



## Assessing Medication Appropriateness in the Elderly

Using Criteria:  
Beers &  
STOPP/START

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## Objective

- To understand 2012 Beers Criteria
- To understand Beers Criteria's impact on clinical decision making for elderly patients
- To understand how is the Beers Criteria and other similar criteria used
- To understand how you can help ensure inappropriate medications are avoided

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## What is the Beers Criteria?

- Original publication in 1991
- Subsequent versions in 1997, 2003, **2012**
- Access to current 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults
  - [http://www.americangeriatrics.org/files/documents/beers/2012BeersCriteria\\_JAGS.pdf](http://www.americangeriatrics.org/files/documents/beers/2012BeersCriteria_JAGS.pdf)

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**Beers Original Intended Use**

- Evaluate inappropriate Rx used in NH residents in “common” situations, but under “certain circumstances” might be appropriate (e.g., using amitriptyline to treat pt with both Parkinson’s disease and depression): Guide for identifying medications for which risks > benefits
- Clinical research on use of Potentially Inappropriate medications (PIMs)
- QA/QI
- Education of students, residents, others

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**Beers Original Intended Use**

- Not meant to be punitive
- Not meant to supersede clinical judgment or an individual patient’s values & needs

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**Beers Criteria: History and Utilization**

- Original 1991 – Nursing home patients
- Updates
  - 1997 All elderly; adopted by CMS in 1999 for nursing home regulation
  - 2003 Era of generalization to Med D, then NCQA, HEDIS
  - 2012 Further adoption into quality measures

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**Specific Aims 2012 AGS Beers Criteria**

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Update 2003 Beers Criteria using a comprehensive, systematic review and grading of evidence

Strategy:

1. Incorporate new evidence
2. Grade the evidence
3. Use an interdisciplinary panel
4. Incorporate exceptions

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**Intent of the AGS 2012 Beers Criteria**

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Goals:

- Improve care those aged 65 and older in all ambulatory and institutional settings by ↓ exposure to PIMS
- Educational tool
- Quality measure
- Research tool

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**Additional Intent/Outcome of the AGS 2012 Beers Criteria?**

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- Underscore the importance of using a team approach & use of non-pharmacological approaches
- Other criteria such as the STOPP/START criteria & Medication Appropriateness Index should be used in a complementary manner

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## Method to Develop 2012 Beers Criteria

**Framework**

- Expert panel
  - 11 members
- IOM 2011 report on guideline development
  - Includes a period for public comment
- Literature search

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## Designations of Quality and Strength of Evidence: ACP Guideline Grading System

**Quality**

- High Evidence
- Moderate Evidence
- Low Evidence

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## Designations of Quality and Strength of Evidence: ACP Guideline Grading System

**Strength of Recommendation**

**Strong**  
Benefits clearly > risks and burden OR risks and burden clearly > benefits

**Weak**  
Benefits finely balanced with risks and burden

**Insufficient**  
Insufficient evidence to determine net benefits or risks

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### Strong Recommendation on Weak Evidence?



	Quality of Evidence			Strength of Recommendation			Reason
	High	Mod	Low	Strong	Weak	Insuff	
Desiccated Thyroid			X	X			Older drug, better alternatives
Ticlopidine		X		X			Safer alternative
Pentazocine			X	X			Safer alternative

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### Not included in Beer's List



- Drugs with risks not unique to elderly
  - Purpose is for PIMs specific to elderly
- Drug-drug interactions
  - Not unique to elderly
- List of alternatives
  - Too complex, requires patient specific judgment

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### Beers List Tables



- Table 2\* – PIM list (with some selective caveats)
- Table 3\* – PIMs due to Drug – Disease/Syndrome Interaction
- Table 4\* – Medications to be used with caution
- Table 5 – Medications moved or modified
- Table 6 – Medications removed
- Table 7 – Medications added
- Table 8 – Antipsychotics
- Table 9 – Drugs with strong anticholinergic properties

\* In Pocket Card

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## Potentially Inappropriate Medications



