What is the Beers Criteria (aka the Beers List)??

- List of *POTENTIALLY* inappropriate medications for use in older adults
- Published by the American Geriatrics Society
- Originally created in 1991 by the late geriatrician, Mark Beers, MD
- Last updated in 2012

2012 Beers Criteria
...and that’s just the pocket guide.

(Printable PDF of 2012 Criteria included with the handouts)

So, what changed in the 2015 update?

- New Tables!
  - Table 5: Drug-Drug Interactions
    - Emphasizes additive effects of medications
  - Table 6: Renal Dosing
    - Some are medications previously marked as “AVOID”
  - Clarifications on drugs from 2012 List

So, what changed in the 2015 update?

- Additions to Table 2 (Potentially inappropriate due to drug-disease effects)
  - Desmopressin
  - PPI’s for duration> 8 weeks

- Removed from Table 2
  - Antiarrhythmics in Atrial Fibrillation
  - Trimethobenzamide
  - Spironolactone
So, what changed in the 2015 update?

- Additions to Table 3 (Potentially inappropriate - use with caution)
  - Dementia or Cognitive Impairment
  - Eszopiclone, Zaleplon, Zolpidem
  - Anti-psychotics
  - History of Fall or Fracture
  - Opioids
- Removal of “Chronic Constipation” from Table 3

Table 5 - Drug-Drug Interactions

<table>
<thead>
<tr>
<th>Object Drug/Class</th>
<th>Interacting Drug/Class</th>
<th>Rationale</th>
<th>Recommendation</th>
<th>Quality of Evidence</th>
<th>Strength of Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha-1 blockers; peripheral loop diuretics</td>
<td>Loop diuretics</td>
<td>Risk of urinary incontinence in women</td>
<td>Avoid in older women unless conditions warrant both drugs</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>ACE-I's</td>
<td>Amiloride or triamterene</td>
<td>Risk of hyperkalemia</td>
<td>Avoid routine use may consider in patients with history of hyperkalemia with ACE-I</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Anticholinergic</td>
<td>Anticholinergic</td>
<td>Risk of cognitive decline</td>
<td>Avoid/minimize # of anticholinergic drugs</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Antidepressant</td>
<td>≤ 2 additional CNS drugs</td>
<td>Risk of falls</td>
<td>Avoid &gt; 3 CNS drugs</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Antipsychotic</td>
<td>&gt; 2 additional CNS drugs</td>
<td>Risk of fall and/or fracture</td>
<td>Avoid &gt; 3 CNS drugs</td>
<td>High</td>
<td>Strong</td>
</tr>
<tr>
<td>Corticosteroids and benzodiazepine-receptor antagonists</td>
<td>NSAIDs</td>
<td>Risk of peptic ulcer disease/GI bleed</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Lithium</td>
<td>ACE-I</td>
<td>Toxicity</td>
<td>Avoid Monitor lithium concentrations</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Lithium</td>
<td>Loop diuretic</td>
<td>Toxicity</td>
<td>Avoid Monitor lithium concentrations</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
</tbody>
</table>

Table 6: Renal Dosing
Table 6: Non-infective Medications That Should Be Avoided or Have Their Dosage Reduced with Varying Levels of Kidney Function in Older Adults.

<table>
<thead>
<tr>
<th>Medication Class/Medication</th>
<th>Creatinine Clearance (mL/min)</th>
<th>Rationale</th>
<th>Recommendation</th>
<th>Quality of Evidence</th>
<th>Strength of Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular/Hemostasis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amiloride</td>
<td>&lt; 30</td>
<td>potassium; sodium</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Apixaban</td>
<td>&lt; 15</td>
<td>bleeding</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Dabigatran</td>
<td>&lt; 30</td>
<td>bleeding</td>
<td>Reduce Dose</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Edoxaban</td>
<td>30 - 50</td>
<td>bleeding</td>
<td>Reduce Dose</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Enoxaparin</td>
<td>&gt; 30</td>
<td>bleeding</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Fondaparinux</td>
<td>&lt; 30</td>
<td>bleeding</td>
<td>Reduce Dose</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Rivaroxaban</td>
<td>30 - 50</td>
<td>bleeding</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Spironolactone</td>
<td>&lt; 30</td>
<td>potassium</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Triamterene</td>
<td>&lt; 30</td>
<td>risk of kidney injury; potassium; sodium</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Central Nervous System / Analgesics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duloxetine</td>
<td>&lt; 30</td>
<td>GI adverse effects</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Weak</td>
</tr>
<tr>
<td>Gabapentin</td>
<td>&lt; 60</td>
<td>CNS adverse effects</td>
<td>Reduce dose</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Levetiracetam</td>
<td>&lt; 80</td>
<td>CNS adverse effects</td>
<td>Reduce dose</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Pregabalin</td>
<td>&lt; 60</td>
<td>CNS adverse effects</td>
<td>Reduce dose</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Tramadol</td>
<td>&lt; 30</td>
<td>CNS adverse effects</td>
<td>Immediate release: Reduce dose Extended release:</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
</tbody>
</table>


