

Assessing Medication Appropriateness in the Elderly: Using Beers & STOPP START Criteria

Julia Bareham

BSc, BSP, MSc Candidate

julia@rxfiles.ca

RxFiles Academic Detailing
Program



RxFiles



- Academic detailing program
- Not-for-profit
- Funded by a grant from Saskatchewan Health
- 1997: began as a service to Saskatoon family physicians
- 2011: expanded to provide services to long-term care
- This program exists to support health care professionals in making the best possible drug therapy choices for patients.
- Value is found in the balanced perspectives on drug effectiveness, safety, cost, clinical evidence & patient considerations.

www.rxfiles.ca

www.shirp.ca



Objectives

- To understand why the 2012 Beers Criteria is important in clinical decision making & relevant to caring for our patients
 - What is the Beers Criteria?
 - Specific aim & intended use
 - Categories of medications
 - Orientation to the pocket guide
 - Quality of evidence & strength of recommendations
 - Tables 1-3
 - Where does Beers fit into the big picture?
 - What are some limitations?
 - Are Beers drugs prescribed in Sask LTC?
 - Other tools / resources (STOPP & START)



What is the Beers Criteria?

- Originally conceived in 1991 by Mark Beers, MD (geriatrician)
- 1991 → 1997 → 2003 → 2012
- *AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults*
- AKA Beers List, Beers Criteria

ORIGINAL INVESTIGATION

Updating the Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Results of a US Consensus Panel of Experts

Donna M. Fick, PhD, RN; James W. Cooper, PhD, RPh; William E. Wade, PharmD, FASHP, FCCP; Jennifer L. Waller, PhD; J. Ross MacLean, MD; Mark H. Beers, MD

Backgrounds: Medication toxic effects and drug-related problems can have profound medical and safety consequences for older adults and economically affect the health care system. The purpose of this initiative was to revise and update the Beers criteria for potentially inappropriate medication use in adults 65 years and older in the United States.

Methods: This study used a modified Delphi method, a set of procedures and methods for formulating a group judgment for a subject matter in which precise information is lacking. The criteria reviewed covered 2 types of statements: (1) medications or medication classes that should generally be avoided in persons 65 years or older because they are either ineffective or they pose unnecessarily high risk for older persons and a safer alternative is available and (2) medications that should not be used in older persons known to have specific medical conditions.

Results: This study identified 48 individual medications or classes of medications to avoid in older adults and their potential concerns and 20 diseases/conditions and medications to be avoided in older adults with these conditions. Of these potentially inappropriate drugs, 66 were considered by the panel to have adverse outcomes of high severity.

Conclusions: This study is an important update of previously established criteria that have been widely used and cited. The application of the Beers criteria and other tools for identifying potentially inappropriate medication use will continue to enable providers to plan interventions for decreasing both drug-related costs and overall costs and thus minimize drug-related problems.

Arch Intern Med. 2003;163:2716-2724

TOXIC EFFECTS of medication and drug-related problems can have profound medical and safety consequences for older adults and economically affect the health care system. Thirty percent of hospital admissions in elderly patients may be linked to drug-related problems or drug toxic effects.¹ Adverse drug events (ADEs) have been linked to preventable problems in elderly patients such as depression, constipation, falls, immobility, confusion, and hip fractures.^{1,2} A 1997 study of ADEs found that 33% of ambulatory older adults experienced an ADE and 20% required health care services (physician, emergency department, or hospitalization) for the ADE.³ Some two thirds of nursing facility residents have ADEs over a 4-year period.⁴ Of these ADEs, 1 in 7 results in hospitalization.⁵

Recent estimates of the overall human and economic consequences of medication-related problems vastly exceed the findings of the Institute of Medicine (IOM) on deaths from medical errors, estimated to cost the nation \$8 billion annually.⁶ In 2000, it is estimated that medication-related problems caused 106,000 deaths annually at a cost of \$85 billion.⁶ Others have calculated the cost of medication-related problems to be \$7.6 billion to ambulatory care, \$20 billion to hospitals, and \$4 billion to nursing home facilities.^{7,8} If medication-related problems were ranked as a disease by cause of death, it would be the fifth leading cause of death in the United States.⁹ The prevention and recognition of drug-related problems in elderly patients and other vulnerable populations is one of the principal health care quality and safety issues for this decade.

