Update of the Beers Criteria and its Application in Practice

Catherine E. DuBeau, MD
Professor of Medicine
General Internal Medicine - Geriatrics
Dartmouth-Hitchcock Medical Center
Geisel School of Medicine at Dartmouth
Lebanon, NH
Disclosure of Financial Relationships

Catherine DuBeau, MD

Has disclosed relationships with an entity producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on, patients.

Honoraria
American Geriatrics Society, Beers Criteria Revision Panel
• Goal and intent of the AGS Beers Criteria
• 2019 Revision
• What about those PAs?!?
• Bringing the Criteria to the clinic
Why the Concern About Drugs and Older Persons?

• They take more medications than any other group of patients, yet:
  – **Unclear efficacy**: many drugs not tested specifically in older pts, especially those with complex comorbidity
  – **Higher risk** for adverse drug effects (ADEs) due to age-related physiological changes and comorbidity

• Avoiding potentially inappropriate medications (PIMs) = High value care
Regional variation in use of high risk medications
(prevalence in darkest areas = 22-29%)

Dartmouth Atlas on Aging, 2016
Mark H Beers, MD 1954-2009
Reducing PIMs

• Explicit criteria:
  – CMS/HEDIS High Risk Medication list

• Patient-centered explicit criteria
  – Beers
  – STOPP-START (UK)

• Implicit criteria: provider judgment
  – Is this drug (still) needed (at this dose)?
  – Match drug to diagnosis
  – High risk Adverse Drug Reaction
• Potentially inappropriate
• Potentially inappropriate for older adults with certain common health problems
• Use with caution in older adults
• Drug-drug interactions of special relevance to older adults
• Avoid or reduce dose in older persons with CKD
New in 2019

• Removal
  – ADEs not unique to older patients
  – Obsolete
  – New data – eg, dabigatran
  – Mitigate unintentional consequences – eg, H2 blockers

• Addition
  – New data
  – Drug-drug interactions
## PIMs to Avoid

<table>
<thead>
<tr>
<th>Organ System or TC or Drug</th>
<th>Rationale</th>
<th>Recommend</th>
<th>Quality of Evidence</th>
<th>Strength of Recommend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrofurantoin</td>
<td>Potential for pulmonary and hepatic toxicity, peripheral neuropathy esp with long term use</td>
<td>Avoid if CrCl &lt;30 or for long term suppression</td>
<td>Low</td>
<td>Strong</td>
</tr>
<tr>
<td>Amiodarone</td>
<td>Effective but greater toxicity than others used in Afib; may be reasonable in pts with CHF of LVH if rhythm control goal</td>
<td>Avoid as first line therapy for Afib unless CHF present or significant LVH</td>
<td>High</td>
<td>Strong</td>
</tr>
</tbody>
</table>
## PIMs with Drug-disease Interactions

<table>
<thead>
<tr>
<th>Disease or Syndrome</th>
<th>Drug</th>
<th>Rationale</th>
<th>Recomm.</th>
<th>Quality of Evidence</th>
<th>Strength of Recomm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syncope</td>
<td>AChEIs, Peripheral α-blockers, Tertiary TCAs</td>
<td>Orthostatic hypotension or bradycardia</td>
<td>Avoid</td>
<td>High</td>
<td>AChEIs, TCAs: Strong α-blockers, antipsych.: Weak</td>
</tr>
<tr>
<td></td>
<td>Aps: Chlorpromazine, Thioridazine, Olanzapine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UI</td>
<td>Estrogen (oral) Periph alpha blkrs</td>
<td>Lack of efficacy; worsening UI</td>
<td>Avoid in women</td>
<td>High/Moderate</td>
<td>Strong</td>
</tr>
</tbody>
</table>

Other conditions: CHF, syncope, epilepsy, delirium, dementia, prior falls and/or fractures, Parkinson’s, peptic ulcers, CKD, BPH
# Drugs to Use with Caution

<table>
<thead>
<tr>
<th>Drug</th>
<th>Rationale</th>
<th>Recommend</th>
<th>Quality of Evidence</th>
<th>Strength of Recommend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dabigatran, Rivaroxaban</td>
<td>Incr bleeding risk when used for VTE or Afib in pts &gt; 75</td>
<td>Use with caution for VTE and AFib if age &gt; 75 or</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMP-SMX</td>
<td>Increased risk of hyperkalemia when used with ACEI or ARB AND CrCl is decreased</td>
<td>Use with caution with ACEI or ARB AND CrCl is decreased</td>
<td>Low</td>
<td>Strong</td>
</tr>
</tbody>
</table>
## Drug-Drug Interactions to Avoid

