2012 Beers Criteria – An Update for Geriatric Medicine

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Ohio Pharmacists Association
Annual Conference and Trade Show
April 12, 2013

Disclosures

I have no financial relationship to disclose.

I will not advocate for off-label use and/or investigational use in my presentation.

Objectives

- Discuss the framework of the Beers Criteria
- Develop a care plan for a patient who has an adverse drug reaction to a Beers Criteria medication
- Justify when it is acceptable to use a medication listed in the Beers Criteria for an elderly patient
- Evaluate the use of antipsychotic medications in patients with dementia.

Case Assessment

- Walt D. is an 88 year old male residing in a local nursing home. The following is known about him:

Meds	Diagnoses	Labs
Olanzapine 5mg daily	Dementia w/hallucinations	sCr 0.8mg/dL
Furosemide 20mg daily	Edema	K+ 3.8mEq/L
Warfarin 2mg daily	A. fib	Na+ 132 mEq/L
Aspirin 81mg daily	Depression	CBC WNL
Sertraline 50mg daily		INR 2.2
Diphenhydramine 25mg daily as needed for sleep		Ht 5'11" Wt 165 lbs

Case Assessment Questions

- What else would you want to know about the patient?
- Which, if any, of Walt's meds are potentially inappropriate according to the 2012 Beers Criteria?
- Which, if any, of Walt's meds are potentially causing his hyponatremia?
- Which, if any, of Walt's meds have anticholinergic properties?

Why is Understanding Geriatric Pharmacy Important?

Mark Beers, MD

- Developed the initial Beers Criteria as a result of research he had published in 1988 in JAMA that looked at the files of 850 LTC residents in Boston
- This initial research found that psychoactive medications often cause confusion and other problems
- A direct result of the 1988 article was the initial Beers Criteria which were published in 1991
- Dr Beers died of complications of diabetes in 2009 at the age of 54

http://www.nytimes.com/2009/03/10/health/10beers.html (Accessed 4/1/2013)

1991 Beers Criteria

- Developed by 13 nationally recognized geriatric experts
- Used a modified Delphi method
- Used 30 factors to identify inappropriate use of medications, many of which were commonly used
- Purpose of the list was to provide useful information for QA review, health services research, and clinical practice guidelines

Beers MH, Ouslander JG, Rollingher I, Reuben DB, Brooks J, Beck JC. Explicit Criteria for Determining Inappropriate Medication Use in Nursing Home Residents. *Arch Intern Med.* 1991;151(9):1825-1832.

1997 Beers Criteria

- Panel of 6 nationally recognized experts on appropriate use of medications in geriatrics
- Updated and expanded criteria to define potentially inappropriate medications
- Agreed on validity of 28 criteria describing potentially inappropriate medication use
- Also 35 criteria describing potentially inappropriate use for 15 medical conditions
- Added goals of assessing clinical severity and incorporating clinical information on diagnoses when available

Beers MH. Explicit Criteria for Determining Potentially Inappropriate Medication Use by the Elderly: An Update. *Arch Intern Med.* 1997;157(14):1531-1536.

2003 Beers Criteria

- Panel of 12 geriatric medicine specialists from across the US
- Modified Delphi method
- 48 individual medications or medication classes
- Also looked at 20 different diseases and specific medications that should be avoided in geriatrics with those conditions
- Viewed as an important update

Fick DM, Cooper JW, Wade WE, Waller JL, Maclean J, Beers MH. Updating the Beers Criteria for Potentially Inappropriate Medication Use in Older Adults: Results of a US Consensus Panel of Experts. *Arch Intern Med.* 2003;163(22):2716-2724.

2012 Beers Criteria

- Was updated in conjunction with support from The American Geriatrics Society
- Modified Delphi with 11 panelists
- Sought "to update Beers Criteria using a comprehensive, systematic review and grading of the evidence on drug-related problems and adverse drug events"
- Reviewed 2,169 references
- Evidence was graded based on American College of Physicians' Guideline Grading System with regards to quality and strength

The American Geriatrics Society 2012 Beers Criteria Update Expert Panel. AGS updated Beers Criteria for potentially inappropriate medication use in older adults. J Am Geriatr Soc 2012; DOI: 10.1111/j.1532-5415.2012.03923.x.

