Medication Management in Older Adults

Inappropriate prescriptions pose health risks for older adults, leading to unnecessary hospitalizations and cost

- Emergency hospitalizations for adverse drug events in older Americans. NEJM 2011;365(21):2002-12

Van Gogh, St Paul Asylum
Goals

- Identify unsafe medications
- Report opportunities to deprescribe
- Enhance medication adherence
- Use screening tools

Why does polypharmacy occur in older adults?

- Medications started in middle age
- Multiple prescribers
  - Average 5 specialty visits and 2.4 primary care visits annually
- Multiple Chronic Conditions & guidelines
  - Example: heart failure B block, ACE, spironolactone, statin
Prescribing cascade
USE ANOTHER MEDICATION TO TREAT SIDE EFFECTS OF A PREVIOUS PRESCRIPTION

Why reduce medication burden?

- Drugs may become unsafe with aging
- Change in kidney function
- Drug – drug interactions
- Metabolic changes
- Changes in priorities: What Matters
- Primary prevention is no longer a goal
- Reduce costs
NHANES study: polypharmacy doubles each decade

Polypharmacy = 5 or more medications
Polypharmacy

- OTC and supplementals
  - 50% of patients do not tell their provider

- Example: ginseng lowers FBS by 21 mg/dL and HA1c by 0.5% in diabetics with potential for hypoglycemia

Few medication studies for chronic conditions in older adults

Leonardo Da Vinci
Opportunities for deprescribing

The Alchemist by Jacob Toorenvliet. fec 1684.

Statins

- Good for secondary prevention
  - CVD: heart disease and stroke
- Uncertain for primary prevention
  - 23% older adults given statin for primary prevention
- 10 year risk for 75+ does not meeting guideline thresholds
- ALLHAT trial of statins found no efficacy
ANTICHLINERGICS

<table>
<thead>
<tr>
<th>Class</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antihistamines</td>
<td>Diphenhydramine, hydroxyzine, meclizine</td>
</tr>
<tr>
<td>Anti parkinsons</td>
<td>Benztropine</td>
</tr>
<tr>
<td>Muscle relaxants</td>
<td>Cyclobenzaprine, methocarbamol</td>
</tr>
<tr>
<td>Anti depressants</td>
<td>Amitriptyline, imipramine, paroxetine</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>Abilify, haldol</td>
</tr>
<tr>
<td>Antimuscarinics</td>
<td>Oxybutynin, tolterodine, trospium</td>
</tr>
<tr>
<td>Antiemetics</td>
<td>Prochlorperzaine, promethazine</td>
</tr>
<tr>
<td>Antispasmodics</td>
<td>Hyoscamine, scopalamine</td>
</tr>
</tbody>
</table>

High anti-cholinergic burden

- Confusion
- Delirium
- Poor physical function
- Loss of independence
- Brain atrophy
- Memory loss
- Impulsivity
Antagonistic therapy with Incontinence meds at odds with anticholinesterase dementia treatment

The notorious benzo’s
Benzos

- Mostly primary care prescribers
- 8% of population
- Anxiety, agitation, insomnia

Too Many Sheep to Sleep - Hiroko Sakai, San Francisco

List 3 bad things that happen with benzodiazepines

List 3 bad things that can happen with benzodiazepines

- Falls
- Amnesia
- Dementia
- Impaired driving
- Hip fractures
- Dependency
- Loss of REM sleep

Antipsychotics

Théodore Géricault, “The Hyena of la Salpêtrière,” 1819
Antipsychotics

- Increasing off label use
- Only 11% effective in managing dementia–related agitation
- Increase mortality risk
- 50% higher risk of serious fall and non-vertebral fracture
- Tardive dyskinesia

Alternatives to anti-psychotics

- Mirror imaging: Go with the flow
- Distract and Divert
- Treat empirically for pain
- Positive body language
- Do not argue or reprimand
- Do not rationalize

Girl Before a Mirror, Pablo Picasso 1932
PPI

- Up to 70% prescriptions with no apparent indication
- Up to 50% of hospitalized patients sent out with PPIs
- Long term use only for
  - Erosive esophagitis
  - Barrett’s esophagitis
  - Gastrinoma / hypersecretion
  - Refractory reflux

Ghost of a Genius, Pall Klee, 1922
Adverse effects of PPIs

- C. difficile colitis
- Community acquired pneumonia
- Hip fractures
- Vitamin B12 deficiency
- Atrophic gastritis
- CKD
- Dementia

Watch Out!

