POLYPHARMACY IN OLDER ADULTS AND BEERS CRITERIA UPDATE

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Learning Objectives:
- State the risks of polypharmacy in older adults.
- Identify Beers Criteria medications that are considered inappropriate for older adults.
- Describe the approach to evaluating appropriate versus inappropriate polypharmacy regimen.

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Polypharmacy in Older Adults & Beers Criteria Update

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Institute of Medicine Report
Retooling for an Aging America: Building the Health Care Workforce

- Requires significant overhaul to care for estimated 70 million adults ≥65 by 2030
  - No profession trains # of geriatric specialist needed
  - Currently <1% of medical professionals are certified or have specialty training in geriatrics
  - Schools and organizations need to collaborate to ensure core competencies to care for older adults with geriatric syndromes

Geriatric Syndromes

- Polypharmacy
- Dementia
- Imbalance/ Immobility/ Falls
- Functional Decline
- Urinary Incontinence
- Malnutrition
- Frailty

Polypharmacy

“The administration of many medications together”

- 4, 5, 9 or more chronic medications
  - Prescription medications
  - Over-the-counter (OTC) medications
  - Vitamin supplements
  - Herbal products

Med Use in Older Adults

- 50% of community-dwelling elderly
  - Take 5 or more Rxs and OTCs
- 12% of community-dwelling elderly
  - Take 10 or more Rxs and OTCs
- 30% of hospitalizations in elderly
  - Medication-related
A 79-year-old woman comes into clinic referred by a primary care provider. She is not a good historian, but you learn that her main problems are COPD, heart failure, type-2 diabetes, and mild urinary incontinence. She also reports some recent difficulty remembering names. Her family brings in a plastic bag full of medications.
Medications in the Bag

- Albuterol inhaler
- Alprazolam
- Atorvastatin
- Diphenhydramine
- Digoxin
- Donepezil
- Furosemide
- Insulin Glargine
- Guaifenesin
- Levothyroxine
- Metformin
- Metoprolol Succinate
- Naproxen
- Omeprazole
- Tolterodine
- Zolpidem

Consequences of Polypharmacy

- Increased errors
- Decreased adherence
- Drug-Drug interactions
- Adverse Drug Reaction
- Increased cost
- Poor outcomes
  - Hip fractures
  - Hospitalizations
  - Death

Kessler DA. JAMA 1993;269:2765-68;

Errors and Poor Adherence

Drug errors = % of prescribed drugs not taken plus % of drugs taken of which physician unaware

Hulka et al. J Chronic Disease; 1975
**Drug-Drug Interactions**

Study of 630,743 adults aged 70+ in Sweden; Drug Safety, 2007

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**Adverse Drug Reaction**

Elderly 2-3 times more likely to have an ADR from any one drug

- Of those taking >5 drugs for one year, 35% have an adverse drug event
- 28% have at least one ADR while hospitalized
  - Doubles the length of stay
- 65% of LTCF residents experience at least one ADR in a four year period
- 80% of adverse drug effects are treated with another drug!
  - Prescribing Cascade

Rollason and Vogt. Drugs and Aging, 2003

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**Poor Outcomes: Hip Fracture**

Lai SW, et al. Medicine, 2010
Poor Outcomes: Death

- Sweden: 1 of every 30 deaths in elders (median age 82) is from an adverse drug event (ADE)

- Norway: in-hospital deaths …
  - 8.7% directly due to ADE
  - 9.4% indirectly due to ADE


HOW TO DEAL WITH POLYPHARMACY

3 Kinds of Polypharmacy

1. Pseudo-polypharmacy
2. Appropriate polypharmacy
3. Inappropriate polypharmacy
Pseudo-polypharmacy

- Record shows patient to be taking more medications than patient really takes
  - Often old medications in possession
- Medication reconciliation
  - Find out what patient really takes
  - Discard old medications

Appropriate Polypharmacy
Appropriate Polypharmacy

- Multiple medications, all of which are appropriate for recognized indications
- Many conditions are now best treated with multiple medications.
- Examples:
  - Heart failure
  - Hypertension
  - Diabetes
- Undertreatment is problem

Commonly Underused Medications in Older Adults

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Most Common Underused Meds (% Underuse)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute MI</td>
<td>Nitrates (66%), aspirin (30%), beta-blockers (14%)</td>
</tr>
<tr>
<td>COPD</td>
<td>Inhaled anticholinergic bronchodilators (66%)</td>
</tr>
<tr>
<td>Depression</td>
<td>SSRI (72%)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>ACE-inhibitors (53%), oral hypoglycemics (16%)</td>
</tr>
<tr>
<td>Heart failure</td>
<td>ACE-inhibitors (32%)</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>Calcium (70%)</td>
</tr>
</tbody>
</table>

Wright et al, Am J Geriatr Pharmacotherapy. 2009

Another example - statins

- Statin use declines by 6% for each year over the age of 65, even though risk of cardiac events increases by 1% per year

