RATIONAL APPROACH TO
DRUG THERAPY IN THE OLDER PATIENT

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International Society of Internal Medicine
Royal Colleges of Physicians of the United Kingdom
RATIONAL DRUG USE

Rational use of medicines requires that "patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community".

World Health Organization
Rational medication prescribing dictates that the fewest medications be used to achieve the therapeutic goals as determined by clinician and patient.

Taskeen, M., et. al.  
J Drug Del. & Therap 2012
While there have been concerns about inappropriate prescribing, polypharmacy and non-adherence, it is now recognised that there are a broader range of drug-related problems that need to be addressed.

These include:
- Suboptimal monitoring of drugs
- Poor medication management in patients’ homes,
- Under-prescribing
- Poor communication between health professionals.
OPTIMAL PHARMACOTHERAPY

• Balance between overprescribing and underprescribing
  – Correct drug
  – Correct dose
  – Targets appropriate condition
  – Is appropriate for the patient

  ❖ Avoid “a pill for every ill”
  ❖ Always consider non-pharmacologic therapy

Farho, Linda
WHAT DO WE KNOW OF THIS PATIENT?

Gen Data:
- 86/F

CC: poor appetite

HPI - progressive decrease in appetite
- progressive weight loss (15 kg ?)
- belligerent (refused consults or hospitals)
- depressed mood
- had a cardiologist in attendance who gave hydroxyzine and appetite stimulants a month ago

PTC

Depression         Insomnia
WHAT DO WE KNOW OF THIS PATIENT?

Clinical Profile:

(+) Hypertension
(+) ASCVD
(+) Chronic atrial fibrillation
(+) Dyslipidemia
(+) Ischemic heart disease
WHAT DO WE KNOW OF THIS PATIENT?

Review of Systems:

(+) palpitations

(+) dizziness on sitting up for a prolonged time

(+) frequent hallucinations of dead relatives being in the room
PHYSICAL EXAMINATION

*GS and Vital Signs*

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
<td>168 cm</td>
</tr>
<tr>
<td>Weight</td>
<td>38 kg</td>
</tr>
<tr>
<td>BMI</td>
<td>13.5 kg/m²</td>
</tr>
<tr>
<td>BP</td>
<td>90/60 supine, 80/40 sitting</td>
</tr>
<tr>
<td>HR</td>
<td>50 (no change on sitting position)</td>
</tr>
<tr>
<td>RR</td>
<td>20</td>
</tr>
<tr>
<td>T</td>
<td>36.5°C</td>
</tr>
</tbody>
</table>

**Hypotension**
PHYSICAL EXAMINATION
Systems Examination

Bradycardic, irregular rhythm, grade 3/6 systolic blowing murmur at apex
Scaphoid, NABS, soft, non-tender, no masses
(-)edema, cyanosis, dry and cool palms

Neuro
patient keeps pointing to people that are not in the room and disoriented to time, place and person
No lateralizing signs

Confusion
LABORATORY RESULTS

CBC: Hgb 112

Na 126

K 3.6

BUN 20 mg/dl

Creatinine 1.24 mg/dl

AST 24 U/L

Albumin 26 g/L
MEDICATIONS

Losartan 50 mg 1x a day
Digoxin 0.25 mg 1x a day
Aspirin 80 mg 1x a day after lunch
   Stopped by relatives due to fear of bleeding
Atorvastatin 20 mg at bedtime
Trimetazidine 35 mg 2x a day
Multivitamins 1 tab 1x a day
Hydroxyzine 10 mg at bedtime
Appetite stimulant (M*****r and M******n), both 2x a day
WHAT DON’T WE KNOW OF THIS PATIENT?

