Smart Prescribing for Older Adults

Colleen Christmas, MD
Johns Hopkins University School of Medicine
Division of Geriatric Medicine and Gerontology
cchristm@jhmi.edu
@CchristmColleen
Disclosures

- None
Objectives

- Identify challenges of prescribing medications in older adults
- Review the prevalence and consequences of polypharmacy
- Describe a framework for safe medication prescribing in older adults
A 55 yo daughter has taken her 80 yo dad into her home because of his Alzheimer Disease.

She calls you because he becomes quite disruptive in the evenings, threatening her husband, scolding the kids.

What would you recommend?
“Second-generation” or “atypical” antipsychotics?

- Antipsychotic drugs differ in many properties and can therefore not be categorized in first-generation and second-generation groupings.

Leucht. Lancet. 2013
Efficacy

- RCT patients with Alzheimer's Dementia plus agitation, aggression, or psychosis
  - Quetiapine
  - Risperidone
  - Olanzapine
  - Placebo

- No differences in time to discontinue treatment of CGIC score

Schneider NEJM 2006
Tardive dyskinesia

- 5.2% with second-generation antipsychotics versus 5.2% with first-generation antipsychotics (P = 0.865) in the elderly

Medical Letter June 2013
“Thank You, Doctor”

“Mom’s More Like Her Former Self, Thanks to You ...and ‘Stelazine’”

She hadn’t expected her golden years to be tarnished by psychotic symptoms. Neither had her family. But when disturbed behavior began to disrupt family life, her physician had the solution: compassion tempered with a sympathetic ear...and a prescription for ‘Stelazine’.

A 25-Year Record of Unsurpassed Antipsychotic Effectiveness

While ‘Stelazine’ affords relief of a broad range of psychotic symptoms, it also apparently exerts an activating effect — especially useful in withdrawn, apathetic elderly patients.

A Favorable Profile in the Elderly

Worth considering when you select an antipsychotic agent for your elderly patients is the low risk of sedation and orthostatic hypotension with ‘Stelazine’. There is also low potential for anticholinergic effects such as dry mouth, constipation, blurred vision and urinary retention. And when extrapyramidal symptoms are encountered, they generally are readily controlled.

Convenient, Economical B.I.D. Dosage

Twice-a-day dosage with distinctive blue ‘Stelazine’ tablets makes antipsychotic therapy easy for your patients to remember, economical for them to take. In general, dosages in the lower range are sufficient for most elderly patients.

Elderly patients should be observed closely since they appear to be more susceptible to hypotension and neuromuscular reactions.

Stelazine

Benzodiazepine of trifluoperazine HCl

Tablets: 1, 2, 5 and 10 mg

Concentrate: 10 mg/ml

Before prescribing, see complete prescribing information in SK&F Co. literature or PDR.

The following is a brief summary:

Indications

Based on a recommendation of the National Academy of Science — National Research Council and other information, FDA has classified the risks as follows:

- Effective for the management of the signs and symptoms of psychotic disorders.
- Possibly effective to control acute manic or hypomanic episodes in patients with manic depression.
- Final classification of the drug for effect on other conditions is in progress.
- Further studies are required.

Contraindications

- Contraindicated in patients with a history of drug intolerance, known sensitivity, or severe liver disease.
- Contraindicated in patients with severe cardiovascular disease, including hypertension, heart disease, or glaucoma.
- Contraindicated in patients with a history of treatment for severe ulcerative colitis, peptic ulcer disease, or renal disease.
- Contraindicated in patients with a history of treatment for severe liver disease or hepatic impairment.
- Contraindicated in patients with a history of treatment for severe renal disease or renal impairment.
- Contraindicated in patients with a history of treatment for severe cardiac disease or cardiac impairment.
- Contraindicated in patients with a history of treatment for severe pulmonary disease or pulmonary impairment.
- Contraindicated in patients with a history of treatment for severe gastrointestinal disease or gastrointestinal impairment.
- Contraindicated in patients with a history of treatment for severe dermatologic disease or dermatologic impairment.
- Contraindicated in patients with a history of treatment for severe neurologic disease or neurologic impairment.
- Contraindicated in patients with a history of treatment for severe immunologic disease or immunologic impairment.
- Contraindicated in patients with a history of treatment for severe endocrine disease or endocrine impairment.
- Contraindicated in patients with a history of treatment for severe psychiatric disease or psychiatric impairment.