Strategy of Updating Beers Criteria

- Incorporate new evidence since 2003 update
- Grade the strength and quality of the evidence
- Use an interdisciplinary panel
- Incorporate evidence-based exceptions into the criteria

Intent of 2012 Beers Criteria Update

- Improve care by decreasing exposure to potentially inappropriate medications (PIMs)
- Educational Tool
- Quality Measure
- Research Tool

Quality of Evidence and Strength of Recommendation

Table 1. Designations of Quality and Strength of Evidence

Designation	Description
Quality of evidence	
High	Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes (≥ 2 consistent, higher-quality randomized controlled trials or multiple, consistent observational studies with no significant methodological flaws showing large effects)
Moderate	Evidence is sufficient to determine effects on health outcomes, but the number, quality, size, or consistency of included studies; generalizability to routine practice; or indirect nature of the evidence on health outcomes (≥ 1 higher-quality trial with > 100 participants; ≥ 2 higher-quality trials with some inconsistency; ≥ 2 consistent, lower-quality trials; or multiple, consistent observational studies with no significant methodological flaws showing at least moderate effects) limits the strength of the evidence
Low	Evidence is insufficient to assess effects on health outcomes because of limited number or power of studies, large and unexplained inconsistency between higher-quality studies, important flaws in study design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes
Strength of recommendation	
Strong	Benefits clearly outweigh risks and burden OR risks and burden clearly outweigh benefits
Weak	Benefits finely balanced with risks and burden
Insufficient	Insufficient evidence to determine net benefits or risks

The American Geriatrics Society 2012 Beers Criteria Update Expert Panel. AGS updated Beers Criteria for potentially inappropriate medication use in older adults. J Am Geriatr Soc 2012; DOI: 10.1111/j.1532-5415.2012.03923.x.

2012 Beers Criteria Table 2

- Summarizes 34 medications or medication classes that are potentially inappropriate and should be avoided in geriatrics
- Newly included drugs in this update include:
  - Megestrol
  - Glyburide
  - Sliding-scale insulin

Beers Criteria 2012 Anticholinergics -1st Gen Antihistamines

Drugs	Rationale	Rec	Quality	Strength
• Brompheniramine • Chlorpheniramine • Clemastine • Cyproheptadine • Diphenydramine • Hydroxyzine • Promethazine • Others	Highly anticholinergic; reduced clearance; tolerance w/ use as hypnotic; Diphenhydramine is ok in some situations	Avoid	Mod-High	Strong

What situations do you think diphenhydramine is ok in?

Beers Criteria 2012 Anticholinergics -Antiparkinsons

Drugs	Rationale	Rec	Quality	Strength
• Benztropine • Trihexyphenidyl	More effective agents for PD; Not recommended for EPS due to psych meds	Avoid	Mod	Strong

What are some more effective agents for PD?

What can we use for EPS due to long term use of psych meds?

Beers Criteria 2012 Anticholinergics - Antispasmodics

Drugs	Rationale	Rec	Quality	Strength
• Clidinium-Chlordiazepoxide • Dicyclomine • Hyoscyamine • Scopolamine	Highly anticholinergic with uncertain effectiveness	Avoid except short-term palliative	Mod	Strong

What other anticholinergic med, not listed here, is often used sublingually in hospice patients for secretions?

Beers Criteria 2012
Antithrombotics

Drugs	Rationale	Rec	Quality	Strength
• Dipyridamole (short-acting)	Orthostasis; IV acceptable	Avoid	Mod	Strong
• Ticlopidine	Safer alternatives	Avoid	Mod	Strong

When is IV dipyridamole used?

Why is ticlopidine not used anymore?

Beers Criteria 2012
Anti-infective

Drugs	Rationale	Rec	Quality	Strength
• Nitrofurantoin	Pulmonary tox; safer alternatives; lack of concentration in urine w/ CrCl < 60ml/min leads to decreased or lack of efficacy	Avoid long-term use; CrCl<60	Mod	Strong

What is the difference between the different nitrofurantoin formulations?

Beers Criteria 2012
Cardiovascular – Alpha$_1$ Blockers

Drugs	Rationale	Rec	Quality	Strength
• Doxazosin • Prazosin • Terazosin	High risk of orthostasis; other drugs have better risk/benefit profile for HTN	Avoid use for HTN	Mod	Strong

What large study evaluating the use of alpha blockers against other hypertension meds is largely responsible for the decline in the use of alpha blockers for HTN?