<b>Barbiturates</b> <ul style="list-style-type: none"> <li>■ Amobarbital<sup>®</sup></li> <li>■ Butabarbital<sup>®</sup></li> <li>■ Secobarbital</li> <li>■ Methobarbital<sup>®</sup></li> <li>■ Phenobarbital<sup>®</sup></li> <li>■ Secobarbital<sup>®</sup></li> </ul>	<b>Avoid.</b> High rate of physical dependence; tolerance to sleep benefits; greater risk of overdose at low dosages. QE = High; SR = Strong
<b>Benzodiazepines</b> <b>Short- and intermediate-acting:</b> <ul style="list-style-type: none"> <li>■ Alprazolam</li> <li>■ Estazolam</li> <li>■ Lorazepam</li> <li>■ Oxazepam</li> <li>■ Temazepam</li> <li>■ Triazolam</li> </ul> <b>Long-acting:</b> <ul style="list-style-type: none"> <li>■ Chlorazepate</li> <li>■ Clonidiazepoxide</li> <li>■ Clonidiazepoxide-amitriptyline</li> <li>■ Clonidum-chlordiazepoxide</li> <li>■ Clonazepam</li> <li>■ Diazepam</li> <li>■ Flurazepam</li> <li>■ Quazepam</li> </ul>	<b>Avoid benzodiazepines (any type) for treatment of insomnia, agitation, or delirium.</b> Older adults have increased sensitivity to benzodiazepines and decreased metabolism of long-acting agents. In general, all benzodiazepines increase risk of cognitive impairment, delirium, falls, fractures, and motor vehicle accidents in older adults. May be appropriate for seizure disorders, rigid eye movement, sleep disorders, benzodiazepine withdrawal, ethanol withdrawal, severe generalized anxiety disorder, preprocedural anesthesia, end-of-life care. QE = High; SR = Strong

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## Potentially Inappropriate Medications



<b>Anti-infective</b> Nitrofurantoin	<b>Avoid for long-term suppression; avoid in patients with CrCl &lt;60 mL/min.</b> Potential for pulmonary toxicity; safer alternatives available; lack of efficacy in patients with CrCl <60 mL/min due to inadequate drug concentration in the urine. QE = Moderate; SR = Strong
<b>Cardiovascular</b> Alpha <sub>1</sub> blockers <ul style="list-style-type: none"> <li>■ Doxazosin</li> <li>■ Prazosin</li> <li>■ Terazosin</li> </ul>	<b>Avoid use as an antihypertensive.</b> High risk of orthostatic hypotension; not recommended as routine treatment for hypertension; alternative agents have superior risk/benefit profile. QE = Moderate; SR = Strong

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## Drugs to Avoid



Organ System or TC or Drug	Rationale	Recommend	Quality of Evidence	Strength of Recommend.
Antipsychotics (conventional or atypical)	Increase CVA and CV mortality in dementia	Avoid unless danger to self/others and non pharm has failed	Moderate	Strong
Insulin, sliding scale	Hypoglycemia risk	Avoid	Moderate	Strong
Chlorpropamide Glyburide	Hypoglycemia risk	Avoid	High	Strong

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## Drugs to Avoid

Organ System or TC or Drug	Rationale	Recommend.	Quality of Evidence	Strength of Recommendation
Megestrol	Minimal effect on weight; risk of thrombotic events and death	Avoid	Moderate	Strong
Metoclopramide	EPS and TD	Avoid, unless gastroparesis	Moderate	Strong
Non-COX NSAIDs, oral	GI bleeding; Protection w/ PPIs or misoprostol	Avoid chronic use	Moderate	Strong

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## Drugs to Avoid

Organ System or TC or Drug	Rationale	Recommend.	Quality of Evidence	Strength of Recommendation
Estrogens with or w/o progestin	Carcinogenic potential, lack of efficacy in dementia/CV dz prevention	Avoid oral and topical patch. Topical cream safe and effective for vaginal symptoms	High	Strong
Muscle Relaxants	Ineffective at tolerated doses, antichol, falls	Avoid	Moderate	Strong

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## Drug-disease/syndrome Interactions

Disease or Syndrome	Drug	Rationale	Recommend.	Quality of Evidence	Strength of Recommendation
Insomnia	Oral decongestants Stimulants Theobromines	CNS stimulant effects	Avoid	Moderate	Strong

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## Drug-disease/syndrome Interactions