CME course available at www.archinternmed.com

The aforementioned IOM report has focused increased attention on funding solutions for unsafe medication practices, polypharmacy, and drug-related problems in the care of older adults. There are many ways to define medication-related prob-

ARCH INTERN MED VOL 163, DEC 22, 2003 WWW.ARCHINTERNMED.COM
© 2003 American Medical Association. All rights reserved.
DOI: 10.1093/archinte/163.25.2716
REPRINTED WITH CORRECTIONS





- Identifies medications that pose potential risks outweighing potential benefits for people ≥ 65 years



- Informs clinical decision-making concerning the prescribing of medications for older adults



- Improves medication safety & quality of care





Intended Use

Goal: To improve care of older adults by ↓ exposure to ***Potentially*** Inappropriate Medications (PIMs)

- *Guide* for identifying medications for which risks > benefits
- Not meant to be punitive
- Not meant to supersede clinical judgment or an individual patient's values & needs
- Underscore the importance of using a team approach & use of non-pharmacological approaches
- Implicit criteria such as the STOPP/START criteria & Medication Appropriateness Index should be used in a complementary manner

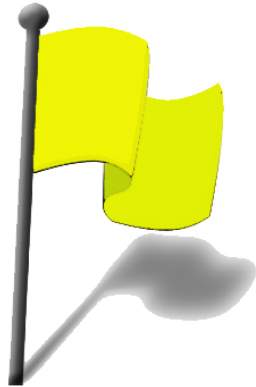


2012 AGS Beers Criteria - Categories

1 st Category	2 nd Category	 3 rd Category 
<p>PIMs for older people:</p> <ul style="list-style-type: none"> • Pose high risks of adverse effects <u>OR</u> • Appear to have limited effectiveness in older pts <p><u>AND</u></p> <ul style="list-style-type: none"> • There are alternatives to these medications 	<p>PIMs for older people:</p> <ul style="list-style-type: none"> • Who have certain diseases/disorders <ul style="list-style-type: none"> – b/c these drugs may exacerbate the specified health problems 	<p>Use with caution in older adults</p> <ul style="list-style-type: none"> • May be associated with more risks than benefits in general <ul style="list-style-type: none"> – However, may be the best choice for a particular individual if administered with caution
<ul style="list-style-type: none"> • 53 medications or medication classes that should be avoided in older adults 		<ul style="list-style-type: none"> • 14 that should be used with caution



Caution vs Potentially Inappropriate



Caution

- Slow down
- Monitor closely for effectiveness & adverse events



Stop & Ask – Is this drug appropriate?

- Why is the patient on this drug?
- 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?



Print off the Pocket Card



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

Open access, available for free.



AGS BEERS CRITERIA FOR POTENTIALLY INAPPROPRIATE MEDICATION USE IN OLDER ADULTS

FROM THE AMERICAN GERIATRICS SOCIETY

This clinical tool, based on *The AGS 2012 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults (AGS 2012 Beers Criteria)*, has been developed to assist healthcare providers in improving medication safety in older adults. Our purpose is to inform clinical decision-making concerning the prescribing of medications for older adults in order to improve safety and quality of care.

Originally conceived of in 1991 by the late Mark Beers, MD, a geriatrician, the *Beers Criteria* catalogues medications that cause adverse drug events in older adults due to their pharmacologic properties and the physiologic changes of aging. In 2011, the AGS undertook an update of the criteria, assembling a team of experts and funding the development of the *AGS 2012 Beers Criteria* using an enhanced, evidence-based methodology. Each criterion is rated (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 together with accompanying resources can be viewed online at www.americangeriatrics.org.

INTENDED USE

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

- This should be viewed as a guide for identifying medications for which the risks of 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.
- Implicit criteria such as the STOPP/START criteria and Medication Appropriateness Index should be used in a complementary manner with the 2012 AGS *Beers Criteria* to guide clinicians in making decisions about safe medication use in older adults.

The criteria are not applicable in all circumstances (eg, patient's receiving palliative and hospice care). If a clinician 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 the potential for an adverse drug effect can be incorporated into the medical record and prevented or detected early.