What about alpha blockers for BPH?

Beers Criteria 2012
Cardiovascular – Alpha Agonists, central

Drugs	Rationale	Rec	Quality	Strength
• Clonidine		Avoid as 1st line hypertensive	Low	Strong

What is the rationale for inclusion of clonidine?

What about clonidine topically?

Beers Criteria 2012
Cardiovascular – Antiarrhythmics (Ia, Ic, III)

Drugs	Rationale	Rec	Quality	Strength
• Amiodarone • Dofetilide • Dronedarone • Flecainide • Procainamide • Propafenone • Quinidine • Sotalol	Rate control = better balance of benefits than rhythm control in geriatrics; Amiodarone is associated with many toxicities	Avoid as 1st line tx of a. fib	High	Strong

What are some of the toxicities of amiodarone?

Does amiodarone have an FDA indication for A. fib?

What other problems does dofetilide have?

Beers Criteria 2012
Cardiovascular

Drugs	Rationale	Rec	Quality	Strength
• Disopyramide	Potent negative inotrope can lead to HF; anticholinergic	Avoid	Low	Strong
• Dronedarone	Worse outcomes in those with chronic a. fib or HF. Prefer rate control	Avoid in A.fib; HF	Mod	Strong
• Digoxin > 0.125mg QD	In HF, ↑ doses ≠ ↑ benefit, but does increase tox risk; ↓ clearance can = more tox	Avoid	Mod	Strong
• Nifedipine, IR	Hypotension; myocardial ischemia	Avoid	High	Strong
• Spironolactone >25mg QD	Risk of hyperkalemia in HF esp with_____	Avoid in HF or CrCl <30	Mod	Strong

Beers Criteria 2012
CNS – Tertiary TCAs (alone or combo)

Drugs	Rationale	Rec	Quality	Strength
• Amitriptyline • CDP-amitriptyline • Clomipramine • Doxepin> 6mg/d • Imipramine • Perphenazine-amitriptyline	Anticholinergic; sedating; orthostatic hypotension. Safety profile of doxepin <6mg/d is similar to placebo	Avoid	High	Strong

What are the commonly used secondary amine TCAs?

Beers Criteria 2012
CNS – 1st or 2nd Generation Antipsych

Drugs	Rationale	Rec	Quality	Strength
• Chlorpromazine • Haloperidol • Loxapine • Perphenazine • Aripiprazole • Asenapine • Clozapine • Iloperidone • Lurasidone • Olanzapine • Paliperidone • Quetiapine • Risperidone • Ziprasidone	Increased risk of stroke and mortality in dementia patients	Avoid use for behaviors with dementia unless nonpharm ineffective or pt is risk to self or others	Mod	Strong

What about PRN use of antipsychotics?

Beers Criteria 2012
CNS - Barbiturates

Drugs	Rationale	Rec	Quality	Strength
• Butalbital • Phenobarbital	Physical dependence; tolerance for sleep; risk of overdose	Avoid	High	Strong

Beers Criteria 2012
CNS – Benzodiazepines (short & long acting)

Drugs	Rationale	Rec	Quality	Strength
• Alprazolam • Estazolam • Lorazepam • Oxazepam • Temazepam • Triazolam • Clorazepate • Chlordiazepoxide • Clonazepam • Diazepam	Increased sensitivity w/ decreased clearance. Ok for seizures, EtOH withdrawal, severe general anxiety disorder, anesthesia, hospice	Avoid (for tx of insomnia, agitation, delirium)	High	Strong

How many of you have ever dispensed a benzodiazepine to a geriatric patient?

Beers Criteria 2012
CNS – Nonbenzodiazepine Hypnotics

Drugs	Rationale	Rec	Quality	Strength
• Eszopiclone • Zolpidem • Zaleplon	Similar ADRs as BZDs with minimal improvement in sleep	Avoid (>90 days)	Mod	Strong

So what can you use for sleep in a geriatric patient???

Beers Criteria 2012
Endocrine - Androgens

Drugs	Rationale	Rec	Quality	Strength
• Testosterone • Methyltestosterone	Cardiac problems; CI in prostate cancer	Avoid except mod-sev hypogonadism	Mod	Weak

What other potential problems are there with testosterone replacement in geriatric patients not listed in the Beers Criteria?