Sliding Scale Insulin - Clarification

- "Use of short- or rapid-acting insulins to manage or avoid hyperglycemia in the absence of a basal or long-acting insulin. Does not apply to the titration of basal insulin or use of additional short- or rapid-acting insulin in conjunction with scheduled insulin (ie “corrective insulin”)."
Added to Table 2: Desmopressin

- Desmopressin for treatment of nocturia and/or nocturnal polyuria
- Strong recommendation to avoid
- High risk of hyponatremia

Added to Table 2: PPI’s

- PPI’s at durations > 8 weeks
  - Exceptions:
    - Chronic NSAID use
    - Erosive esophagitis
    - Barrett’s esophagus
    - Pathologic hypersecretory condition or demonstrated need for maintenance tx.
  - Increased risk of *C. difficile* infection, bone loss, fracture

Removed from Table 2: Anti-arrhythmics in Atrial Fibrillation (Class Ia, Ic, III)

- New evidence and ACC/AHA guidelines suggest rhythm control can have equal or even better outcomes versus rate control
- AVOID amiodarone as 1st line unless patient has heart failure or significant LV hypertrophy
- AVOID dronedarone in permanent AFib or with severe/decompensated heart failure
Removed from Table 2: Trimethobenzamide
- Recommended anti-emetic for use with apo-morphine in Parkinson’s disease

Removed from Table 2: Spironolactone
- Moved to renal dosing table (Table 6)
- Concerns based on dosing and renal function only

Added to Table 3: Non-benzodiazepine hypnotics
- Zaleplon, Eszopiclone, Zolpidem
- Removed “avoid chronic use (>90 days)” from recommendation
- AVOID use regardless of duration
- Increased evidence of harm (fall, fracture)
- Minimal efficacy for insomnia in elderly patients

So, what do we do for insomnia in our older patients??
- Consider safer alternatives:
  - Sleep hygiene
  - Address possible underlying conditions
    - Pain?
    - Sleep apnea?
    - Urinary incontinence or BPH?
  - Mirtazapine 7.5mg PO HS PRN
  - Doxepin 2 – 6mg PO HS PRN
Added to Table 3: Antipsychotic medications

- Dementia or Cognitive impairment
- AVOID antipsychotics
  ...UNLESS...
  - Non-pharmacologic options have failed or are not possible
  AND
  - Patient is a danger to self and/or others

Antipsychotics in Older Patients

- Keep in mind the emphasis from Table 5!

<table>
<thead>
<tr>
<th>Drug/Class Interacting</th>
<th>Object</th>
<th>Drug/Class</th>
<th>Rationale</th>
<th>Evidence</th>
<th>Strength of Recommendation</th>
<th>Quality of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antipsychotic</td>
<td>&gt;2 additional CNS drugs</td>
<td>Risk of fall</td>
<td>Avoid</td>
<td>&gt;3 CNS drugs</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Benzodiazepines and benzodiazepine-receptor agonists</td>
<td>&gt;2 additional CNS drugs</td>
<td>Risk of fall and/or fracture</td>
<td>Avoid</td>
<td>&gt;3 CNS drugs</td>
<td>High</td>
<td>Strong</td>
</tr>
<tr>
<td>Corticosteroids NSAIDs</td>
<td></td>
<td>Risk of peptic ulcer disease / GI bleed</td>
<td>Avoid. If not possible to avoid, provide GI protection</td>
<td></td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Lithium ACE-I</td>
<td></td>
<td>Toxicity</td>
<td>Avoid. Monitor lithium concentrations</td>
<td></td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Lithium Loop diuretic</td>
<td></td>
<td>Toxicity</td>
<td>Avoid. Monitor lithium concentrations</td>
<td></td>
<td>Moderate</td>
<td>Strong</td>
</tr>
</tbody>
</table>