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Rationale</th>
<th>Recommend.</th>
<th>Quality of Evidence</th>
<th>Strength of Recommend.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenytoin and TMP-SMX</td>
<td>Increased risk of phenytoin toxicity</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Warfarin and amiodarone</td>
<td>Increased risk of bleeding</td>
<td>Avoid as possible</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>&gt; Two anticholinergic agents</td>
<td>Increased risk of cognitive decline</td>
<td>Avoid, minimize</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
</tbody>
</table>
### PIMs to Avoid in CKD

<table>
<thead>
<tr>
<th>Organ System or TC or Drug</th>
<th>Rationale</th>
<th>Recommend.</th>
<th>Quality of Evidence</th>
<th>Strength of Recommend.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spironolactone</td>
<td>Increased potassium</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Duloxetine GABAnergics</td>
<td>CNS effects</td>
<td>Avoid / Reduce dose</td>
<td>Moderate - low</td>
<td>Strong - weak</td>
</tr>
<tr>
<td>Tramadol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H2 blockers</td>
<td>CNS effects</td>
<td>Reduce dose</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
</tbody>
</table>
Drugs with Anticholinergic Properties

• Promethazine
• TCAs
• Paroxetine
• Antimuscarinics for UI
Medications in the AGS Beers Criteria are potentially inappropriate, not definitely inappropriate.
The **caveats** and **guidance** are important
Access to medications included in the Beers Criteria should not be excessively restricted by prior authorization and/or health plan coverage policies
Patient requires a "Prior Authorization" for insurance coverage on:

Nitrofurantoin

Ins: Part D

MD Call# 1-855-344-0930

Do you want PA? yes
Prescribing Guidance vs. Quality Metric
Healthcare Effectiveness Data and Information Set (HEDIS)

- Used by >90% of American health plans to measure performance on important dimensions of care and service
- Makes it possible for stakeholders to compare performance across health plans for value-based purchasing; eg, ACOs
- 75 measures across 8 domains of care
- Updated yearly
Road from Quality Prescribing to PAs

- 2019 AGS Beers Criteria Update
- NCQA Medicare Advisory Panel
- HEDIS High Risk Medications (HRMs)
- Pharmacy Benefits Manager
- Payer adoption of HRMs
High-Risk Medication Alert: Benzodiazepine/Non-Benzodiazepines use in

Dear Dr. [Name],

According to our prescription records, your patient may be using a benzodiazepine (BZD) or non-benzodiazepine. Long-term use of BZDs and non-BZDs are associated with habituation, withdrawal symptoms, risk to other organ systems, and driving. Non-BZDs now have strengthened warnings concerning complex sleep-related behaviors. Patients should be monitored for any symptoms of withdrawal when therapy is being discontinued or dose reduction and be available to treat the patient's condition.

Requested Action:
(1) Please consider tapering and then discontinuing the BZD or Non-BZD. If medically appropriate, switch to:
   (a) For anxiety disorders, please consider citalopram, duloxetine, escitalopram, sertraline or venlafaxine as alternatives.
   (b) For insomnia, please consider Rozerem (ramelteon) 8mg or Silenor (doxepin) 3mg or 6mg as alternatives.

Please refer to your patient’s formulary for a list of covered medications.

1. Drugs identified as high-risk were adapted from the HEDIS, NCQA, PQA performance measures, and Beers Criteria.

Please do not fax this form back to CVS Caremark.

Patient Name: [Name]
High-Risk Medication Alert: Benzodiazepines/Non-Benzodiazepines use in Older Adults

Dear Dr. [Redacted],

According to our prescription records, your patient may be using lorazepam or doxepin, which are not recommended for use in older adults due to their high-risk profile. Benzodiazepines and non-Benzodiazepines are associated with adverse effects such as cognitive and motor performance impairment. Non-Benzodiazepines now have strengthened warnings concerning complex sleep-related driving risks.

Patients should be monitored for any symptoms of withdrawal when therapy is being discontinued, and should be available to treat your patient’s condition.

Requested Action:
(1) Please consider tapering and then discontinuing the Benzodiazepine or Non-Benzodiazepine. If medically appropriate, switch to a different medication option.
   (a) For anxiety disorders, please consider alternatives to benzodiazepines, such as venlafaxine as an alternative.
   (b) For insomnia, please consider alternatives to benzodiazepines, such as ramelton or doxepin as alternative.

Please refer to your patient notes for any additional information.

1. Drugs identified as high-risk were adapted from the HEDIS, NCQA, PQI, and Beers Criteria.

Please do not fax this form back to CVS Caremark.

