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  - Type your question & hit Enter
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- About technical issues or CE credit —
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- This webinar is being recorded for on-demand access later, after the series' conclusion
- To earn CE, you must attend the entire session
- **For those sharing a computer**
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Each activity has been approved for 1.0 clock hours continuing education credit for nurses by The Illinois Health Care Association, an approved sponsor of continuing education by the Illinois Department of Professional Regulation. Participants must be present for the entire duration of the activity and complete a post-event evaluation to receive credits. There is no conflict of interest for any planner or presenter.

Administrator credit

This program has been approved for Continuing Education for one total participant hour by NAB/NCERS. Approval #20210604-1-A66886-DL

Appropriateness of Drug Therapy

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Geriatric Population Statistics

Beginning January 1st, 2011:

Each day more than

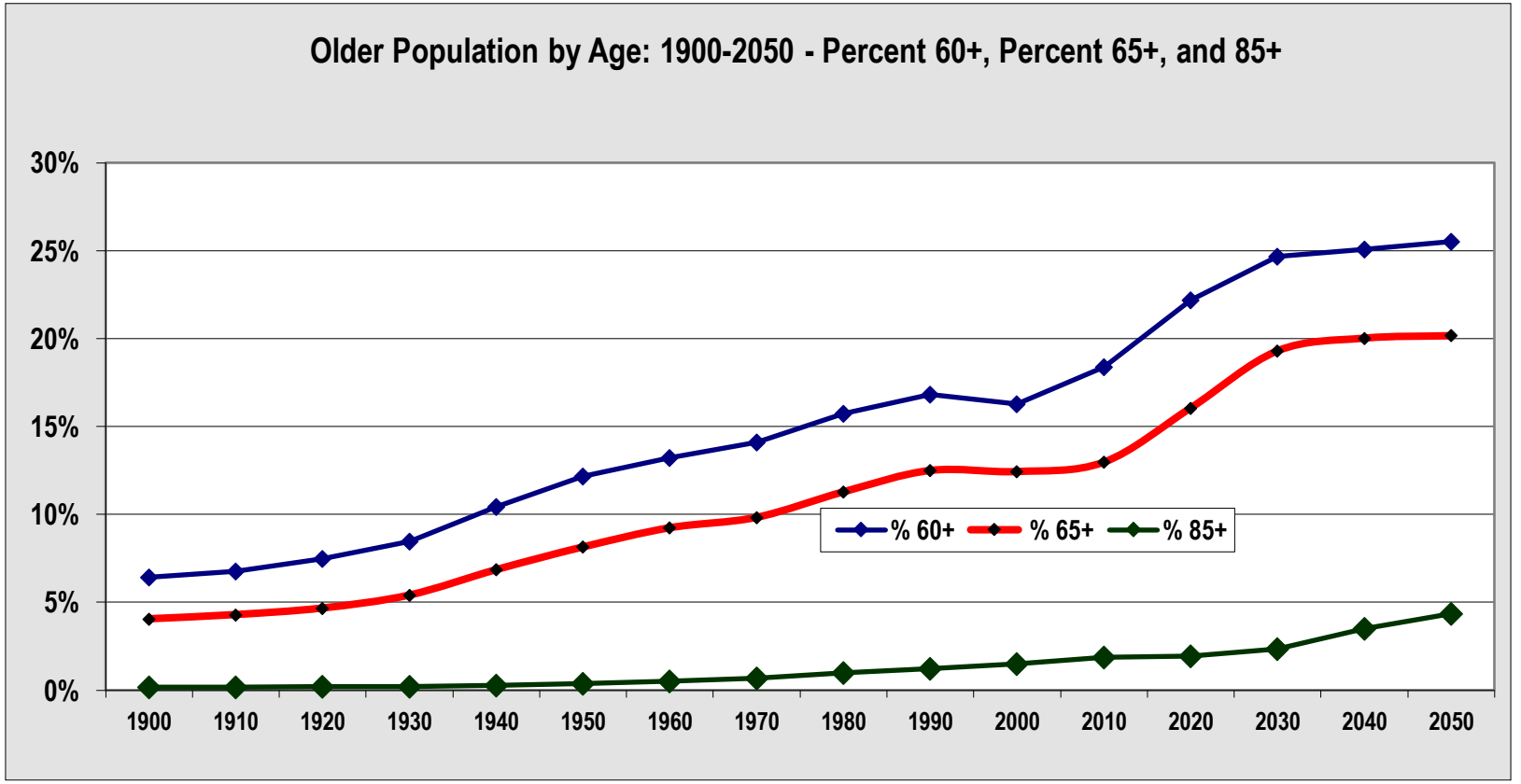
10,000

Baby Boomers will reach the age of 65.