1. Frequency of physician check-ups and follow-ups.

2. When were her medications administered? (chronology)

3. Was she seeing the same physician for all the complaints?
THE PRESCRIBING CASCADE

Drug 1

ADE interpreted as new medical condition

Drug 2

ADE interpreted as new medical condition

Drug 3

Polypharmacy in the Making…

• Drug reactions in the elderly often produce effects that simulate the conventional image of growing old:

  unsteadiness       drowsiness
  dizziness          falls
  confusion          depression
  nervousness        incontinence
  fatigue            malaise
  insomnia
CONSEQUENCES OF POLYPHARMACY

• Increased total medical expenditure
• **Increased incidence of ADRs & drug-drug interactions**
• Decreased patient compliance
• Decreased social activity
• Increased incidence of depression
• Diminished cognition
• Increased incidence of eventual nursing home placement
• Increased prescribing errors

*Rossoni, E. et al.*
*Univ. Of Rhode Island*
ADVERSE DRUG REACTIONS

• The most consistent risk factor for adverse drug reactions is:

The NUMBER of drugs being taken

– Risk rises exponentially as the number of drugs increases.

2 medications  6%
5 medications  50%
8 medications  100%  

Larsen and Martin, 1999
MEDICATIONS

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Hydroxyzine 10 mg at bedtime
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PRINCIPLES

- If an elderly person is started on a new medication and 2 to 3 days later they are taken to the emergency room, suspect a drug reaction.

- If an older patient seems very different than at your last session, ask them if they are taking any new medications.

James-Kracke, M.
Univ. of Missouri – Columbia Medical School
# APPROPRIATE PRESCRIBING
(Medication Appropriateness Index)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there an indication for the drug?</td>
<td>3</td>
</tr>
<tr>
<td>Is the medication effective for the condition?</td>
<td>3</td>
</tr>
<tr>
<td>Is the dosage correct?</td>
<td>2</td>
</tr>
<tr>
<td>Are the directions correct?</td>
<td>2</td>
</tr>
<tr>
<td>Are the directions practical?</td>
<td>2</td>
</tr>
<tr>
<td>Are there significant Drug-Drug Interactions?</td>
<td>2</td>
</tr>
<tr>
<td>Are there significant Drug-Disease Interactions?</td>
<td>1</td>
</tr>
<tr>
<td>Is there unnecessary duplication of the drugs?</td>
<td>1</td>
</tr>
<tr>
<td>Is the duration of therapy acceptable?</td>
<td>1</td>
</tr>
<tr>
<td>Is the drug the least expensive alternative?</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>18</strong></td>
</tr>
</tbody>
</table>
Mark H Beers, MD 1954-2009

- MD, University of Vermont
- First medical student to do a geriatrics elective at Harvard’s new Division on Aging
- Geriatric Fellowship, Harvard U
- Faculty, UCLA/RAND
- Co-editor, Merck Manual of Geriatrics
- Editor in Chief, Merck Manuals
BEERS DRUGS CRITERIA

• Medications that should be avoided in the elderly (≥ 65 years old).
• Inclusion based on drug’s specific risk-benefit analysis.
• 2 classifications of Beer’s drugs
  – Medications to avoid or use within specific dose and duration
  – Medications to avoid with concomitant diseases

Rossoni, E., et al.  Univ. of Rhode Island
BEERS CRITERIA – OVER THE YEARS

2012 – latest revision
- 53 medications and classes of medications
- Sponsored by the American Geriatrics Society (AGS)
- Evidence-based using Institute of Medicine guidelines
- Three categories

(1) 34 medications that pose high risk of side-effects or are of limited effectiveness or alternatives are available.

(2) 14 medications inappropriate for certain diseases because they exacerbate these disorders.

(3) 14 medications more risks than benefits but may be the best choice for the particular individual provided it is used with caution.
Table 3. Drug-disease/syndrome Interactions

<table>
<thead>
<tr>
<th>Disease or Syndrome</th>
<th>Drug</th>
<th>Rationale</th>
<th>Recommendations</th>
<th>Quality of Evidence</th>
<th>Strength of Recomm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syncope</td>
<td>AChEIs, Peripheral α-blockers, Tert. TCAs, Chlorpromazine, Thoridazine, Olanzapine</td>
<td>Orthostatic hypotension or bradycardia</td>
<td>Avoid</td>
<td>α-blockers: High TCAs, AChEIs, antipsych: Moderate</td>
<td>AChEIs, TCAs: Strong, α-blockers, antipsych.: Weak</td>
</tr>
<tr>
<td>Insomnia</td>
<td>Oral decongestants, Stimulants, Theobromines</td>
<td>CNS stimulant effects</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
</tbody>
</table>
SUMMARY: AGS 2012 Beers Criteria