[Cut Here]

Patient Name: [Redacted]
Correlation between Beers Criteria and Clinical Judgment of Appropriateness

<table>
<thead>
<tr>
<th>Beers</th>
<th>Clinical Judgment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Problem</td>
<td>No Problem</td>
</tr>
<tr>
<td>Problem</td>
<td>97</td>
<td>39</td>
</tr>
<tr>
<td>No Problem</td>
<td>69</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>168</td>
<td>90</td>
</tr>
</tbody>
</table>

Concordance = 58%

Steinman MA et al, Arch Int Med 2009
## Alternative to PIMs

<table>
<thead>
<tr>
<th>PIM</th>
<th>Alternative treatment strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrofurantoin</td>
<td>Don’t treat asymptomatic bacteriuria</td>
</tr>
<tr>
<td></td>
<td>Other antibiotics, based on sensitivity patterns</td>
</tr>
<tr>
<td></td>
<td>For long-term suppression: SMZ-TMP, cephalosporins</td>
</tr>
<tr>
<td>Insulin, sliding scale</td>
<td>Basal insulin dosing or avoid insulin</td>
</tr>
<tr>
<td>Chlorpropamide Glyburide</td>
<td>Metformin, Glipizide</td>
</tr>
<tr>
<td>Megestrol</td>
<td>Mirtazapine</td>
</tr>
<tr>
<td>Metclopramide</td>
<td>Target underlying cause of nausea</td>
</tr>
<tr>
<td>Non-COX NSAIDs, oral</td>
<td>APAP; concomitant use of PPI, H2 blocker (if renal fxn allows), misoprostol</td>
</tr>
</tbody>
</table>
Alternatives to Antipsychotics

• Needs bases approaches
• Music
• Treat for possible pain
• “Tolerate, Anticipate, Don’t Agitate” (TADA)

Flaherty, JH. Med Clin N Amer, 2011

Courtesy Dodge Park Rest Home, Worcester, MA
### Prescribing problems in 460K Veterans

**Median number or prescriptions = 5**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug-drug interactions</td>
<td>30%</td>
</tr>
<tr>
<td>Beers PIM</td>
<td>26%</td>
</tr>
<tr>
<td>High risk (warfarin, insulin, and/or digoxin)</td>
<td>16%</td>
</tr>
<tr>
<td>Inappropriate high dose</td>
<td>12%</td>
</tr>
<tr>
<td>Drug-disease interactions</td>
<td>3%</td>
</tr>
</tbody>
</table>

**Polypharmacy** - strongest predictor of all prescribing problems

**Multimorbidity** - predictor of drug-disease interactions and high risk meds

Steinman MA et al  JGIM 2014
Interventions to Decrease Use of PIMs

- Education
- Pharmacist interventions
- Computerized support systems
- Regulation
- Targeting

Kaur S et al, Drugs Aging 2009
Tools

Criteria
- Full Article
- Editorial
- Perspective

Public Education Resources

Beers Criteria App

STOPP/START

NNT app

Medstopper app

Available at: americangeriatrics.org
Today, with quetiapine, I made a bouquet...

... Yesterday, I was a neurosurgeon.
MedStopper is a de-prescribing resource for healthcare professionals.

MedStopper Plan

Arrange medications by: **Stopping Priority**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RED=Highest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GREEN=Lowest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# MedStopper Plan

Arrange medications by: **Stopping Priority**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RED=Highest</td>
<td>zolpidem (Ambien) / Non-benzodiazepine sedative / insomnia</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>if used daily for more than 3-4 weeks. Reduce dose by 25% every week (i.e. week 1-75%, week 2-50%, week 3-25%) and this can be extended or decreased (10% dose reductions) if needed. If intolerable withdrawal symptoms occur (usually 1-3 days after a dose change), go back to the previously tolerated dose until symptoms resolve and plan for a more gradual taper with the patient. Dose reduction may need to slow down as one gets to smaller doses (i.e. 25% of the original dose). Overall, the rate of discontinuation needs to be controlled by the person taking the medication.</td>
<td>rebound insomnia, tremor, anxiety, as well as more serious, rare manifestations including hallucinations, seizures, and delirium</td>
<td>![Details]</td>
</tr>
</tbody>
</table>
• Do I need a PPI?
• PPIs have risks
• PPIs can change the way other drugs work
• PPIs cost more
• When should I consider a PPI?
• **Ease heartburn without drugs**
Ten Medications Older Adults Should Avoid or Use with Caution

1. Caution - NSAIDs (long-term)
2. Caution – digoxin > 0.125 mg
3. Avoid glyburide, chlorpromamide
4. Avoid cyclobenzaprine, methocarbamol, carisprodol
5. Avoid benzodiazepines and hypnotics
6. Avoid certain anticholinergic meds (amitryptiline, imipramine, Artane, Bentyl)
7. Avoid Demerol
8. Avoid certain OTCs (Benadryl, chlorphenarimine)
9. Caution - Antipsychotics if no dx of psychosis
10. Avoid estrogen (oral)
Let my people know!
Is De-prescribing the answer?