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Rationale for avoidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA, dabigatran, rivaroxaban, prasugrel</td>
<td>Risk of bleeding increases with older age</td>
</tr>
<tr>
<td>SSRI, SNRI, TCAs, diuretics, antipsychotics, carbamazepine, tramadol</td>
<td>SIADH and hyponatremia</td>
</tr>
<tr>
<td>Trimethoprim - sulfamethoxazole</td>
<td>Hyperkalemia with ACE or ARB and low eGFR</td>
</tr>
</tbody>
</table>
Approach to polypharmacy

HPI or ROS: Consider patient symptoms as drug – related

- Fatigue / Tiredness
- Falls
- Poor sleep
- Decreased alertness
- Constipation
- Diarrhea
- Incontinence
- Loss of appetite / weight loss
- Confusion
- Depression / interest in usual activities

Strategies to prevent polypharmacy

- Medication list with diagnosis
- Brown bag visit
- Pharmacist consult, including One Rx referral
- Check list: Beer’s criteria
- Transition of care reconciliation
- Align medication regimen to What Matters

John Henry Fuseli, “The Nightmare,” 1781

Carol Josefiak
Deprescribing

- 90% of patients willing to stop medication if physician says it is possible

Tools for deprescribing

- Pamphlets
- Checklists
- Research
Tools for deprescribing

deprescribing.org

Beers List: framework

AVOID

POTENTIALLY INAPPROPRIATE MEDICATIONS

CAUTION

DRUG–DISEASE INTERACTIONS

DRUG-DRUG INTERACTIONS
### Potentially Inappropriate Medications (PIMs)

#### Table 2. Incorporated changes of potentially inappropriate medications in older adults

<table>
<thead>
<tr>
<th>Medication or medication class</th>
<th>Recommendation; rationale (changes to the 2015 criteria)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anticholinergics</strong></td>
<td></td>
</tr>
<tr>
<td>First-generation antihistamines</td>
<td>Avoid; clearance reduced with advanced age, and tolerance develops when used as hypnotic; risk of confusion, dry mouth, constipation, and other anticholinergic effects or toxicity</td>
</tr>
<tr>
<td>Antiparkinsonian agents (benzotropine, trihexyphenidyl)</td>
<td>Avoid; not recommended for prevention of extrapyramidal symptoms with antipsychotics</td>
</tr>
<tr>
<td>Antispasmodics</td>
<td>Avoid; high anticholinergic and uncertain effectiveness</td>
</tr>
<tr>
<td>Dipyrardmole, oral short-acting</td>
<td>Avoid; may cause orthostatic hypotension, and more effective alternatives available; I.V. form acceptable to use in cardiac stress testing</td>
</tr>
</tbody>
</table>

#### CNS

<table>
<thead>
<tr>
<th>Delirium (anticholinergics, antipsychotics, benzodiazepines, corticosteroids, H2-receptor antagonists, meperidine, Z drugs)</th>
<th>Avoid; potential of inducing or worsening delirium; avoid antipsychotics for behavioral problems of dementia and/or delirium unless nonpharmacological options have failed or are not possible and the older adult is threatening substantial harm to self or others; antipsychotics are associated with greater risk of cerebrovascular accident and mortality in patients with dementia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dementia or cognitive impairment (anticholinergics, benzodiazepines, Z drugs, antipsychotics used chronically and “as needed”)</td>
<td>Avoid; adverse CNS effects; avoid antipsychotics for behavioral problems of dementia and/or delirium unless nonpharmacological options have failed or are not possible and the older adult is threatening substantial harm to self or others; antipsychotics are associated with greater risk of cerebrovascular accident and mortality in patients with dementia</td>
</tr>
<tr>
<td>History of falls or fractures (antiepileptics, antipsychotics, benzodiazepines, Z drugs, antidepressants [TCAs, SSRIIs, SNRIs], opioids)</td>
<td>Avoid unless safer alternatives are not available; avoid antiepileptics except for seizure and mood disorders; avoid opioids except for pain management in setting of acute pain; may cause ataxia, impaired psychomotor function, syncope, additional falls</td>
</tr>
</tbody>
</table>