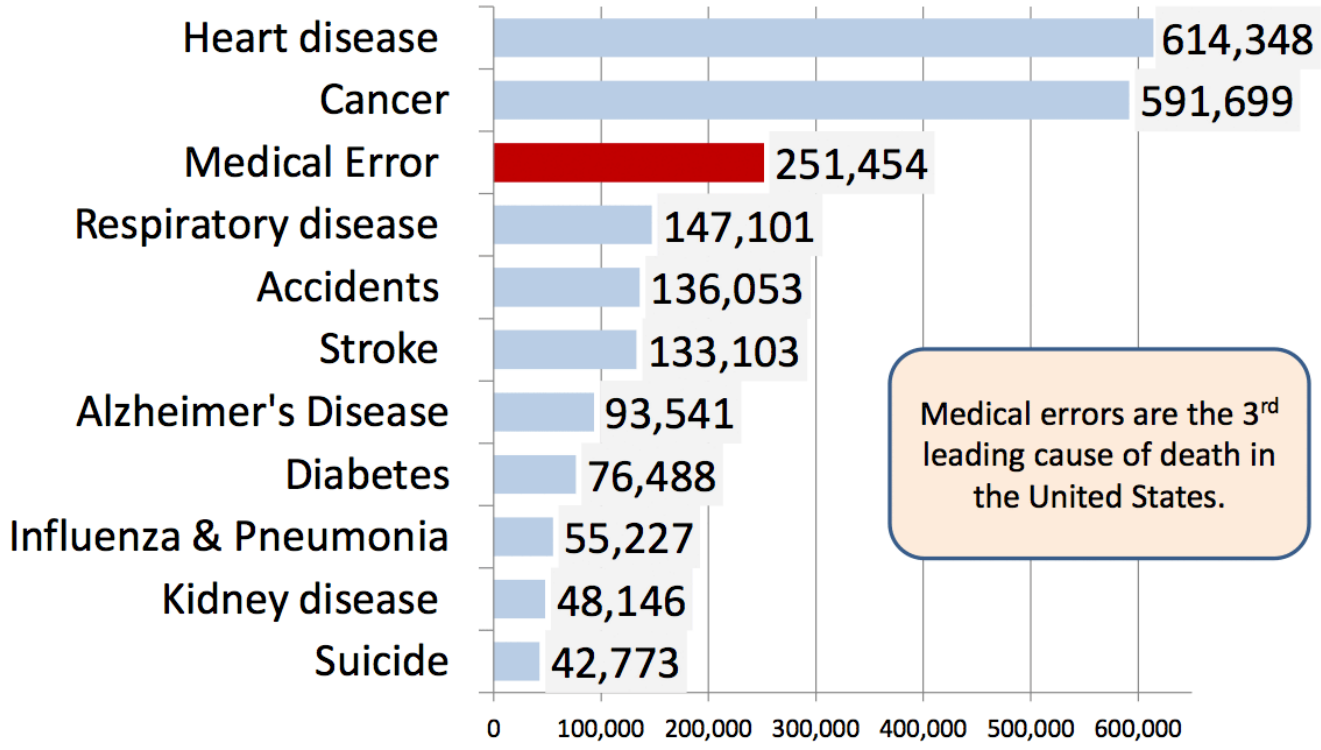
This will continue **daily** for the next

19 years

Geriatric Population Statistics



Number of Deaths in the United States



Sources: CDC. National Center for Health Statistics. Number of deaths for leading causes of death, 2014.

US Healthcare:
Third Leading Cause of Death

225,000 Americans die each year die as a result of their medical treatments:

- 7,000 deaths/year due to hospital medication errors
- 12,000 deaths/year due to unnecessary surgery
- 20,000 deaths/year due to other errors in hospitals
- 80,000 deaths/year due to infections in hospitals
- 106,000 deaths/year due to negative effects of drugs

Reference: Starfield, B. (2000, July 26). Is US health really the best in the world? Journal of the American Medical Association, 284(4), 483-485.

