decrease HbA1c by 1%
  - Opportunities to discontinue oral meds or insulin
- No need for routine testing if on oral hypoglycemic medications alone or stable doses of basal insulin
- Use NPH over Lantus and Detemir (cheaper and similar)
- Can usually get away with basal insulin alone
  - This will avoid hypoglycemia due to variable oral intake

Dietary Restrictions

“Let them eat cake”

CPG for treatment of Hypertension in Frailty

Partnership between:
PATH
Dalhousie Academic Detailing Service
Drug Evaluation Alliance of Nova Scotia (DEANS)
### Slide 25

<table>
<thead>
<tr>
<th>Study</th>
<th>Subjects</th>
<th>Duration</th>
<th>Achieved SBP</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>EW</td>
<td>840</td>
<td>4.6</td>
<td>172</td>
<td>150</td>
</tr>
<tr>
<td>CW</td>
<td>884</td>
<td>4.4</td>
<td>180</td>
<td>162</td>
</tr>
<tr>
<td>SHEP</td>
<td>4736</td>
<td>4.5</td>
<td>170</td>
<td>143</td>
</tr>
<tr>
<td>STOP</td>
<td>1627</td>
<td>2.1</td>
<td>186</td>
<td>167</td>
</tr>
<tr>
<td>MRC-E</td>
<td>4396</td>
<td>5.8</td>
<td>165</td>
<td>156</td>
</tr>
<tr>
<td>S-Eur</td>
<td>4695</td>
<td>2.0</td>
<td>161</td>
<td>151</td>
</tr>
<tr>
<td>S-Ch</td>
<td>2394</td>
<td>3.0</td>
<td>160</td>
<td>151</td>
</tr>
<tr>
<td>SCOPE</td>
<td>4937</td>
<td>3.7</td>
<td>148</td>
<td>145</td>
</tr>
<tr>
<td>HYVET</td>
<td>3845</td>
<td>2.1</td>
<td>159</td>
<td>144</td>
</tr>
<tr>
<td>JATOS</td>
<td>4418</td>
<td>2.0</td>
<td>146</td>
<td>136</td>
</tr>
<tr>
<td>VALISH</td>
<td>3079</td>
<td>3.7</td>
<td>142</td>
<td>137</td>
</tr>
</tbody>
</table>

### Slide 26

**Guidelines**

1. Use seated BP for tx decisions
   - Check for orthostasis (lying and standing BP) and ask about sx
2. **STOP:**
   - if SBP < 140 taper decrease or d/c, unless other indications
   - the decision to discontinue treatment in patients with a history of previous stroke should be made on an individual basis.
3. **START:** if SBP >/= 160
   - Target is 140 - 160 unless orthostasis or ADs
   - No changes with DM
   - In general use </= 2 meds
   - For those with previous stroke, see above

### Slide 27

**CPG for treatment of Hyperlipidemia in Frailty**

Partnership between:

- PATH
- Dalhousie Academic Detailing Service
- Drug Evaluation Alliance of Nova Scotia (DEANS)
Recommendations for statin use with severe frailty

<table>
<thead>
<tr>
<th>Primary Prevention</th>
<th>Secondary Prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statins not needed</td>
<td>Statin use in severe frailty is probably not necessary</td>
</tr>
<tr>
<td></td>
<td>There may be extenuating individualized circumstances that shift the risk/benefit ratio</td>
</tr>
</tbody>
</table>

Recommendations

- **Heart failure**: There is no reason to start or continue statins for heart failure
- **Ezetimibe**: There is no reason to start or continue ezetimibe for primary or secondary prevention
- **Combination therapy with statins**: There is no reason to start or continue other lipid lowering drugs in conjunction with statins
- **Statin dosing**: If statins are to be used, use lower doses.

JUPITER Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>NNT 2 yrs</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary outcome: non-fatal MI, non-fatal stroke, hospitalization (or UA, revascularization, CV death)</td>
<td>62</td>
<td>39 to 148</td>
</tr>
<tr>
<td>Myocardial infarction</td>
<td>214</td>
<td>106 to 32924</td>
</tr>
<tr>
<td>Revascularization or hospitalization for UA</td>
<td>102</td>
<td>62 to 292</td>
</tr>
<tr>
<td>Stroke</td>
<td>161</td>
<td>88 to 1192</td>
</tr>
</tbody>
</table>

We do not know what proportion of MI or strokes were symptomatic.
Slide 31

**PROSPER**

- The only RCT which exclusively studied the elderly (ages 70-82)
- Pravastatin 40 mg versus placebo
- Included patients requiring both primary and secondary prevention
- Then each population evaluated separately
- No statistically significant benefit in any outcome:
  - **Primary**: CHD death, non fatal MI, fatal or non fatal stroke
  - **Secondary**: Fatal/non fatal MI, fatal/non fatal stroke or TIA