Delirium	All TCAs Anticholinergics (see online for full list) Benzodiazepines Chlorpromazine Corticosteroids H <sub>1</sub> -receptor antagonist Meprobamate Sedative hypnotics Thioridazine	<b>Avoid.</b>  Avoid in older adults with or at high risk of delirium because of inducing or worsening delirium in older adults; if discontinuing drugs used chronically, taper to avoid withdrawal symptoms.  QE = Moderate; SR = Strong
Dementia & cognitive impairment	Anticholinergics (see online for full list) Benzodiazepines H <sub>1</sub> -receptor antagonists Zolpidem Antipsychotics, chronic and as-needed use	<b>Avoid.</b> Avoid due to adverse CNS effects. Avoid antipsychotics for behavioral problems of dementia unless non-pharmacologic options have failed and patient is a threat to themselves or others. Antipsychotics are associated with an increased risk of cerebrovascular accident (stroke) and mortality in persons with dementia. QE = High; SR = Strong

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## Use with Caution

Drug	Rationale	Recommend	Quality of Evidence	Strength of Recommendation
Dabigatran	Risk of bleeding; lack of evidence if CrCl < 30mL/min	Use with caution if $\geq 75$ or if CrCl < 30mL/min	Moderate	Weak
Drugs linked to SIADH/ Hyponatremia (eg SSRI, TCA, CBZ, antipsychotics)	May exacerbate or cause SIADH/ hyponatremia; monitor	Use with caution	Moderate	Strong

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## Use with Caution

Antipsychotics Carbamazepine Carboplatin Cisplatin Mirazapine SNRIs SSRIs TCAs Vinorelbine	<b>Use with caution.</b>  May exacerbate or cause SIADH or hyponatremia; need to monitor sodium level closely when starting or changing dosages in older adults due to increased risk.  QE = Moderate; SR = Strong
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### Previous Drugs to Avoid Dropped in 2012 AGS Beers Criteria



Cyclandelate	• Off market
Guanethidine, guanadrel	• Off market
Propoxyphene	• Off market
Stimulant laxative, chronic	• New safety info
FeSo4 325mg daily	• Not geriatric specific
Amphetamines/anorexics	• Risk not geriatric specific
Cimetidine and Fluoxetine	• DDI risk not geri. specific
Ethacrynic acid	• Weak ototoxicity evidence

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### Drug-Disease Interactions Dropped from 2003 Beers Criteria



Drug/Drug Class	Disease	Rationale
CNS stimulants	Anorexia	Limited evidence
Antithrombotic	Bleed. dx/warfarin	Drug-drug interaction
Disopyramide	CHF	Seen with others
High sodium agents	CHF	Few agents
BZD, Beta blockers,	COPD	New safety evidence
BZD	Depression	Limited evidence
Select $\alpha$ blockers	Depression	Only in high doses
Barbiturates	Dementia	Low use
CNS stimulants	Dementia/HTN	Limited evidence
MAOIs	Insomnia	Occurs with only some
Olanzapine	Obesity	Weight gain seen with all

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### Uses of the Beers Criteria in Clinical Care



Quality Prescribing	Quality Performance Measurement
<ul style="list-style-type: none"> <li>▪ Patient-centered</li> <li>▪ Patient-specific goals</li> <li>▪ Tolerance for deviation from EBM care guidelines</li> <li>▪ Requires system-level approaches</li> </ul>	<ul style="list-style-type: none"> <li>▪ Population-centered</li> <li>▪ Benchmark goals</li> <li>▪ Less tolerance for deviation from EBM care guidelines</li> <li>▪ Requires system-level approaches</li> </ul>

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**Beers Criteria only Part of Quality Prescribing**



- Quality prescribing includes
  - Correct drug for correct diagnosis
  - Appropriate dose (label; dose adjustments for comorbidity, drug-drug interactions)
  - Avoiding underuse of potentially important medications (e.g., bisphosphonates for osteoporosis)
  - Avoiding overuse (e.g., antibiotics)
  - Avoiding potentially inappropriate drugs
  - Avoiding withdrawal effects with discontinuation
  - Consideration of cost

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**Perceived Barriers to Appropriate Prescribing**



- Polypharmacy, can't review such a long list
- "Best" drugs may cost too much
- Worrying about drug interactions if making drug changes
- Time involved