Warnings

- General, the patient should be warned regarding the possibility of side effects and to report any unexpected reactions.
- Discontinuation symptoms may occur and require medical supervision.
- Hypersensitivity reactions may require immediate medical attention.
- Patients should be warned about the possibility of drug interactions and to report any unexpected reactions.
- Patients should be warned about the possibility of drug interactions and to report any unexpected reactions.

Precautions

- Use cautiously in patients with a history of drug intolerance, known sensitivity, or severe liver disease.
- Use cautiously in patients with a history of treatment for severe ulcerative colitis, peptic ulcer disease, or renal disease.
- Use cautiously in patients with a history of treatment for severe liver disease or hepatic impairment.
- Use cautiously in patients with a history of treatment for severe renal disease or renal impairment.
- Use cautiously in patients with a history of treatment for severe cardiac disease or cardiac impairment.
- Use cautiously in patients with a history of treatment for severe pulmonary disease or pulmonary impairment.
- Use cautiously in patients with a history of treatment for severe gastrointestinal disease or gastrointestinal impairment.
- Use cautiously in patients with a history of treatment for severe dermatologic disease or dermatologic impairment.
- Use cautiously in patients with a history of treatment for severe neurologic disease or neurologic impairment.
- Use cautiously in patients with a history of treatment for severe immunologic disease or immunologic impairment.
- Use cautiously in patients with a history of treatment for severe endocrine disease or endocrine impairment.
- Use cautiously in patients with a history of treatment for severe psychiatric disease or psychiatric impairment.

Supplied

Tablets: 1 mg, 2 mg, 5 mg, and 10 mg.

In bottles of 100 in bottles of 100 (no. of bottles x 10 = units), 2 mg/ml, and 10 mg/ml, and Concentrate (for intramuscular use) 10 mg/ml x 10 ml.

SK&F CO.
Increased mortality in dementia-related psychosis

Analyses of 17 placebo-controlled trials, largely in patients on “atypical” antipsychotic drugs, revealed 1.6-1.7 x the risk of death in patients treated with antipsychotics vs placebo.
“For decades antipsychotic drugs were a niche product. Today, they’re the top-selling class of pharmaceuticals in America, generating annual revenue of about $14.6 billion and surpassing sales of even blockbusters like heart-protective statins.”

D. Wilson NYT 10/2/10
Challenge to good prescribing

- Reliable information is hard to find
  - And this is intentional
- “All promotional statements that a new drug has few, mild, or no side-effects should be ignored.”
  - Medical Letter 1962;4:6
Pharmacology and Aging

Physiologic Change

- Reduction in liver mass and blood flow
- Increased total body fat and decreased lean body mass
- Decreased renal function with age

Consequence

- Reduced first pass metabolism affecting bioavailability of some drugs
- Reduced clearance of drugs by the liver
- Increased half-life of lipophilic medications, e.g. benzodiazepines, anti-psychotics
- Decreased clearance of drugs through kidney

Polypharmacy

Definition
- The use of multiple medications at the same time
  - Exact number defining “polypharmacy” varies in literature, although ≥ 5 concurrent medications is commonly used
- Taking at least one medication that is not clinically indicated
Prescription Drug Use in Adults

Why do older adults use more medications?

- Guidelines don’t work well for the elderly
- Higher number of comorbid conditions
  - 20% of Medicare beneficiaries have 5 or more chronic conditions and 50% receive 5 or more medications
- We docs have some very, very bad habits

Kaufman D. JAMA 2002;287:337–44.
### Table 3. Treatment Regimen Based on Clinical Practice Guidelines for a Hypothetical 79-Year-Old Woman With Hypertension, Diabetes Mellitus, Osteoporosis, Osteoarthritis, and COPD*