Added to Table 3: Opioids

- AVOID in patients with history of fall or fracture

- “If agent must be used, consider reducing use of other CNS-active medications that increase risk of falls and fractures...and implement other strategies to reduce fall risk”
Digoxin

- Avoid as 1st line in atrial fibrillation
- More effective alternatives available
- Possible increase in mortality
- Avoid as 1st line in heart failure
- Questionable effect on risk of hospitalization
- Possible increase in mortality
- Avoid doses > 0.125mg daily

Nitrofurantoin

- Removed recommendation to avoid in CrCl < 60ml/min
- New evidence of safety and efficacy in CrCl<60ml/min
- Avoid use for long-term suppression
- Potential pulmonary toxicity

Whoa! That’s a lot of info! What am I supposed to remember out of all that???
Take home points:

- The Beers Criteria is a list of drugs with the POTENTIAL to cause harm
- The list is meant to serve as a starting point - not a definitive "DO NOT USE"
- Weigh risk vs. benefit
- What's the REASON for the drug's place on the list?? Does it apply to your patient??
- Consider less risky alternatives if possible

AG is a 72-year-old woman who brings a prescription to your pharmacy for Macrobid 100mg BID x 7 days then 100mg daily thereafter. She typically fills her medications through mail-order pharmacy. When asked, she provides the following list of daily medicines:

- Doxazosin 4mg qhs
- Toprol XL 50mg daily
- Metformin 500mg BID
- Lantus 32 units QHS
- "water pill" QAM
- Oxybutynin 5mg TID
- Ambien 10mg QHS

Which of the following medications is of concern based on the updated Beer's criteria and why?

A. Macrobid; long term use potentially not appropriate
B. Ambien; not recommended in elderly patients
C. Oxybutynin; potentially not appropriate due to anticholinergic effects
D. All of the above
Upon questioning, AG responds that they are for her use and that she typically takes the Tylenol PM every night with her Ambien for aches and pains, and the Benadryl if she needs it for nasal allergies. What should you do?

a. Sell her the items - she's an adult, and can purchase whatever she likes.
b. Attempt to dissuade her from purchasing the Benadryl, and suggest a less cholinergic drug for her allergies.
c. Attempt to dissuade her from purchasing the Tylenol PM and suggest acetaminophen for her pain.
d. B and C

Beers Criteria List: Falls Risk Initiative

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MPA Fall Meeting (October 4, 2015)

ABCS Injury Risk Assessment Tool

- Frequency of assessment:
  - At the time of admission, in conjunction with initial fall risk assessment score
  - Changes in level of care
  - Post fall
  - Any other time when fall risk assessment is performed
Use the ABCs to identify patients with the highest risk of injury related to a fall with Risk Categories:

- Age - age 85 or older
- Bones - osteoporosis, osteoporotic risk factors (postmenopausal women/men over 70 years old/smokers), previous fracture, prolonged steroid use, bone metastases
- Coagulation abnormalities - anticoagulants, bleeding disorders, conditions causing coagulopathy
- Surgery - recent lower limb amputation, or major abdominal or thoracic surgery

### Corresponding Intervention for Triggers

**A**

- Assist devices
- Lowest bed position except when exiting
- Floor mats
- Safe exit
- Side/replicate home environment layout
- Medications review/alert pharmacist
- Teach back

**B**

- Hip protectors
- Lowest bed position except when exiting
- Floor mats
- Evaluate for osteoporosis

**C**

- If traumatic brain injury & anticoagulation, consider helmets
- Anti-tipping device on wheelchairs
- Lowest bed position except when exiting
- Floor mats

**S**

- Pre-op & post-op education of fall prevention
- Pain management
- Increase frequency of rounding
- Lowest bed position except when exiting
- Floor mats
- Toileting prior to medicating for pain
Sentri 7 Rules