Ramaswamy R et al, J Eval Clin Pract 2011

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**Perceived Barriers to Appropriate Prescribing**



- Difficulty communicating with pt's other prescribing clinicians
- Lack of knowledge re Beers
- Lack of therapeutic alternatives
- Patient unwillingness to change
- Discomfort changing a med another clinician prescribed

Ramaswamy R et al, J Eval Clin Pract 2011

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### Why are BEERS Drugs Used

- All of the previous mentioned barriers
- RN/Family Request
- Lack of Tested Non Drug Alternatives
- Multiple prescribers
- Risk of drug is less than risk of condition
- Palliative Care and other special cases and populations

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### Reducing PIMS

"Pt. takes Tylenol PM at home for sleep and would like it or it's equivalent ordered for here."  
Thanks

- 88 Year Old Patient Falling at Home
- Sticky Note from Nurse
- Importance of ALL PLAYERS in reducing PIMS

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### What can nurses do?

- Initiate non-drug approaches
- *Admission* and discharge teaching with family and patient about risks and alternatives to PIMS
- Review scheduled and non-scheduled meds when the older adult has a change in function
- Observe and communicate medication responses
- For behavioral issues—Use pharm as a last resort T-A-DA Anticipate, Tolerate, Don't Agitate further (Flaherty & Tumos, 2011)

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### What can interdisciplinary team members do?

- Lead inter-professional practice rounds with other team members/disciplines using AGS BC POCKETCARDS




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### What can nurses do?

- Involve family & caregivers in care and non-drug approach—consider patient values/preferences
- For more----see teaching case study in June 2012 Journal of Gerontological Nursing on AGS Website under related resources
- [http://www.americangeriatrics.org/health\\_care\\_professionals/clinical\\_practice/clinical\\_guidelines\\_recommendations/2012/](http://www.americangeriatrics.org/health_care_professionals/clinical_practice/clinical_guidelines_recommendations/2012/)

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### Interventions to Decrease Use of PIMs

- NonPharm Interventions
- Education
- Geriatric Medicine services
- Pharmacist interventions
- Computerized support systems
- Regulation

Kaur, S et al. Drugs Aging 2009

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## Other Tools/Resources

- STOPP Criteria 2006
- START Criteria 2006
- Medication Appropriateness Index

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## STOPP Criteria

### Screening Tool of Older Persons' potentially inappropriate Prescriptions

65 rules relating to the most common and the most potentially dangerous instances of inappropriate prescribing in older people

O'Mahony D, Gallagher P, Ryan C, Byrne S, Hamilton H, Barry P, O'Connor M, Kennedy J. STOPP & START criteria: A new approach to detecting potentially inappropriate prescribing in old age. *European Geriatric Medicine*. 2010 Jan 6; 1(1):45-51.

Hamilton H, Gallagher P, Ryan C, Byrne S, O'Mahony D. Potentially inappropriate medications defined by STOPP criteria and the risk of adverse drug events in older hospitalised patients. *Arch Intern Med*. 2011 Jun 13; 171(11):1013-8.

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## Gastrointestinal

**Diphenoxylate, loperamide or codeine phosphate for treatment of:**

- **diarrhoea of unknown cause** (*risk of delayed diagnosis, may exacerbate constipation with overflow diarrhoea, may precipitate toxic megacolon in inflammatory bowel disease, may delay recovery in unrecognised gastroenteritis*).
- **infective gastroenteritis i.e. bloody diarrhoea, high fever or severe systemic toxicity** (*risk of exacerbation or protraction of infection*)

**PPI for peptic ulcer disease at full therapeutic dosage for > 8 weeks** (*dose reduction or earlier discontinuation indicated*).

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## Urology

**Bladder antimuscarinic drugs:**

- with dementia (*risk of increased confusion, agitation*).
- with chronic glaucoma (*risk of acute exacerbation of glaucoma*).
- with chronic constipation (*risk of exacerbation of constipation*).
- with chronic prostatism (*risk of urinary retention*).