Defining Polypharmacy

- Considered to be > 5 medications
- More likely in the elderly (30-40%)
  - Large Government Health Plan Findings:
    - 5 or more prescription meds = 47%
    - 10 or more prescription meds = 13%
    - 15 or more prescription meds = 3%

Reason for Polypharmacy

- Several underlying medical conditions
  - Clinical standards may recommend multiple medications
- Patients see different physicians or specialists
  - Focus on expertise/Not focusing on the whole patient
- Why medications are prescribed often unavailable
  - Medications continued without indication
  - Fear negative effects if discontinued

Reasons for Polypharmacy

- Prescribing Cascade

Consequences of Polypharmacy

- Adverse Drug Reactions
  - Risk increases based on number of medications
- Drug-Drug Interactions
  - 8 different medications guarantees at least one drug-drug interaction
- Inappropriate Medication Use
  - Burden to remember when and how to take medications
- Undertreatment
  - Due to number of current medications prescribers may hesitate to start another necessary therapy

Adverse drug reaction (ADR) is a broad term referring to unwanted, uncomfortable, or dangerous effects that a drug may have.

Adverse Drug Reactions (ADR)

- Over 2 MILLION serious ADR annually
- Over 100,000 DEATHS annually
- Nursing home patient ADR rate ~ 350,000
- Ambulatory patient ADR rate ~ unknown
- Cost associated with ADR ~ $200 BILLION
  - Greater than total cost of cardiovascular or diabetic care

For every $1 spent on medications, $1.33 spent on adverse drug reactions

-Arch Intern Med

Adverse Drug Reactions (ADR)

Americans are currently being prescribed pharmaceuticals at a higher rate than ever.

According to the Henry J. Kaiser Family Foundation, in 2016 there were a little over 4 billion pharmaceutical drug prescriptions filled at retail pharmacies in the United States - that equates to 13 prescriptions for every single American!

Adverse Drug Reactions (ADR)

- The elderly account for 12% of the U.S. population, but consume approximately 36% of total prescriptions.
- On average, individuals 65 to 69 years old take nearly 14 prescriptions per year, individuals aged 80 to 84 take an average of 18 prescriptions per year.

Table 3. Independent Risk Factors for Having an Adverse Drug Event

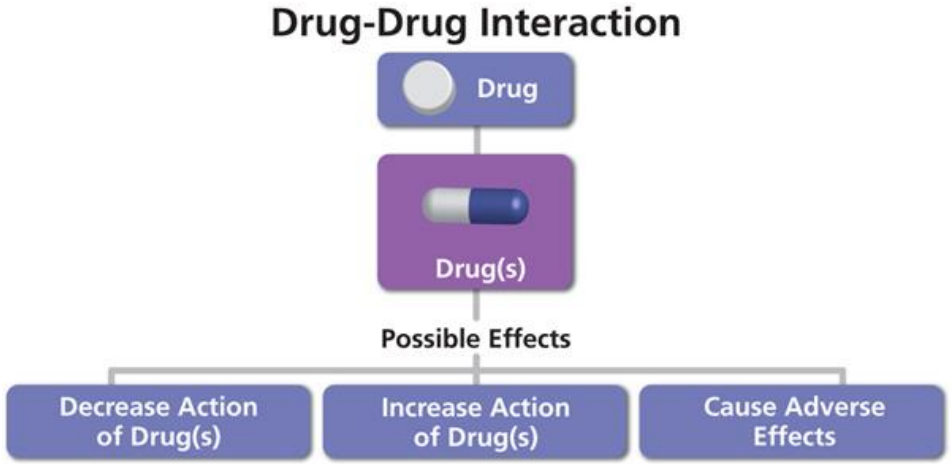
Risk Factor	Odds Ratio* (95% Confidence Interval)
New resident (1st or 2nd month)	2.8 (1.5-5.2)
No. of regularly scheduled medications	
<5	1.0 (Referent)
5-6	2.0 (1.2-3.2)
7-8	2.8 (1.7-4.7)
≥9	3.3 (1.9-5.6)
Current medications	
Antibiotics/anti-infectives	4.0 (2.5-6.2)
Antipsychotics	3.2 (2.1-4.9)
Antidepressants	1.5 (1.1-2.3)
Nutrients/supplements	0.42 (0.27-0.63)

*Adjusted for age and sex.

Arch Intern Med/Vol 161, July 9, 2001: 1633
www.archinternmed.com

Drug-Drug Interaction

- 8 different medications guarantees at least one drug-drug interaction



"Any symptom in an elderly patient should be considered a drug side effect until proven otherwise."