Slide 32

**Case – in review**

- 90 year old female admitted to a nursing home
- Dx: weakness, severe stage dementia, HTN, Type 2 DM, Depression
- Past Medical Hx: PUD, anxiety and insomnia after the loss of spouse 5 years ago (resolved)
- Objective data: Blood Pressure 120/80, Heart Rate 80
- Fasting Blood Sugar 6mmol/L; HbA1C 7.5%

Slide 33

**Case – what changes do you recommend**

- Rabeprazole 20mg bid
- Domperidone 10mg qid
- Lorazepam 1mg tid
- Lorazepam 0.5mg tid gen
- Humulin 30/70 15u ac b i.m.
- Humulin 30/70 8u ac supper
- Metformin 500mg bid
- Vit D 1000iu daily
- Acetaminophen 1gm qid
- Amlodipine 7.5 mg hs
- Metoprolol 50mg bid
- Zopiclone 7.5mg hs
- Sertraline 50mg hs
- Calcium 500mg bid
- Donepezil 10mg daily
- Atorvastatin 10mg hs

14 medications

Pill burden 26 orals + 2 injections
Case – what changes do you recommend

- Rabeprazole 20mg bid
  Decrease to once daily with the intent to wean and discontinue
  - Humulin 30/70 15u ac
  - Humulin 30/70 8u ac supper
  - Metformin 500mg bid
  - Vit D 1000iu daily
  - Acetaminophen 1gm qid
  - Amlodipine 7.5 mg hs
  - Metoprolol 50mg bid
  - Zopiclone 7.5mg hs
  - Sertraline 50mg hs
  - Calcium 500mg tid
  - Donepezil 10mg daily
  - Atorvastatin 10mg hs

14 medications
Pill burden 26 orals + 2 injections

Slide 35

Case – what changes do you recommend

- Rabeprazole 20mg bid
  Decrease to once daily with the intent to wean and discontinue
  - Humulin 30/70 15u ac
  - Humulin 30/70 8u ac supper
  - Metformin 500mg bid
  - Vit D 1000iu daily
  - Acetaminophen 1gm qid
  - Amlodipine 7.5 mg hs
  - Metoprolol 50mg bid
  - Zopiclone 7.5mg hs
  - Sertraline 50mg hs
  - Calcium 500mg tid
  - Donepezil 10mg daily
  - Atorvastatin 10mg hs

14 medications
Pill burden 26 orals + 2 injections

Slide 36

Case – what changes do you recommend

- Rabeprazole 20mg bid
  Decrease to once daily with the intent to wean and discontinue
  - Humulin 30/70 15u ac
  - Humulin 30/70 8u ac supper
  - Metformin 500mg bid
  - Vit D 1000iu daily
  - Acetaminophen 1gm qid
  - Amlodipine 7.5 mg hs
  - Metoprolol 50mg bid
  - Zopiclone 7.5mg hs
  - Sertraline 50mg hs
  - Calcium 500mg tid
  - Donepezil 10mg daily
  - Atorvastatin 10mg hs

14 medications
Pill burden 26 orals + 2 injections
Case – what changes do you recommend

- Rabeprazole 20mg bid
- Domperidone 10mg qid
- Lorazepam 1mg tid
- Lorazepam 0.5mg tid prn
- Humulin 30/70 15u ac b/fk
- Humulin 30/70 8u ac supper
- Metformin 500mg bid
- Vit D 1000iu daily
- Acetaminophen 1gm qid
- Amlodipine 7.5 mg hs
- Metoprolol 50mg bid
- Zopiclone 7.5mg hs
- Sertraline 50mg hs
- Calcium 500mg tid
- Donepezil 10mg daily
- Atorvastatin 10mg hs

Change to basal insulin or oral hypoglycemic and wean to achieve HbA1C >8

14 medications
Pill burden 26 orals + 2 injections
### Case – what changes do you recommend

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Dosage</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rabeprazole</td>
<td>20mg bid</td>
<td></td>
</tr>
<tr>
<td>Domperidome</td>
<td>10mg</td>
<td>qid</td>
</tr>
<tr>
<td>Lorazepam</td>
<td>1mg</td>
<td>tid</td>
</tr>
<tr>
<td>Lorazepam</td>
<td>0.5mg prn</td>
<td>tid</td>
</tr>
<tr>
<td>Humulin 30/70</td>
<td>15u</td>
<td>ac bfk</td>
</tr>
<tr>
<td>Humulin 30/70</td>
<td>8u</td>
<td>ac supper</td>
</tr>
<tr>
<td>Metformin</td>
<td>500mg bid</td>
<td></td>
</tr>
<tr>
<td>Vit D</td>
<td>1000iu daily</td>
<td></td>
</tr>
<tr>
<td>Acetaminophen</td>
<td>1gm qid</td>
<td></td>
</tr>
<tr>
<td>Amlodipine</td>
<td>7.5mg hs</td>
<td></td>
</tr>
<tr>
<td>Metoprolol</td>
<td>50mg bid</td>
<td></td>
</tr>
<tr>
<td>Zopiclone</td>
<td>7.5mg hs</td>
<td></td>
</tr>
<tr>
<td>Sertraline</td>
<td>50mg hs</td>
<td></td>
</tr>
<tr>
<td>Calcium</td>
<td>500mg tid</td>
<td></td>
</tr>
<tr>
<td>Donepezil</td>
<td>10mg daily</td>
<td></td>
</tr>
<tr>
<td>Atorvastatin</td>
<td>10mg hs</td>
<td></td>
</tr>
</tbody>
</table>