<table>
<thead>
<tr>
<th>Time</th>
<th>Medications†</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 AM</td>
<td>Ipratropium metered dose inhaler 70 mg/wk of alendronate</td>
<td>Check feet&lt;br&gt;Set upright for 30 min on day when alendronate is taken&lt;br&gt;Check blood sugar</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>500 mg of calcium and 200 IU of vitamin D&lt;br&gt;12.5 mg of hydrochlorothiazide&lt;br&gt;40 mg of lisinopril&lt;br&gt;10 mg of glyburide&lt;br&gt;81 mg of aspirin&lt;br&gt;850 mg of metformin&lt;br&gt;250 mg of naproxen&lt;br&gt;20 mg of omeprazole</td>
<td>Eat breakfast&lt;br&gt;2.4 g/d of sodium&lt;br&gt;90 mmol/d of potassium&lt;br&gt;Low intake of dietary saturated fat and cholesterol&lt;br&gt;Adequate intake of magnesium and calcium&lt;br&gt;Mental nutrition therapy for diabetes‡&lt;br&gt;DASH‡</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>Ipratropium metered dose inhaler 500 mg of calcium and 200 IU of vitamin D</td>
<td>Eat lunch&lt;br&gt;2.4 g/d of sodium&lt;br&gt;90 mmol/d of potassium&lt;br&gt;Low intake of dietary saturated fat and cholesterol&lt;br&gt;Adequate intake of magnesium and calcium&lt;br&gt;Mental nutrition therapy for diabetes‡&lt;br&gt;DASH‡</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>Ipratropium metered dose inhaler 850 mg of metformin&lt;br&gt;500 mg of calcium and 200 IU of vitamin D&lt;br&gt;40 mg of lovastatin&lt;br&gt;250 mg of naproxen</td>
<td>Eat dinner&lt;br&gt;2.4 g/d of sodium&lt;br&gt;90 mmol/d of potassium&lt;br&gt;Low intake of dietary saturated fat and cholesterol&lt;br&gt;Adequate intake of magnesium and calcium&lt;br&gt;Mental nutrition therapy for diabetes‡&lt;br&gt;DASH‡</td>
</tr>
<tr>
<td>7:00 PM</td>
<td>Ipratropium metered dose inhaler</td>
<td></td>
</tr>
<tr>
<td>11:00 PM</td>
<td>Ipratropium metered dose inhaler</td>
<td></td>
</tr>
<tr>
<td>As needed</td>
<td>Albuterol metered dose inhaler</td>
<td></td>
</tr>
</tbody>
</table>

*Adapted from the American College of Physicians Clinical Practice Guidelines. Used with permission from the American College of Physicians. CVD guidelines (Cholesterol.<br>BP and DM).<br>Boyd CM et al., JAMA 2005.
An adverse effect of a medication is mistaken for a new diagnosis and treated with an additional medication.

- Example:
  - Prescribing oxybutynin for urinary incontinence caused by cholinesterase inhibitors used for dementia (i.e. donepezil)
Consequences of Polypharmacy

- Adverse Drug Reactions
  - Risk increases with number of medications
    - 13% risk with the use of 2 medications
    - 58% risk with 5 medications
    - 82% risk with 7 or more medications
  - Approximately 12% of hospital admissions in older adults are related to ADRs
  - 4th most common death cause in US hospitals

Adverse Drug Reactions

- Delirium
  - Opioids, Benzodiazepines, Anticholinergics

- Falls
  - Medication use is one of the most modifiable risk factors for falls
  - Medications associated with increased risk of falls include any psychotropic drug, benzodiazepines, antipsychotics, antidepressants

- Weight Loss

Consequences of Polypharmacy

- Drug interactions
- Medication nonadherence
  - Higher rate with increased number of meds
- Increased health care costs
- Underuse of appropriate medications

Prescribing Principles for Older Adults

- Understand patient’s goals
- Consider timeframes
- Consider magnitude of benefit to allow prioritization and tailoring of treatment
Prescribing Principles for Older Adults

- Understand patient’s goals
  - Longevity, function, what gives life meaning
  - “What is a typical day like for you?”
  - “In whatever amount of time you have left on Earth, what do you hope for in that time ahead?”