–J. Gurwitz et al. Brown University

"Something for a runny nose...
How about tissues?"

Why Seniors are at Greatest Risk for Medication-Related Problems

- Body changes with age
- Likely taking more medications
- Likely having more comorbidities
- Physical and financial hurdles impairing compliance
- Likely to have psychological symptoms
- Likely to require hospitalization
- Increased risk of falls/fractures

Goal of Medication Use

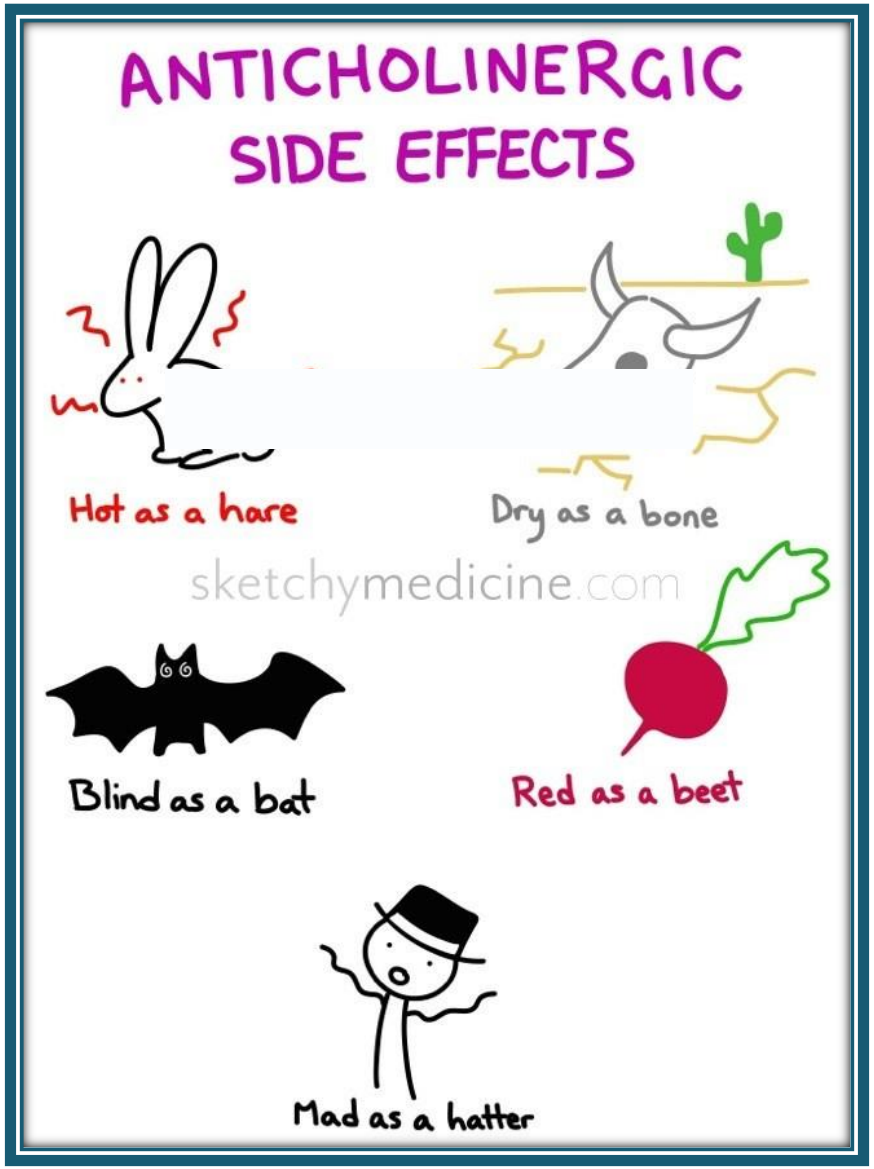
- Medication regimens help promote or maintain the resident's highest mental, physical, and psychosocial well-being
- Resident receives only those medications, in doses and for the duration clinically indicated to treat their assessed conditions
- Non-pharmacological interventions are considered and used when indicated, instead of medications

Goal of Medication Use

- Clinically significant adverse consequences are minimized
- The potential contribution of the medication regimen to an unanticipated decline or newly emerging or worsening symptom is recognized and evaluated, and the regimen is modified when appropriate