Beers Criteria 2012 Endocrine

Drugs	Rationale	Rec	Quality	Strength
• Desiccated thyroid	concerns about cardiac effects; safer alternatives	Avoid	Low	Strong
• Estrogens +/- progestins	Carcinogenic potential; no cardiac or cognitive protection seen; vaginal estrogens ok for dryness in women w/ breast cancer	Avoid oral & patch; topical vaginal cream ok for vaginal symptoms	PO/Patch: high Topical: mod	PO/Patch: strong Topical: weak
• Long-acting sulfonylureas	Prolonged hypoglycemia due to metabolites	Avoid	High	Strong

What are the long-acting sulfonylureas and which sulfonylureas are considered safest for geriatrics?

Beers Criteria 2012 Endocrine

Drugs	Rationale	Rec	Quality	Strength
• Growth hormone	Small effect; risk of ADRs	Avoid except for pituitary gland removal	High	Strong
• Insulin, sliding scale	Higher risk of hypoglycemia w/out improvement in hyperglycemia regardless of setting	Avoid	Moderate	Strong
• Megestrol	Minimal effect on wt gain; ↑ risk of clots	Avoid	Moderate	Strong

Who is megestrol approved for to treat weight loss?

If weight gain is obtained with megestrol what kind is it?

Sliding scale… what do you think?

Beers Criteria 2012 GI

Drugs	Rationale	Rec	Quality	Strength
• Metoclopramide	EPS including TD;	Avoid, unless gastroparesis	Moderate	Strong
• Mineral oil, oral	Aspiration;	Avoid	Moderate	Strong
• Trimethobenzamide	Least effective antiemetic; EPS potential	Avoid	Moderate	Strong

Beers Criteria 2012 Pain

Drugs	Rationale	Rec	Quality	Strength
• Meperidine	Not effective oral analgesic in common doses; neurotox; safer alternatives	Avoid	High	Strong
• Pentazocine	Opioid w/ most CNS ADEs; safer alternatives	Avoid	Low	Strong
• Skeletal Muscle Relaxants (carisoprodol, chlorzoxazone, cyclobenzaprine, metaxalone, methocarbamol, orphenadrine)	Anticholinergic effects, sedation, fracture risk; questionable effectiveness at tolerable doses	Avoid	Moderate	Strong

Beers Criteria 2012 Pain

Drugs	Rationale	Rec	Quality	Strength
• Non-COX-selective NSAIDs (ASA>325mg/d, diclofenac, diflunisal, etodolac, ibuprofen, ketoprofen, meloxicam, nabumetone, naproxen, oxaprozin, piroxicam, sulindac)	GI bleed, PUD, which is reduced but not eliminated in combo with PPIs or misoprostol	Avoid chronic use unless alternatives ineffective. Pt should take PPI or misoprostol	Moderate	Strong
• Indomethacin and ketorolac	Same as above; indomethacin has most CNS ADRs	Avoid	Indo-mod Keto-high	Strong

2012 Beers Criteria Table 3

- Summarizes medications that are potentially inappropriate with certain disease states because the medication can potentially exacerbate the disease state
- Newly included drugs in this update include:
  - TZDs in HF
  - SSRIs with falls and fractures
  - Acetylcholinesterase-inhibitors with syncope

Beers Criteria 2012
Cardiovascular – Heart Failure

Drugs	Rationale	Rec	Quality	Strength
• NSAIDs and COX-2 inhibitors • Diltiazem & verapamil • TZDs • Cilostazol • Dronedarone	Fluid retention and worsening or exacerbation of HF	Avoid	NSAIDs: mod CCBs: mod TZDs: high Cilostazol: low Dronedarone: mod	Strong

Beers Criteria 2012
Cardiovascular – Syncope

Drugs	Rationale	Rec	Quality	Strength
• AChEIs • Peripheral α-blockers (doxazosin, prazosin, terazosin) • Tertiary TCAs • Chlorpromazine, thioridazine, olanzapine	Orthostatic hypotension or bradycardia risks	Avoid	α-blockers: high TCAs, AChEIs, & antipsychotics: mod	AChEIs & TCAs: strong α-blockers & psych: weak