TABLE 1: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
<i>Anticholinergics (excludes TCAs)</i>	
First-generation antihistamines (as single agent or as part of combination products) <ul style="list-style-type: none"> ■ Brompheniramine ■ Carbinoxamine ■ Chlorpheniramine ■ Clemastine ■ Cyproheptadine ■ Dexbrompheniramine ■ Dexchlorpheniramine ■ Diphenhydramine (oral) ■ Doxylamine ■ Hydroxyzine ■ Promethazine ■ Triprolidine 	<p>Avoid.</p> <p>Highly anticholinergic; clearance reduced with advanced age, and tolerance develops when used as hypnotic; increased risk of confusion, dry mouth, constipation, and other anticholinergic effects/toxicity.</p> <p>Use of diphenhydramine in special situations such as acute treatment of severe allergic reaction may be appropriate.</p> <p>QE = High (Hydroxyzine and Promethazine), Moderate (All others); SR = Strong</p>
Antiparkinson agents <ul style="list-style-type: none"> ■ Benzotropine (oral) ■ Trihexyphenidyl 	<p>Avoid.</p> <p>Not recommended for prevention of extrapyramidal symptoms.</p>

Table 1 (continued from page 1)

TABLE 1: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Antispasmodics <ul style="list-style-type: none"> ■ Belladonna alkaloids ■ Clidinium-chlordiazepoxide ■ Dicyclomine ■ Hyoscyamine ■ Propantheline ■ Scopolamine 	<p>Avoid except in short-term palliative care to decrease oral secretions.</p> <p>Highly anticholinergic, uncertain effectiveness.</p> <p>QE = Moderate; SR = Strong</p>
<i>Antithrombotics</i>	
Dipyridamole, oral short-acting* (does not apply to the extended-release combination with aspirin)	<p>Avoid.</p> <p>May cause orthostatic hypotension; more effective alternative available; IV form acceptable for use in cardiac stress testing.</p> <p>QE = Moderate; SR = Strong</p>
Ticlopidine*	<p>Avoid.</p> <p>Safer, effective alternatives available.</p> <p>QE = Moderate; SR = Strong</p>
<i>Anti-infective</i>	
Nitrofurantoin	<p>Avoid for long-term suppression; avoid in patients with CrCl <60 mL/min.</p> <p>Potential for pulmonary toxicity; safer alternatives available; low efficacy in patients with CrCl <60 mL/min due to inadequate concentration in the urine.</p> <p>QE = Moderate; SR = Strong</p>
<i>Cardiovascular</i>	
Alpha ₁ blockers <ul style="list-style-type: none"> ■ Doxazosin ■ Prazosin ■ Terazosin 	<p>Avoid use as an antihypertensive.</p> <p>High risk of orthostatic hypotension; not recommended as first-line treatment for hypertension; alternative agents have superior benefit profile.</p> <p>QE = Moderate; SR = Strong</p>
Alpha agonists <ul style="list-style-type: none"> ■ Clonidine ■ Guanabenz* ■ Guanfacine* ■ Methyldopa* ■ Reserpine (>0.1 mg/day)* 	<p>Avoid clonidine as a first-line antihypertensive. Avoid others as listed.</p> <p>High risk of adverse CNS effects; may cause bradycardia and orthostatic hypotension; not recommended as routine treatment for hypertension.</p> <p>QE = Low; SR = Strong</p>
Antiarrhythmic drugs (Class Ia, Ic, III) <ul style="list-style-type: none"> ■ Amiodarone ■ Dofetilide ■ Dronedarone ■ Flecainide ■ Ibutilide ■ Procainamide ■ Propafenone ■ Quinidine ■ Sotalol 	<p>Avoid antiarrhythmic drugs as first-line treatment of atrial fibrillation.</p> <p>Data suggest that rate control yields better balance of benefits and harms than rhythm control for most older adults.</p> <p>Amiodarone is associated with multiple toxicities, including thyroid disease, pulmonary disorders, and QT interval prolongation.</p> <p>QE = High; SR = Strong</p>
Disopyramide*	<p>Avoid.</p> <p>Disopyramide is a potent negative inotrope and therefore may induce heart failure in older adults; strongly anticholinergic; other antiarrhythmic drugs preferred.</p> <p>QE = Low; SR = Strong</p>
Dronedarone	<p>Avoid in patients with permanent atrial fibrillation or heart failure.</p> <p>Worse outcomes have been reported in patients taking dronedarone who have permanent atrial fibrillation or heart failure; rate control is preferred over rhythm control for atrial fibrillation.</p> <p>QE = Moderate; SR = Strong</p>

Yes, there's an app for that!

\$2.99

By USBMIS, Inc

Open iTunes to buy and download apps.