Defining Unnecessary Medication

- In excessive dose, including duplication
- For excessive duration
- Without adequate monitoring
- Without adequate indication for use
- In the presence of adverse consequences which indicate dose should be reduced or discontinued
- Any combination of the above


ANTICHOLINERGIC SIDE EFFECTS
Hot as a hare
Dry as a bone
sketchymedicine.com
Blind as a bat
Red as a beet
Mad as a hatter

Anticholinergic Side Effects

- "Hot as a Hare"
  - Increased Heart Rate
  - Increased Blood Pressure
- "Dry as a Bone"
  - Dry Mouth
  - Dry Eyes
  - Urinary Retention
  - Constipation
- "Blind as a Bat"
  - Blurred Vision
- "Red as a Beet"
  - Flushing
- "Mad as a Hatter"
  - Mental Status Changes
    - Drowsiness
    - Fatigue
    - Dizziness
    - Memory Loss
    - Cognitive Decline
    - Confusion
    - Hallucinations
    - Delirium

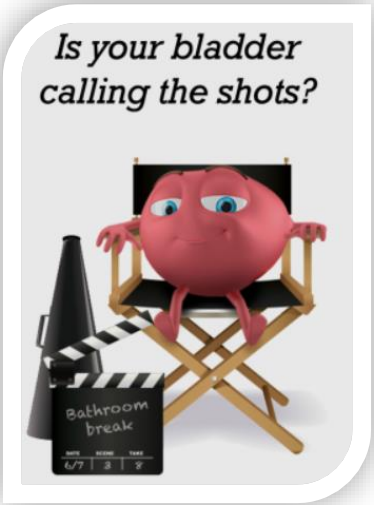
Medications and Anticholinergic Side Effects

Antihistamines with Anticholinergic Properties

- Use these:
  - Cetirizine (Zyrtec)
  - Desloratadine (Clarinex)
  - Fexofenadine (Allegra)
  - Levocetirizine (Xyzal)
  - Loratadine (Claritin)
- Not these:
  - Brompheniramine (Dimetapp)
  - Chlorpheniramine (Chlor-Phen)
  - Diphenhydramine (Benadryl)
  - Hydroxyzine (Atarax, Vistaril)

Medications for Urinary Incontinence with Anticholinergic Properties

- Use this:
  - Mirabegron (Myrbetriq)



- Not these:
  - Darifenacin (Enablex)
  - Fesoterodine (Toviaz)
  - Oxybutynin (Ditropan)
  - Solifenacin (Vesicare)
  - Tolterodine (Detrol)
  - Trospium (Sanctura)

Muscle Relaxants with Anticholinergic Properties

- Baclofen (Lioresal)
- Carisoprodol (Soma)
- Chlorzoxazone (Parafon Forte)
- Cyclobenzaprine (Flexeril)
- Dantrolene (Dantrium)
- Metaxalone (Skelaxin)
- Methocarbamol (Robaxin)
- Orphenadrine (Norflex)
- Tizanidine (Zanaflex)

Antidepressants with Anticholinergic Properties

- Use these:
  - Citalopram (Celexa)
  - Duloxetine (Cymbalta)
  - Escitalopram (Lexapro)
  - Sertraline (Zoloft)
- Not these:
  - Amitriptyline (Elavil)
  - Doxepin (Sinequan)
  - Imipramine (Tofranil)
  - Nortriptyline (Pamelor)
  - Paroxetine (Paroxetine)

Antipsychotics with Anticholinergic Properties

Table 2

Relative frequency of common adverse effects of antipsychotics at usual therapeutic doses

Note: this is the frequency of occurrence of adverse effects, not the intensity with which they occur

Drug	Usual daily oral dose range (mg)	Sedation	Postural hypotension	Anticholinergic	Extrapyramidal	Weight gain
Atypical drugs						
amisulpride	400-1000 (acute psychosis) 100-300 (negative symptoms)	+	+	0	++ *	+
aripiprazole	10-30	++	+	0	+	+
clozapine	200-600	+++	+++	+++	+	+++
olanzapine	5-20	+++	+	++	+	+++
quetiapine	300-750	+++	++	+	+ *	++
risperidone	2-6	++ (initially)	+++ (initially)	0	++	++
ziprasidone	80-160	++	+	+	+	+
Typical drugs						
chlorpromazine	75-500	+++	+++	+++	++	+++
droperidol	5-10 (intramuscular) †	++	+	+	+++	+
fluphenazine	5-20	+	+	+	+++	+++
haloperidol	1-7.5	+	+	+	+++	++
pericyazine	15-75	+++	++	+++	+	++
pimozide	2-12 ‡	++	+	+	+++	+
thioridazine	300-600	+++	+++	+++	+	+++
trifluoperazine	5-20	+	++	+	+++	++
zuclopenthixol acetate	50-150 (intramuscular) §	+++	+	++	+++	++
zuclopenthixol dihydrochloride	10-75	+++	+	++	+++	++