Not necessarily a benign process:

In VA study of decreasing meds in 124 pts on ≥ 5 meds, 26% of stopped meds led to drug withdrawal events, 36% of which were serious (led to ER visit, urgent care, or admission)

De-prescribing

1. No benefit
   Significant toxicity OR no indication OR obvious contraindication OR cascade prescribing?
   Yes → Withdrawal symptoms or disease recurrence likely if drug therapy discontinued?
   No → Continue drug therapy

2. Harm outweighs benefit
   Adverse effects outweigh symptomatic effect or potential future benefits?
   Yes → Taper dose and monitor for adverse drug withdrawal effects
   No → Continue drug therapy

3. Symptom or disease drugs
   Symptoms stable or nonexistent?
   Yes → Discontinue drug therapy
   No → Continue drug therapy

4. Preventive drugs
   Potential benefit unlikely to be realized because of limited life expectancy?
   Yes → Restart drug therapy
   No → Continue drug therapy

JAMA Intern Med. 2015;175(5):827-834.
Proton Pump Inhibitor (PPI) Deprescribing Algorithm

Why is patient taking a PPI?
- If unsure, find out if history of endoscopy, if ever hospitalized for bleeding ulcer or if taking because of chronic NSAID use in past, if ever had heartburn or dyspepsia
- Mild to moderate esophagitis or GERD treated 4-8 weeks (esophagitis healed, symptoms controlled)
- Peptic ulcer disease treated x 2-12 weeks (from NSAID; H. pylori)
- Upper GI symptoms without endoscopy; asymptomathic for 3 consecutive days
- ICU stress ulcer prophylaxis treated beyond ICU admission
- Uncomplicated H. pylori treated x 2 weeks and asymptomatic
- Barrett’s esophagus
- Chronic NSAID use with bleeding risk
- Severe esophagitis
- Documented history of bleeding GI ulcer

Recommend Deprescribing

Strong Recommendation (from Systematic Review and GRADE approach)
- Evidence suggests no increased risk in return of symptoms compared to continuing higher dose, or
- Daily until symptoms stop (1/3 patients may have return of symptoms)

Decrease to lower dose
- Stop and use on-demand

Monitor at 4 and 12 weeks
- If verbal:
  - Heartburn
  - Dyspepsia
  - Regurgitation
  - Epigastric pain
- If non-verbal:
  - Loss of appetite
  - Weight loss
  - Agitation

Use non-drug approaches
- Avoid meals 2-3 hours before bedtime; elevate head of bed if need for weight loss and avoid dietary triggers

Manage occasional symptoms
- Over-the-counter antacid, H2RA, PPI, alginate pm (in Tums®, Rolaids®, Zantac®, Omeprazol, Gaviscon®)
- H2RA daily (weak recommendation – GRADE; 1/5 patients may have symptoms return)

If symptoms relapse:
- If symptoms persist x 3 – 7 days and interfere with normal activity:
  1. Test and treat for H. pylori
  2. Consider return to previous dose

© Use freely, with credit to the authors. Not for commercial use. Do not modify or translate without permission.
This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License.
Contact deprescribing@deprescribing.org for more information.
Appropriate Prescribing > PIMs
Drugs leading to ED visits for ADRs

- 9.7/1000 persons ≥ 65 have an ED visit for ADR, and rate is increasing
- 43% of these ED visits result in hospitalization
- Responsible drugs
  - Anticoagulants 54% (32% warfarin, 9% clopidogreal, 7% ASA, 4% DOACs)
  - Insulin 13%
  - Oral hypoglycemics 6.3%
  - Sulfamethoxazole-trimethoprim: 1.4% (more than APAP-hydrocodone)
  - Beers PIMs 1.8%

Shehab, JAMA 2106
Prescribing Cascade

77 yo woman with urgency; gets amlodipine for HTN

Edema, constipation, impaired bladder emptying

Nocturia, ↑ urgency, some UI

OAB!

Add antimuscarinic

↑ constipation  Add laxative....
Prescribing Cascade

77 yo woman with urgency; gets **amlodipine** for HTN

Edema, constipation, impaired bladder emptying

Nocturia, ↑ urgency, some UI

**OAB!**

Add **antimuscarinic**

↑ constipation  ➔ Add laxative....