**14 medications**  
**Pill burden 26 orals + 2 injections**
Case – what changes do you recommend

- Rabeprazole 20mg bid
- Domperidone 10mg qid
- Lorazepam 1mg tid
- Lorazepam 0.5mg tid prn
- Humulin 30/70 15u ac bbfk
- Humulin 30/70 8u ac supper
- Metformin 500mg bid
- Vitamin D 1000iu daily
- Acetaminophen 1gm qid
- Amlodipine 7.5mg hs
- Metoprolol 50mg bid
- Zopiclone 7.5mg hs
- Zopiclone 7.5mg hs
- Sertraline 50mg hs
- Calcium 500mg tid
- Donepezil 10mg daily
- Atorvastatin 10mg hs

14 medications
Pill burden 26 orals + 2 injections

Wean to discontinue.
Consider sleep hygiene
• Calcium 500mg tid
• Donepezil 10mg daily
• Atorvastatin 10mg hs

Reassess need
Case – what changes do you recommend
- Rabeprazole 20mg bid
- Domperidome 10mg qid
- Lorazepam 1mg tid
- Lorazepam 0.5mg tid prn
- Humulin 30/70 15u ac bifen
- Humulin 30/70 8u ac supper
- Metformin 500mg bid
- Vit D 1000iu daily
- Acetaminophen 1gm qid
- Amlodipine 7.5 mg hs
- Metoprolol 50mg bid
- Zopiclone 7.5mg hs
- Sertraline 50mg hs
- Calcium 500mg tid
- Donepezil 10mg daily
- Discontinue
- Atorvastatin 10mg hs

14 medications
Pill burden 26 orals + 2 injections
Psychotropic Pearls

- Elders with a previous psychiatric history on significant psychotropic regimes generally do not tolerate these drugs well as they age past 75.
- Gradually reduce 1 drug at a time starting with the one you think is causing the most side effects.
- Antipsychotics in schizophrenia can generally be tapered and discontinued over 4 to 6 months.
- Relapse is rare – antipsychotics can be restarted if that occurs.

Psychosis Arising from Dementia

- First onset psychosis in Elders is very rare (I have never seen it). Generally, psychosis is secondary to delirium or advancing dementia. Underlying cause of delirium should be sought and treated.

- No need for an antipsychotic unless the delirious Elder is highly agitated and a risk to self or others. In that case, use low dose risperidone 0.25mg daily – can titrate up to 1mg daily if necessary. BUT – wean and discontinue once Elder improves.

First line treatment should always be psychosocial. Pharmacological treatment should be considered only if a marked risk to self/others or with marked suffering on the Elder’s part.

- Risperidone – most potent, least sedating
- Olanzapine – moderate potency, sedating
- Quetiapine – least potent, sedating
- SSRI’s can reduce agitation and may be a safer option. One study showed that citalopram was as effective as risperidone in this population – and safer.

- Once the situation settles always attempt a taper toward discontinuing of psychotropic.
Slide 52

**Anxiety**

- First line of treatment – psychosocial
- Benzos – predispose to confusion and falls and should be avoided. Cavet – benzos very helpful for end of life palliation.
- If suffering of the Elder is intense and psychosocial interventions fail consider low dose – see dosages under depression.

Slide 53

**Depression**

- High percent of Elders in LTC suffer depression – numbers suggest up to 50% or more and undiagnosed/untreated.
- Is this true?
- We suspect depression is being confused with dementia and incidence is not nearly that high.

Slide 54

**Treatment of severe major depression should include an antidepressent.**

- For less severe depression, psychosocial interventions are first-line treatment.
- Appropriate drugs for major depression:
  - Escitalopram – 5 to 10 mg
  - Sertraline – start at 25mg
  - Venlafaxine – start at 37.5 mg
  - Ipropiron – start at 100mg
  - Mirtazapine – start at 15 mg – can be a good choice in depression with insomnia

**Principle** – Start Low Go Slow!
Insomnia

Do we really need to sleep all night?

- Older folks often require less total sleep and wake periodically in the night.
- Do not give night sedation unless absolutely necessary.

Best Choices:
- Trazodone – 12.5 to 100 mg hs
- Zopiclone – 2.5 to 10 mg hs

Always consider –

Once situation improves try to taper and/or discontinue a psychotropic.

Contact Info:
Polypharmacy.ca
PATHCLINIC.ca
brianrsteeves@gmail.com

Special Mention: Major contributors to this presentation:
- Dr. Laurie Mallery, Geriatrician, Halifax NS
- Dr. Jeannie Ferguson, Geriatric Psychiatrist, Sydney NS
Questions?