Drug – disease list
Beers List: 30 drugs to avoid in general / 40 to use cautiously

- SNRIs → falls
- Metoclopramide
- Sliding scale insulin → hypoglycemia
- SulfonOureas → hypoglycemia
- NSAIDs, especially with diuretics or HF

Beers List: Combos to avoid

- Opioids with benzodiazepines or gabapentinoids
- More than 3 CNS active Rxs
- Macrolides & Cipro with warfarin (bleeding)
- SMx – TMP and phenytoin (Dilantin toxicity)
- SMX – TMP with ACE / ARB and CKD (hyperkalemia)
## Beers List: medications to avoid or reduce with CKD

<table>
<thead>
<tr>
<th>Medication</th>
<th>Side effect</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ciprofloxacin</td>
<td>CNS changes, tendon rupture</td>
<td>Reduce dose</td>
</tr>
<tr>
<td>Nitrofurantoin</td>
<td>Organ toxicity, neuropathy</td>
<td>Avoid, especially long term use</td>
</tr>
<tr>
<td>TMP - SMX</td>
<td>Hyperkalemia, kidney failure</td>
<td>Reduce dose, CrCL 15 - 29 mL / min</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Avoid if &lt; 15 mL / min</td>
</tr>
<tr>
<td>H2 blockers</td>
<td>Mental status changes</td>
<td>Reduce dose</td>
</tr>
<tr>
<td>Gabapentin / Pregabalin</td>
<td>CNS changes</td>
<td>Reduce dose</td>
</tr>
<tr>
<td>Duloxetine</td>
<td>CNS changes</td>
<td>Reduce dose</td>
</tr>
<tr>
<td>Colchicine</td>
<td>GI side effects, BM toxicity, Neuromuscular effects</td>
<td>Reduce dose</td>
</tr>
</tbody>
</table>

## STOPP/START List

<table>
<thead>
<tr>
<th>Physiological System</th>
<th>Number of criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular system</td>
<td>17</td>
</tr>
<tr>
<td>Central nervous system</td>
<td>13</td>
</tr>
<tr>
<td>Gastro-intestinal system</td>
<td>5</td>
</tr>
<tr>
<td>Musculoskeletal system</td>
<td>8</td>
</tr>
<tr>
<td>Respiratory system</td>
<td>3</td>
</tr>
<tr>
<td>Urogenital system</td>
<td>6</td>
</tr>
<tr>
<td>Endocrine system</td>
<td>4</td>
</tr>
<tr>
<td>Drugs that adversely affect fallers</td>
<td>5</td>
</tr>
<tr>
<td>Analgesics</td>
<td>3</td>
</tr>
<tr>
<td>Duplicate drug classes</td>
<td>1</td>
</tr>
</tbody>
</table>
Examples of STOPP / START

**Cardiovascular System**
1. Digoxin at a long-term dose > 125µg/day with impaired renal function
2. Loop diuretic for dependent ankle oedema only i.e. no clinical signs of heart failure
3. Loop diuretic as first-line monotherapy for hypertension
4. Thiazide diuretic with a history of gout
5. Non cardioselective Beta-blocker with Chronic Obstructive Pulmonary Disease

**Central Nervous System and Psychotropic Drugs.**
1. Tricyclic antidepressants (TCAs) with dementia
2. TCAs with glaucoma
3. TCAs with cardiac conductive abnormalities
4. TCAs with constipation
5. TCAs with an opiate or calcium channel blocker

STOMP / START protocol

- 41 – 67 % hospitalized patients with Potentially Inappropriate Medication (4 RCTs)
- Protocol impact
  - Fall reduction
  - Reduced drug costs
  - Reduced adverse drug events from 24 to 12.5 %
Consider

- What Matters to the patient
- Functional status
- Life expectancy

4Ms Framework

High-quality Geriatrics healthcare with 4Ms

Need to be delivered reliably with every older adult encounter across the continuum.