- Consider timeframes

- Consider magnitude of benefit to allow prioritization and tailoring of treatment
Prescribing Principles for Older Adults

- Understand patient’s goals
- Consider timeframes
  - Patient
    - Life expectancy [www.eprognosis.org](http://www.eprognosis.org)
    - Worry about short term versus long term
  - Treatment
    - Time to benefit
    - Time to harm
- Consider magnitude of benefit to allow prioritization and tailoring of treatment
Examples of time to benefit versus harm

<table>
<thead>
<tr>
<th>Preventive intervention</th>
<th>Time to benefit</th>
<th>Time to harm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bisphosphonates for osteoporosis</td>
<td>1-2 years</td>
<td>Immediate</td>
</tr>
<tr>
<td>BP control, primary prevention</td>
<td>1-2 years</td>
<td>Immediate and potentially serious</td>
</tr>
<tr>
<td>Intensive glycemic control in DM 2</td>
<td>10 years if at all</td>
<td>Immediate and potentially fatal</td>
</tr>
</tbody>
</table>

Lee SJ, Kim CM. JAGS 2018
Prescribing Principles for Older Adults

- Understand patient’s goals
- Consider timeframes
- Consider magnitude of benefit to allow prioritization and tailoring of treatment
  - Absolute risk reduction (Often hard to find this info!)
  - Is there a non-drug way to get the same benefit
  - START/STOPP criteria or Beers List as short cut
  - Prioritize: big impact, short time, low risk, c/w goals
  - Allows you to consider totality of treatments and consider treatment burden and tolerance of treatment complexity
  - Med review EVERY VISIT
Beers Criteria

Potentially inappropriate medications include medications that:

- Have limited effectiveness in older adults
- Are associated with poor outcomes
- Have safer alternatives available

Beers Criteria - Examples

- **Anticholinergics** (e.g. Benadryl)
  - Reduced clearance with increased age
  - Increased risk of confusion, constipation

- **Benzodiazepines**
  - Increased risk of cognitive impairment, delirium, falls, fractures, and motor vehicle accidents

- **Glyburide**
  - Increased risk of prolonged hypoglycemia
AGS – Top Medications to Avoid

- NSAIDs
- Digoxin in doses greater than 0.125 mg
- Certain diabetes drugs
  - Sulfonylureas, especially long acting
- Muscle relaxants
- Certain meds for anxiety/insomnia
  - Benzodiazepines, sleeping pills (including OTC)
- Anticholinergic drugs
- Antipsychotics (unless patient has psychosis)
- Estrogen pills and patches
Medication Review

- Is there an indication for the drug?
- Is the medication effective for the condition?
- Is the dosage correct?
- Are the directions correct and practical?
- Are there clinically significant drug-drug or drug-disease interactions?
- Is there unnecessary duplication with other drug(s)?
- Is the duration of therapy acceptable?
- Is this drug the least expensive alternative compared to others of equal utility?

Let’s practice:
79yo woman w Htn, DM2, OP, OA, COPD

- Ipatropium MDI
- Alendronate
- Calcium
- Vitamin D
- HCTZ
- Lisinopril
- Glyburide
- Metformin
- Naproxen
- Omeprazole
- Lovastatin
- Albuterol prn

- Goals: Function, Independence
- Timeframe: 5-ish years
- Prioritization and tailoring
Let’s practice:
79yo woman w Htn, DM2, OP, OA, COPD

- Ipatropium MDI - mild disease
- Alendronate - “20 y”
- Calcium - Diet
- Vitamin D – Level 22
- HCTZ - + orthostatic
- Lisinopril - protect kidneys
- Glyburide - Beers List
- Metformin - A1C goal, time to benefit
- Naproxen - Beers List
- Omeprazole - Cascade
- Lovastatin - LDL 27, weak, Primary prevention
- Albuterol - helps
Let’s practice:
79yo woman w Htn, DM2, OP, OA, COPD

- Ipatropium MDI
- Alendronate
- Calcium
- Vitamin D
- HCTZ
- Lisinopril
- Glyburide
- Metformin
- Naproxen
- Omeprazole
- Lovastatin
- Albuterol MDI

- Ergocalciferol 50K/week
- Albuterol MDI prn
- Metformin

- Exercise, home safety, calcium in diet but otherwise live a little
Take Home Points

- Elderly consume more, tolerate less, often can’t afford, frequently harmed by drugs
- Be especially cautious about
  - New drugs ($, not studied in “real” patients)
  - Multiple drugs, guideline based care
  - Temptation to treat side effects with drugs
  - Certain drugs
- An approach to prescribing includes consideration of patient goals, timeframe & magnitude of benefits and burdens, and prioritizing value of treatments