Beers Criteria 2012
CNS – Chronic Seizures/Epilepsy

Drugs	Rationale	Rec	Quality	Strength
• Bupropion • Chlorpromazine • Clozapine • Olanzapine • Tramadol	Lowers seizure threshold; may be ok if well-controlled & ineffective alternatives	Avoid	Moderate	Strong

Beers Criteria 2012
CNS – Delirium

Drugs	Rationale	Rec	Quality	Strength
• All TCAs • Anticholinergics • BZDs • Chlorpromazine • Steroids • H_2RAs • Meperidine • Hypnotics • Thiordiazine	Induces or worsens delirium. Should be slowly tapered to prevent withdrawal symptoms	Avoid	Moderate	Strong

Beers Criteria 2012
CNS – Dementia or Cognitive Impairment

Drugs	Rationale	Rec	Quality	Strength
• Anticholinergics • BZDs • H_2RAs • Zolpidem • Antipsychotics	CNS effects; antipsychotics increase risk of CVA and mortality in dementia	Avoid	High	Strong

Beers Criteria 2012
CNS – History of Falls or Fractures

Drugs	Rationale	Rec	Quality	Strength
• Anticonvulsants • Antipsychotics • BZDs • Hypnotics • TCAs • SSRIs	Cause ataxia, psychomotor impairment, syncope.	Avoid unless safer agents unavailable; avoid anticonvulsants unless seizures	High	Strong

Any surprises here?

Any meds you think should be here that are not?

Beers Criteria 2012
CNS – Insomnia

Drugs	Rationale	Rec	Quality	Strength
• Oral Decongestants • Stimulants • Theobromines	CNS stimulants	Avoid	Moderate	Strong

When might methylphenidate be used in a geriatric patient?

Beers Criteria 2012
CNS – Parkinson's

Drugs	Rationale	Rec	Quality	Strength
• All antipsychotics (except quetiapine and clozapine) • Antiemetics (metoclopramide, prochlorperazine, promethazine)	DA receptor antagonists which may worsen PD symptoms.	Avoid	Moderate	Strong

Why not quetiapine or clozapine?

What is the big concern with clozapine?

Beers Criteria 2012
GI – Chronic Constipation

Drugs	Rationale	Rec	Quality	Strength
• Antimuscarinics • Nondihydropyridine CCBs • 1st gen antihistamines • Anticholinergics	Can worsen constipation, but have variable effects	Avoid unless no alternatives	UI: high Others: mod-low	Weak

Beers Criteria 2012
GI – Hx of Gastric or Duodenal Ulcers

Drugs	Rationale	Rec	Quality	Strength
• ASA >325mg/day • Non-COX-2 selective NSAIDs	Exacerbate existing or cause new ulcers	Avoid unless no alternatives & pt can take GI protectant	Moderate	Strong

Beers Criteria 2012
Kidney – Stage IV/V CKD

Drugs	Rationale	Rec	Quality	Strength
• NSAIDs • Triamterene	Increase risk of kidney injury	Avoid	NSAIDs: Mod Triamterene: Low	NSAIDs: Strong Triamterene: Weak

Beers Criteria 2012
Urinary Tract – UI (all types) in Women

Drugs	Rationale	Rec	Quality	Strength
• Estrogen (oral and transdermal)	Aggravation of incontinence	Avoid in women	High	Strong

What about vaginal estrogen?

Which symptoms might vaginal estrogen relieve?

Beers Criteria 2012
Urinary Tract – BPH

Drugs	Rationale	Rec	Quality	Strength
• Inhaled anticholinergics • Oral anticholinergics (except those for UI)	Decrease urinary flow and cause retention	Avoid in men	Moderate	Inhaled agents: strong Others: weak

Beers Criteria 2012
Urinary Tract – Stress or Mixed UI

Drugs	Rationale	Rec	Quality	Strength
• α- blockers Doxazosin Prazosin Terazosin	Aggravation of UI	Avoid in women	Moderate	Strong

Mini-Case

- A 64 year old male comes into your pharmacy and asks what he should do because "my kidneys are shutting down due to my allergies".
- What would you want to know?
- What would you recommend?