- Beers Criteria have come a long way since 1991
- Are explicit criteria supported by evidence-based literature
- Guidelines for identifying medications whose risks > benefits in older adults
- Not meant to supersede clinical judgment or individual patient values or needs

The American Geriatrics Society with the support of the John A. Hartford Foundation, Retirement Research Foundation and Robert Wood Johnson Foundation.
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QUESTIONS THAT BEG TO BE ASKED

1. Why does this patient not have an interval history (from year 2000 to the present?)
SINGLE DRUGS
Potentially Inappropriate Drugs for Older Adults
Beers Criteria, 2012

DIGOXIN – higher doses than 0.125 mg/day may induce sinus bradycardia, AV blocks and other arrhythmias.

HYDROXYZINE – causes confusion, drowsiness, blurred vision, dysuria, dry mouth and constipation.
DRUG-DRUG INTERACTIONS

<table>
<thead>
<tr>
<th>DIGOXIN</th>
<th>EFFECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Atorvastatin</td>
<td>Increase digoxin levels</td>
</tr>
<tr>
<td>+ Losartan</td>
<td>Increase serum potassium levels</td>
</tr>
</tbody>
</table>

Note: In spite of these interactions, these drugs are, at times used together. The Beers Criteria alerts the physician so that proper monitoring may be made.
DRUG-DRUG INTERACTIONS

<table>
<thead>
<tr>
<th>ASPIRIN</th>
<th>EFFECT</th>
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<tbody>
<tr>
<td>+ Digoxin</td>
<td>Increase serum potassium levels</td>
</tr>
<tr>
<td>+ Losartan</td>
<td>Renal dysfunction, diminished anti-HPN effect, increased serum potassium</td>
</tr>
</tbody>
</table>
### DRUG-DRUG INTERACTIONS

<table>
<thead>
<tr>
<th>HYDROXYZINE</th>
<th>EFFECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Losartan</td>
<td>Hypotension, dizziness, light-headedness</td>
</tr>
</tbody>
</table>
MEDICATIONS

Losartan 50 mg 1x a day

Digoxin 0.25 mg 1x a day  (Review dose and indication for use)

Atorvastatin 20 mg at bedtime

Trimetazididine 35 mg 2x a day

Question:
Should even these medications be continued, replaced or stopped?
THE TEN COMMANDMENTS IN PRESCRIBING FOR THE ELDERLY

1. Know the pharmacology of the drug to be prescribed, its route of metabolism and excretion.

2. Use the drug for the correct and absolute indication and only when necessary for treatment.

3. Simplify the medication regimen to improve compliance and reduce the likelihood of interactions.

4. Use the lowest possible effective dose.

5. Reduce the number of drugs to be prescribed.
THE TEN COMMANDMENTS IN PRESCRIBING FOR THE ELDERLY

6. **Discontinue** all other unnecessary drugs.

7. **Inform the patient** and responsible companion on the purpose of the drug, its expected and desired effects and important side-effects.

8. **Write dosage instructions** about the prescribed drug/s in legible print and provide the patient with a copy.

9. **Have the patient demonstrate** that he/she is able to open the medication container.

10. **NEVER, EVER** withhold medications for the simple reason that the patient is old.
And if you still have illusions that you
are the most qualified to determine what
is good to prescribe for your elderly
patient all the time . . .

Remember . . .
Voltaire’s Cynicism

...Doctors pour drugs of which they know little, for diseases of which they know less, into patients of whom they know nothing...
THANK YOU FOR YOUR ATTENTION, INTEREST AND TIME.

ROY J. CUISON, M.D., MBA, MFPM, FPCGM
Professor
UST Faculty of Medicine and Surgery