Approximate frequencies of adverse effects:
0 (<2%) = negligible or absent; + (>2%) infrequent; ++ (>10%) = moderately frequent; +++ (>30%) = frequent

* rarely a problem at usual therapeutic doses

† doses >5 mg should not be given without immediate access to ECG monitoring and resuscitation facilities

‡ use doses >12 mg only under specialist supervision

§ single dose, not to be repeated for 2 to 3 days

Antipsychotic Black Box Warning

WARNING: INCREASED MORTALITY IN ELDERLY PATIENTS WITH DEMENTIA-RELATED PSYCHOSIS

Elderly patients with dementia-related psychosis treated with antipsychotic drugs are at an increased risk of death. **Analyses of 17 placebo-controlled trials (modal duration of 10 weeks), largely in patients taking atypical antipsychotic drugs, revealed a risk of death in drug-treated patients of between 1.6 to 1.7 times the risk of death in placebo-treated patients.** Over the course of a typical 10-week controlled trial, the rate of death in drug-treated patients was about 4.5%, compared to a rate of about 2.6% in the placebo group. Although the causes of death were varied, most of the deaths appeared to be either cardiovascular (e.g., heart failure, sudden death) or infectious (e.g., pneumonia) in nature. Observational studies suggest that, similar to atypical antipsychotic drugs, treatment with conventional antipsychotic drugs may increase mortality. The extent to which the findings of increased mortality in observational studies may be attributed to the antipsychotic drug as opposed to some characteristic(s) of the patients is not clear. RISPERDAL® (risperidone) is not approved for the treatment of patients with dementia-related psychosis.

Gradual Dose Reduction (GDR)

- Stepwise dose reduction used to determine if symptoms, conditions, or side effects can be managed by a lower dose or if the medication can be discontinued
- Determines benefit and appropriate dose
- Necessary even when condition has improved or stabilized
- Often the only way to determine continued benefit and need by the patient

Psychotropic Clinically Acceptable Withdrawal

- Behavioral and Psychological Symptoms of Dementia (BPSD) symptoms are often temporary
  - When stable, reduce
  - Reduce Q3months
    - Never more than 50% every two weeks
    - The longer the medication prescribed, the slower the withdrawal
  - Most patients do not worsen behaviorally
    - Reduction to quickly leads to emergence of symptoms

(Drug Withdrawal ≠ BPSD)

From THE AMERICAN GERIATRICS SOCIETY

A POCKET GUIDE TO THE

AGS 2015 BEERS CRITERIA

This guide has been developed as a tool to assist healthcare providers in improving medication safety in older adults. The role of this guide is to *inform* clinical decision-making, research, training, quality measures and regulations concerning the prescribing of medications for older adults to improve safety and quality of care. It is based on *The AGS 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults.*

Originally conceived of in 1991 by the late Mark Beers, MD, a geriatrician, the Beers Criteria catalogues medications that cause side effects in the elderly due to the physiologic changes of aging. In 2011, the AGS sponsored its first update of the criteria, assembling a team of experts and using an enhanced, evidence-based methodology. In 2015, the AGS again funded the development of the Updated Criteria using an evidence-based methodology and rating each Criterion (quality of evidence and strength of evidence) using the American College of Physicians' Guideline Grading System, which is based on the GRADE scheme developed by Guyatt et al.

The full document, along with accompanying resources can be viewed in their entirety online at geriatricscareonline.org.

INTENDED USE

The goal of this guide is to improve care of older adults by reducing their exposure to Potentially Inappropriate Medications (PIMS).