[View In iTunes](#)

+ This app is designed for both iPhone and iPad

Free

Category: [Medical](#)
Updated: Apr 24, 2012
Version: 3.3.1_36
Size: 9.3 MB
Language: English
Seller: USBMIS, Inc.
© American Geriatrics Society 2012
Rated 4+

Requirements: Compatible with iPhone, iPod touch, and iPad. Requires iOS 3.1.2 or later

Customer Ratings

Current Version:
★★★★ 6 Ratings
All Versions:
★★★★ 12 Ratings

More by USBMIS, Inc



[TABASCON Pharmacokinetics](#)

Description

iGeriatrics combines all of the American Geriatrics Society's free clinical information offerings into one easy to use application. Aimed at healthcare providers and covering a wide range of topics relating to older adults, from medication safety to cross-cultural assistance, iGeriatrics is an excellent introduction to the information and services

[USBMIS, Inc Web Site](#) ▶ [iGeriatrics Support](#) ▶

[...More](#)

What's New in Version 3.3.1_36

Combined American Geriatric Society's free offerings into an all-in-one appl

Screenshots

iPhone | iPad



Get Your AGS Mobile Apps Today!



A walk through the pocket guide....

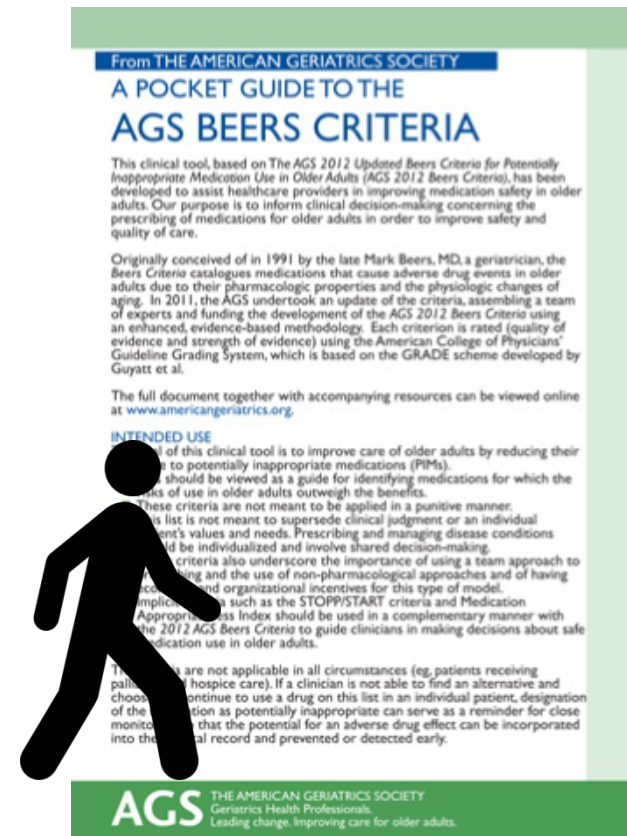
- Quality of Evidence

- High
- Moderate
- Low

- Strength of Recommendation

- Strong
- Weak
- Insufficient

Validated literature evaluation tool to support recommendations



BEERS Tables

Table 1 – PIMs list (with select caveats)

Table 2 – PIMs due to Drug-Disease/Syndrome Interactions

Table 3 – Medications to be used with



From THE AMERICAN GERIATRICS SOCIETY

A POCKET GUIDE TO THE AGS BEERS CRITERIA

This clinical tool, based on The AGS 2012 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults (AGS 2012 Beers Criteria), has been developed to assist healthcare providers in improving medication safety in older adults. Our purpose is to inform clinical decision-making concerning the prescribing of medications for older adults in order to improve safety and quality of care.

Originally conceived of in 1991 by the late Mark Beers, MD, a geriatrician, the Beers Criteria catalogues medications that cause adverse drug events in older adults due to their pharmacologic properties and the physiologic changes of aging. In 2011, the AGS undertook an update of the criteria, assembling a team of experts and funding the development of the AGS 2012 Beers Criteria using an enhanced, evidence-based methodology. Each criterion is rated (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 together with accompanying resources can be viewed online at www.americangeriatrics.org.

INTENDED USE

The goal of this clinical tool is to improve care of older adults by reducing their exposure to potentially inappropriate medications (PIMs).

- This should be viewed as a guide for identifying medications for which the risks of 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.
- Implicit criteria such as the STOPP/START criteria and Medication Appropriateness Index should be used in a complementary manner with the 2012 AGS Beers Criteria to guide clinicians in making decisions about safe medication use in older adults.

The criteria are not applicable in all circumstances (eg, patients receiving palliative and hospice care). If a clinician 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 the potential for an adverse drug effect can be incorporated into the medical record and prevented or detected early.

AGS THE AMERICAN GERIATRICS SOCIETY
Geriatrics Health Professionals
Leading change. Improving care for older adults.

Drugs to Avoid (except if....)