2012 Beers Criteria
Table 4

- Summarizes medications which should be used with caution in geriatrics
- New addition to Beers Criteria
- Includes 14 medications and classes of medications

Beers Criteria 2012
Meds to Be Used with Caution

Drugs	Rationale	Rec	Quality	Strength
• ASA for primary prevention of cardiac events	Lack of evidence in >80 yo as compared to risk	Use w/ caution in >80	Low	Weak
• Dabigatran	> Risk of bleeding than warfarin in >75 yo; lack of safety for CrCl < 30ml/min	Use w/ caution in > 75 yo or CrCl< 30 ml/min	Moderate	Weak
• Prasugrel	> Risk of bleeding in geriatrics; however benefit is seen in those with prior MI or DM	Use w/ caution in > 75 yo	Moderate	Weak

What about warfarin?

Beers Criteria 2012
Meds to Be Used with Caution

Drugs	Rationale	Rec	Quality	Strength
• Antipsychotics • Carbamazepine • Mirtazapine • SNRIs • SSRIs • TCAs	SIADH	Use with caution	Moderate	Strong
• Vasodilators	Syncope	Use with caution	Moderate	Weak

What is SIADH?

Which antidepressants have lowest risk of SIADH?

Beers Criteria – What Does it all Mean?

- Valuable, evidence-based guideline
- Applicable to many situations and patients
- Role in e-prescribing and POE
- Safer use of medication in geriatrics
- But…
  - Underrepresentation of geriatrics in clinical trials
  - Doesn't address renal dosing
  - Hospice not represented
- Ultimately your professional judgment is what matters most

Beers Review Case

- 82 year old female who resides in local AL
- Diagnoses: HTN, Depression, Anxiety
- Meds:
  - Lisinopril 10mg daily for last 3 years
  - Fluoxetine 20mg daily for last 15 years
  - Lorazepam 0.5mg 4 times a day as needed for last 25 years
- What would you like to recommend?

Beers Review Case – You're Seeing Double

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- What would you like to recommend?

STOPP

- Screening Tool of Older Persons' potentially inappropriate Prescriptions
- More evidence-based than 2003 Beers Criteria
- Designed more specifically (ie digoxin 125mcg w/ impaired renal fx, thiazide diuretic w/ hx of gout)
- STOPP criteria has done a better job of identifying medications that led to hospitalization (35% vs 25%)
- European

Gallagher P, O'Mahony D. STOPP (Screening Tool of Older Persons' potentially inappropriate Prescriptions): application to acutely ill elderly patients and comparison with Beers' criteria. *Age Ageing* 2008;37:673-9.

START

- Screening Tool to Alert doctors to the Right Treatment
- A lot of emphasis on overprescribing, but this tool is designed to look at prescribing omission
- ie) Calcium and Vitamin D supplementation in patients w/ known osteoporosis
- Found 57% of seniors not getting meds they should be and don't have contraindications for including 26% with CAD without statin tx.
- European

Barry PJ, Gallagher P, Ryan C, O'Mahony D. START (screening tool to alert doctors to the right treatment)--an evidence-based screening tool to detect prescribing omissions in elderly patients. *Age Ageing* 2007;36:632-8.

Anticholinergics

- What are typical anticholinergic side effects?
- What medications have anticholinergic effects?

Anticholinergic Scales

- Anticholinergic burden is more than we thought
- Additive anticholinergic effects
- Different scales:
  - Anticholinergic Drug Scale
    - Carnahan RM, Lund BC, Perry PJ et al. The Anticholinergic Drug Scale as a measure of drug-related anticholinergic burden: Associations with serum anticholinergic activity. J Clin Pharmacol 2006;46:1481–1486.
  - Anticholinergic Risk Scale
    - Rudolph JL, Salow MJ, Angelini MC et al. The Anticholinergic Risk Scale and anticholinergic adverse effects in older persons. Arch Intern Med 2008;168:508–513.
  - Anticholinergic Cognitive Burden Scale
    - The anticholinergic burden scale. www.indydiscoverynetwork.org/AnticholinergicCognitiveBurdenScale.html. Accessed April 1, 2013.

The Anticholinergic Cognitive Burden Scale*

ACB Score = 1 Possible Ach Effects	ACB Score = 2 Definite Ach Effects	ACB Score = 3 Definite Ach Effects
Atenolol	Amantadine	Amitriptyline
Alprazolam	Carbamazepine	Chlorpheniramine
Furosemide	Cyclobenzaprine	Darifenacin
Metoprolol	Cyproheptadine	Diphenhydramine
Isosorbide	Loxapine	Hydroxyzine
Prednisone	Meperidine	Hyoscyamine
Warfarin	Oxcarbazepine	Oxybutynin

*Not a complete list

Using the ACB Score

- A score of 2 or 3 = definite anticholinergic properties
- Each definite anticholinergic scale may increase the risk of cognitive impairment by 46% over 6 years
- For each 1 point increase in ACB total score there may be a decline in the MMSE of 0.33 points over 2 years
- Each 1 point increase in the ACB score is also correlated with a 26% increase in the risk of death

Let's Use the ACB!