Rule 1
- All patients great to or equal to 85 years of age

Rule 2
- All patients >85 years of age
- On 2 or more medications from the list of the minimum predetermined list

Medications that Contribute to Falls

Falls can be caused by almost any drug that acts on the brain or on the circulation. Usually the mechanism leading to a fall is one or more of:
- Sedation, with slowing of reaction times and impaired balance
- Hypotension, including the 3 syndromes of paroxysmal hypotension - orthostatic hypotension, vasovagal syndrome and vasodepressor control (visceral hypersensitivity)
- Bradycardia, tachycardia or periods of asystole

Falls are common and expensive. The cost of falls includes:
- Hospitalization, long-term care, extra medications
- Health care costs, injury
- Reduced mobility, functional decline, pain, anxiety

Medications that Contribute to Falls

<table>
<thead>
<tr>
<th>Benzodiazepines</th>
<th>Antipsychotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temazepam, Diazepam, Lorazepam, Oxazepam, Clonazepam, Flurazepam, Alprazolam, Chlordiazepoxide</td>
<td>Haloperidol, Risperidone, Quetiapine, Olanzapine</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tricyclic Antidepressants</th>
<th>Beta Blockers</th>
<th>Centrally Acting alpha 2 Receptor Agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amitriptyline, Trazadone, Nortriptyline, Doxepin</td>
<td>Metoprolol, Propranolol, Carvedilol, Atenolol, Sotalol, Bisoprolol</td>
<td>Clonidine</td>
</tr>
</tbody>
</table>

Recommended Fall Risk Medication Review Note Verbiage

01 No Recommendations/ no meds within specific criteria
Patient medications have been reviewed for potential to increase risk of falls. No recommendations at this time.

02 Recommendation
Patient medications have been reviewed for potential to increase risk of falls. Provider contacted with the following recommendations:
- Meds w/ concerns are: [ ] [ ] [ ]
- [enter recommendations and response] 

03 No Recommendations, yet on medications that meet criteria
Patient medications have been reviewed for potential to increase risk of falls. One or several medications may be associated with fall risk. Review of medication history, indication, or patient status suggest minimal/low fall risk for this patient. No recommendations at this time.
So... Back to our friend, AG
Recalling her medication list:

- Doxazosin 4mg qhs
- Toprol XL 50mg daily
- metformin 500mg BID
- Lantus 32 units QHS
- "water pill" QAM
- oxybutynin 5mg TID
- Ambien 10mg QHS

Two weeks later, AG presents to the local emergency department with symptomatic bacteriuria and is subsequently admitted to the medical floor for further evaluation and treatment. From the admission medication reconciliation, it is found that she also fills a prescription for lorazepam 0.5 mg TID PRN at another local pharmacy. What recommendation should you give the admitting provider?

A. Nothing, she's an inpatient who will be closely watched during her stay.
B. Discontinue doxazosin; recommend ACE-I for hypertension
C. Discontinue zolpidem; recommend low-dose doxepin for insomnia
D. Both B and C.

Provider ignores recommendation, patient has fall during admission with subsequent hip fracture. Following an extended stay, she is discharged to regional nursing home for long term care. Which of the following medications are of concern for her increased fall risk?

A. Benzodiazepines
B. Zolpidem
C. Tramadol
D. Warfarin
E. All of the above
Post-Test Questions for Pharmacy Technicians

1. Which of the following types of medicines can possibly lead to problems in elderly patients?
   A. sleeping medicines
   B. cough and cold medicines
   C. over-the-counter pain medicine
   D. all of the above

2. Based only on the information provided, which of the following patients appears to have the highest risk of fall or fracture?
   A. 45-year-old man hospitalized for pneumonia
   B. 71-year-old woman with high blood pressure and insomnia, hospitalized following a head injury sustained in a car accident
   C. 27-year-old woman hospitalized following a caesarian birth
   D. 52-year-old man hospitalized following a heart attack

3. Which of the following most accurately describes the Beer's Criteria?
   A. A list of medicines that should never be used in elderly patients.
   B. Medicines that should require prior authorization from insurance companies.
   C. A list of medicines that should be used with caution in the elderly.
   D. The qualifications required before a person can be certified as a brewmaster.
Questions?????

Thank you!! Have a great remainder of your weekend!