- This should be viewed as a guideline for identifying medications for which the risks of their use in older adults outweigh the benefits.
- These criteria are not meant to be applied in a punitive manner.
- This list is not meant to supersede clinical judgment or an individual patient's values and needs. Prescribing and managing disease conditions should be individualized and involve shared decision-making.
- These criteria also underscore the importance of using a team approach to prescribing and the use of non-pharmacological approaches and of having economic and organizational incentives for this type of model.
- Two companion pieces were developed for the 2015 update. The first addresses the best way for patients, providers, and health systems to use (and not use) the 2015 AGS Beers Criteria. The second is a list of alternative medications included in the current use of High-Risk Medications in the Elderly and Potentially Harmful Drug-Disease Interactions in the Elderly quality measures. Both pieces can be found on geriatricscareonline.org.

The criteria are not applicable in all circumstances (i.e. patient's receiving palliative and hospice care). If a provider is not able to find an alternative and chooses to continue to use a drug on this list in an individual patient, designation of the medication as potentially inappropriate can serve as a reminder for close monitoring so that adverse drug effects can be incorporated into the electronic health record and prevented or detected early.

Deprescribing

- Medications that were good then, might not be the best choice now
- Process of intentionally stopping a medication or reducing its dose to improve health or reduce risk for adverse side effects

Deprescribing

- Identify all medication's indication(s) for use
  - Does the resident benefit from medication therapy for each identified indication?
  - Are there multiple medications for the same indication?
    - If yes, what order were medications started?
    - If yes, was an additional medication started due to insufficient efficacy from previous medication?
    - If yes, was the original medication discontinued due to insufficient efficacy or is there clinical benefit with continuation or dual therapy?
  - Do the benefits of therapy outweigh the risks?

Case Study

RT is an 89yof receiving hospice services and the following medications:

- Amlodine 5mg QD
- Furosemide 20mg QD
- Aspirin 81mg QD
- Simvastatin 20mg QD
- Fluticasone Nasal Spray 1 spray EN QD
- Pantoprazole 40mg QD
- Multivitamin w/Minerals QD
- Vitamin B-12 1000mcg QD

Case Study

RT is an 89yof receiving hospice services and the following medications:

- Amlodine 5mg QD (Hypertension)
- Furosemide 20mg QD (Edema)
- Aspirin 81mg QD (Cardiovascular Prevention)
- Simvastatin 20mg QD (Hyperlipidemia)
- Fluticasone NS 1 spray EN QD (Allergies)
- Pantoprazole 40mg QD (GERD)
- Multivitamin w/Minerals QD (Supplement)
- Vitamin B-12 1000mcg QD (Vit B-12 Deficiency)

Routine Medications = 8

After Review/Discontinuation = 2 routine/ 2 PRN

Case Study

AS is a 74yom receiving the following medications:

- Amlodine 5mg QD
- Metoprolol 12.5mg BID
- Furosemide 20mg QD
- Aspirin 81mg QD
- Fenofibrate 48mg QD
- Simvastatin 20mg QD
- Docusate 100mg BID
- Polyethylene Glycol 17gm QD
- Senna 1 tablet BID
- Pantoprazole 40mg QD
- Folic Acid 1mg QD
- Multivitamin w/Minerals QD
- Vitamin B-12 1000mcg QD
- Vitamin D 2000 units QD

Case Study

AS is a 74yom receiving the following medications:

- Amlodine 5mg QD (Hypertension)
- Metoprolol 12.5mg BID (Hypertension)
- Furosemide 20mg QD (Edema)
- Aspirin 81mg QD (Stroke Prevention)
- Fenofibrate 48mg QD (Hyperlipidemia)
- Simvastatin 20mg QD (Hyperlipidemia)
- Docusate 100mg BID (Constipation)
- Polyethylene Glycol 17gm QD (Constipation)
- Senna 1 tablet BID (Constipation)
- Pantoprazole 40mg QD (GERD)
- Folic Acid 1mg QD (Folate Deficiency)
- Multivitamin w/Minerals QD (Supplement)
- Vitamin B-12 1000mcg QD (Vitamin B-12 Deficiency)
- Vitamin D 2000 units QD (Vitamin D Deficiency)

Routine Medications = 14

After Review/Discontinuation = 7 routine/ 1 PRN

Sign up for the rest of the series

Friday, July 10

Pain Management in Older Adults

Friday, July 17

Update on COVID-19 - Learnings to Date

ForumPharmacy.com/
2020-Virtual-Symposium

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- For those sharing a computer to view the webinar:
  - Submit your sign-in sheet to the email address listed on the form
  - Each participant will then be emailed a link to the evaluation
  - Each person must complete an evaluation to receive CE credit
- Certificates should be emailed in about 30 days

THANK YOU!