Ko at al, JAMA, 2004
Yet another example…
Anticoagulation for A-Fib

- Only ~50% of eligible patients receive it
- Fall risk is the usual reason cited for not prescribing
- Studies show benefit outweighs risk even in patients…
  - at risk for falls
  - over 80 years


Appropriate Polypharmacy

- Do not withhold polypharmacy if they are…
  - indicated and effective for the patient’s condition
  - not interacting unfavorably with the patient’s other medications

INAPPROPRIATE POLYPHARMACY
Inappropriate Polypharmacy

- Patient takes more drugs than needed/safe
  - Inappropriate for older adults
  - Interact with other medications
  - Ineffective for diagnosis
  - Duplicate therapy

Inappropriate for older adults

- Beers Criteria – 2012 Update
  - Consensus list of 53 medications or medication classes potentially inappropriate for older adults
    - Risk > Benefit
    - Think twice before prescribing/recommending
    - then think again…
    - …and again
  - Tool for geriatric teams

Considerations

- Not EBM
- 2012 update
  - Quality of evidence
  - Strength of recommendation
  1. Meds to avoid regardless of disease/condition
  2. Meds to avoid in certain disease/condition
  3. Meds to use with caution
- No alternatives presented
Key Medications on Beers Criteria

- **Anticholinergics and First-Generation Antihistamines**
  - Sedation
  - Cognitive impairment
  - Dry mouth
  - Constipation
  - Urinary retention
  - Examples:
    - Diphenhydramine (Benadryl®)
    - Hydroxyzine (Atarax®)

- **Long-acting Benzodiazepines**
  - Cognitive dysfunction
  - Falls
  - Addiction/withdrawal
  - Examples:
    - Diazepam (Valium®)
    - Flurazepam (Dalmane®)
    - Chlordiazepoxide (Librium®)

- **Tricyclic Antidepressants**
  - Anticholinergic
  - Cardiac toxicity
  - Orthostatic hypotension
  - Examples:
    - Amitriptyline (Elavil®)
    - Doxepin (Sinequan®)
Key Medications on Beers Criteria

- Antipsychotic medications
  - First-generation
    - Movement disorders
  - Second-generation
    - Hyperlipidemia, weight gain, diabetes
  - Both generations – FDA Warning
    - Death from heart disease, infections
  - Examples:
    - Haloperidol (Haldol®)
    - Olanzapine (Zyprexa®)

Key Medications on Beers Criteria

- NSAIDs – Ibuprofen, Naproxen
  - 3,000 ≥ 65 years die each year in the US from complications of NSAIDs
    - GI bleeding/perforation
    - Renal impairment
    - Fluid retention (BP, HF)

- Digoxin
  - If essential, use low dose (<0.125/d)

Beers Criteria – examples

Medical Conditions
- Anorexia: CNS stimulant drugs, amphetamines
- Chronic constipation: CCB’s, anticholinergics
- Depression: long-acting benzodiazepines
- Gastric ulcers: NSAIDs
- Cognitive impairment: anticholinergics, antispasitics
- Parkinson’s Disease: metoclopramide, antipsychotics
Drug Interaction Websites

- Institutional (UA, VA)
  - Micromedex, Lexicomp, Up-to-Date
- HealthLine (easiest to use)
  - www.healthline.com/druginteractions
- Drugs.com (more herbals)
  - www.drugs.com/drug_interactions.php
- AARP
  - healthtools.aarp.org/drug-interactions

Ineffective or Duplicative

384 frail elderly at hospital discharge
- 44% had at least one unnecessary drug
- Drug was started during hospitalization in 25%
- Unnecessary:
  - 32% - No indication
  - 18% - No effectiveness for indication
  - 7% - Therapeutic duplication
- Risks for unnecessary drugs:
  - >5 medications
  - Multiple prescribers

Hajjar et al, J Am Geriatr Soc. 2006

Ineffective or Duplicative

196 outpatients >65 years of age
- Taking >5 medications (mean 8.1)
- Inappropriate medications in 65%
  - 37% violating Beers criteria
  - 57% ineffective, not indicated, duplicative

Resolving Inappropriate Polypharmacy

- **Step 1**
  - Make a table to match patient’s conditions with meds

- **Step 2**
  - Eliminate medication that…
    - has no indication
    - duplicates other current medications
    - is potentially harmful
    - has interactions

- **Step 3**
  - Consider adding medication…
    - that may be beneficial

Rational Drug Use – Polypharmacy

Many elderly receive multiple drugs for their chronic diseases

- Standard of care

Use only those drugs needed!!

- Unallowd dose initially or rounding per CrCl
- Minimize frequency
- Medication reconciliation
- Ask “is this necessary?”
- Psychotropics
- Resolve drug-related problems

Drug-related Problems

Consider before prescribing/recommending

1. Drug without indication
2. Untreated indication
3. Overdose
4. Underdose
5. Drug-drug/drug-herbal interactions
6. Adverse effects
7. Allergies
8. Duplicate therapy
9. Missing medication
10. Nonadherence
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