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## Drugs that adversely affect those prone to falls

**Benzodiazepines** (*sedative, may cause reduced sensorium, impair balance*).

**Neuroleptic drugs** (*may cause gait dyspraxia, Parkinsonism*).

**First generation antihistamines** (*sedative, may impair sensorium*).

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## START Criteria

**S**creening **T**ool to **A**lert doctors to the **R**ight **T**reatment

22 rules relating to common instances of prescribing omission

O'Mahony D, Gallagher P, Ryan C, Byrne S, Hamilton H, Barry P, O'Connor M, Kennedy J. STOPP & START criteria: A new approach to detecting potentially inappropriate prescribing in old age. *European Geriatric Medicine*. 2010 Jan 6; 1(1):45-51.

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## Cardiovascular

Warfarin in the presence of chronic atrial fibrillation, where there is no contraindication to warfarin.

Antihypertensive therapy where systolic BP consistently >160 mmHg, where antihypertensive therapy is not contraindicated.

Statin therapy in patients with documented history of coronary, cerebral or peripheral vascular disease, where the patients' functional status remains independent for activities of daily living and life expectancy is more than 5 years

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## Medication Appropriateness Index

1. Is there an indication for the drug?
2. Is the medication effective for the condition?
3. Is the dosage correct?
4. Are the directions correct?
5. Are the directions practical?

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## Medication Appropriateness Index

6. Are there clinically significant drug-drug interactions?
7. Are there clinically significant drug-disease/condition interactions?
8. Is there unnecessary duplication with other drugs?
9. Is the duration of therapy acceptable?
10. Is this drug the least expensive alternative compared with others of equal usefulness?

*Arch Intern Med. Vol 166, March 27, 2006*

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### Summary: AGS 2012 Beers Criteria

- 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

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### Limitations

- Evidence base available
- What's not covered
  - Dose-adjustments for kidney function
  - Drug-drug interactions
  - Therapeutic duplication
- Special populations within geriatrics
- Search strategy - missed information

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### Take homes

- Don't let the perfect be the enemy of the good
- Beers PIMs are only part of appropriate prescribing
- Target initiatives to high prevalence/high severity meds (based on local data, where possible)
- Stopping meds should be done with same consideration as starting
- Beers Criteria = Patient-centered care

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**Potentially Inappropriate**

**Caution**

- Slow down
- Monitor closely for effectiveness & adverse events
- Why is the patient on this drug?

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**Potentially Inappropriate**

**Caution**

- Is this drug appropriate?
- Does the patient still require treatment?
- Does the risk of this medication outweigh the benefit?
- Is this the best drug for my patient? Is there a safer or more effective alternative?

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**Remember....**

- Not intended to mandate drug prescribing
- Intended to serve as guidance to good geriatric care & principles
- Not meant to supersede the clinical judgement of the prescriber
- To help providers best monitor older patients, reduce risk & prevent harm that all too commonly occurs with medication use

Fick D & Resnick B. 2012 Beers Criteria Update: How Should Practicing Nurses Use the Criteria? Journal of Gerontological Nursing, June 2012 - Volume 38 - Issue 6: 3-5

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## Tools You Can Use

**Pocket Card**  
<http://www.americangeriatrics.org/files/documents/beers/PrintableBeersPocketCard.pdf>

**AGS Guidelines**  
[http://www.americangeriatrics.org/health\\_care\\_professionals/clinical\\_practice/clinical\\_guidelines\\_recommendations/2012](http://www.americangeriatrics.org/health_care_professionals/clinical_practice/clinical_guidelines_recommendations/2012)

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## Tools You Can Use: App

Get Your AGS Mobile Apps Today!



By STEMM, Inc.

**Description:**

AGS: The AGS App is a comprehensive resource for geriatricians and other healthcare providers. It provides access to the AGS Beers Criteria, AGS Guidelines, and AGS Clinical Practice Guidelines. The app is available for both iOS and Android devices.

**What's New in Version 5.1.1.18:**

**Screenhots:**

- Beers Criteria
- Geriatrics Cultural Competency
- AGS GerPsych Consult
- AGS Guidelines
- AGS Clinical Practice Guidelines

**Evidence Ratings:**

AGS: The AGS App is a comprehensive resource for geriatricians and other healthcare providers. It provides access to the AGS Beers Criteria, AGS Guidelines, and AGS Clinical Practice Guidelines. The app is available for both iOS and Android devices.

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## Questions

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\*Some of the slides in this presentation were used or adopted from AGS BEERS Criteria Training Slides

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