- Sarah Sue
  - Furosemide 40mg daily
  - Warfarin 2mg daily
  - Acetaminophen 500mg twice daily as needed
  - What is her ACB score?
  - Physician wants to add darifenacin 7.5mg daily for OAB.
  - What does that now mean?

Antipsychotics in LTC

- 2005 atypical antipsychotics get black box warning against use in dementia patients
- 2008 this warning was expanded to all antipsychotics
- 2011 OIG released report stating 88% of Medicare claims for atypical antipsychotics were used off-label for patients with dementia
- This led to a lot of press about antipsychotics in LTC facilities and general population
- Ultimately in 2012 CMS announced a goal to reduce off-label use by 15% by the end of 2012

Antipsychotics – What Does it Mean?

- There is a relationship between dementia and increased risk of death when treated with antipsychotics
- Nonpharmacologic measures should be tried first in patients with behavioral and psychological symptoms of dementia (BPSD)
- Increased emphasis from surveyors

Case Assessment

- Walt D. is an 88 year old male residing in a local nursing home. The following is known about him:

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Sertraline 50mg daily		INR 2.2
Diphenhydramine 25mg daily as needed for sleep		Ht 5'11" Wt 165 lbs

Case Assessment Questions

- What else would you want to know about the patient?
- Which, if any, of Walt's meds are potentially inappropriate according to the 2012 Beers Criteria?
- Which, if any, of Walt's meds are potentially causing his hyponatremia?
- Which, if any, of Walt's meds have anticholinergic properties?

Selected Websites

- The American Geriatrics Society
  - http://www.americangeriatrics.org/
- The American Society of Consultant Pharmacists
  - https://www.ascp.com/
- Anticholinergic Cognitive Burden Scale
  - http://www.indydiscoverynetwork.org/AnticholinergicCognitiveBurdenScale.html

Selected References

- The American Geriatrics Society 2012 Beers Criteria Update Expert Panel. AGS updated Beers Criteria for potentially inappropriate medication use in older adults. J Am Geriatr Soc 2012; DOI: 10.1111/j.1532-5415.2012.03923.x.
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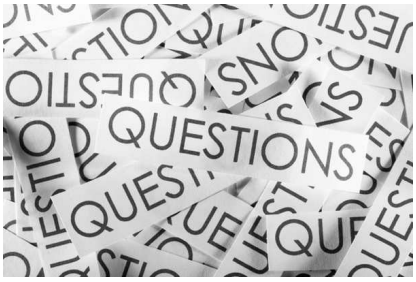

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Quality of Evidence and Strength of Recommendation

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High	Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes ($\geq$ 2 consistent, higher-quality randomized controlled trials or multiple, consistent observational studies with no significant methodological flaws showing large effects)
Moderate	Evidence is sufficient to determine effects on health outcomes, but the number, quality, size, or consistency of included studies; generalizability to routine practice; or indirect nature of the evidence on health outcomes ($\geq$ 1 higher-quality trial with > 100 participants; $\geq$ 2 higher-quality trials with some inconsistency; $\geq$ 2 consistent, lower-quality trials; or multiple, consistent observational studies with no significant methodological flaws showing at least moderate effects) limits the strength of the evidence
Low	Evidence is insufficient to assess effects on health outcomes because of limited number or power of studies, large and unexplained inconsistency between higher-quality studies, important flaws in study design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes
Strength of recommendation	
Strong	Benefits clearly outweigh risks and burden OR risks and burden clearly outweigh benefits
Weak	Benefits finely balanced with risks and burden
Insufficient	Insufficient evidence to determine net benefits or risks

The American Geriatrics Society 2012 Beers Criteria Update Expert Panel. AGS updated Beers Criteria for potentially inappropriate medication use in older adults. J Am Geriatr Soc 2012; DOI: 10.1111/j.1532-5415.2012.03923.x.