- Table 1 in the pocket guide



AGS BEERS CRITERIA FOR POTENTIALLY INAPPROPRIATE MEDICATION USE IN OLDER ADULTS

FROM THE AMERICAN GERIATRICS SOCIETY

This clinical tool, based on *The AGS 2012 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults (AGS 2012 Beers Criteria)*, has been developed to assist healthcare providers in improving medication safety in older adults. Our purpose is to inform clinical decision-making concerning the prescribing of medications for older adults in order to improve safety and quality of care.

Originally conceived of in 1991 by the late Mark Beers, MD, a geriatrician, the *Beers Criteria* catalogues medications that cause adverse drug events in older adults due to their pharmacologic properties and the physiologic changes of aging. In 2011, the AGS undertook an update of the criteria, assembling a team of experts and funding the development of the AGS 2012 *Beers Criteria* using an enhanced, evidence-based methodology. Each criterion is rated (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 together with accompanying resources can be viewed online at www.americangeriatrics.org.

INTENDED USE

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

- This should be viewed as a guide for identifying medications for which the risks of 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.
- Implicit criteria such as the STOPP/START criteria and Medication Appropriateness Index should be used in a complementary manner with the 2012 AGS *Beers Criteria* to guide clinicians in making decisions about safe medication use in older adults.

The criteria are not applicable in all circumstances (eg, patient's receiving palliative and hospice care). If a clinician 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 the potential for an adverse drug effect can be incorporated into the medical record and prevented or detected early.

TABLE 1: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults	
Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Anticholinergics (excludes TCAs)	
First-generation antihistamines (as single agent or as part of combination products)	Avoid.
<ul style="list-style-type: none"> ■ Brompheniramine ■ Carbinoxamine ■ Chlorpheniramine ■ Clemastine ■ Cyproheptadine ■ Dexbrompheniramine ■ Dexchlorpheniramine ■ Diphenhydramine (oral) ■ Doxylamine ■ Hydroxyzine ■ Promethazine ■ Triprolidine 	Highly anticholinergic; clearance reduced with advanced age, and tolerance develops when used as hypnotic; increased risk of confusion, dry mouth, constipation, and other anticholinergic effects/toxicity.
	Use of diphenhydramine in special situations such as acute treatment of severe allergic reaction may be appropriate.
	QE = High (Hydroxyzine and Promethazine), Moderate (All others); SR = Strong
Antiparkinson agents	Avoid.
<ul style="list-style-type: none"> ■ Benztropine (oral) ■ Trihexyphenidyl 	Not recommended for prevention of extrapyramidal symptoms with antipsychotics; more effective agents available for treatment of Parkinson disease.
	QE = Moderate; SR = Strong

<p>Antispasmodics</p> <ul style="list-style-type: none"> ■ Belladonna alkaloids ■ Clidinium-chlordiazepoxide ■ Dicyclomine ■ Hyoscyamine ■ Propantheline ■ Scopolamine 	<p>Avoid except in short-term palliative care to decrease oral secretions.</p> <p>Highly anticholinergic, uncertain effectiveness.</p> <p><i>QE = Moderate; SR = Strong</i></p>
<p>Antithrombotics</p>	
<p>Dipyridamole, oral short-acting* (does not apply to the extended-release combination with aspirin)</p>	<p>Avoid.</p> <p>May cause hypotension; more effective alternatives available. IV form available for use in cardiac stress testing.</p> <p><i>QE = Moderate; SR = Strong</i></p>
<p>Ticlopidine*</p>	<p>Avoid.</p> <p>Safer, effective alternatives available.</p> <p><i>QE = Moderate; SR = Strong</i></p>
<p>Anti-infective</p>	
<p>Nitrofurantoin</p>	<p>Avoid for long-term suppression; avoid in patients with CrCl <60 mL/min.</p> <p>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.</p> <p><i>QE = Moderate, SR = Strong</i></p>
<p>Cardiovascular</p>	
<p>Alpha₁ blockers</p> <ul style="list-style-type: none"> ■ Doxazosin ■ Prazosin ■ Terazosin 	<p>Avoid use as an antihypertensive.</p> <p>High risk of orthostatic hypotension; not recommended as routine treatment for hypertension; alternative agents have superior risk/benefit profile.</p> <p><i>QE = Moderate; SR = Strong</i></p>
<p>Alpha agonists</p> <ul style="list-style-type: none"> ■ Clonidine ■ Guanabenz* 	<p>Avoid clonidine as a first-line antihypertensive. Avoid others as listed.</p> <p>High risk of adverse CNS effects; may cause bradycardia and</p>

<p>Mesoridazine</p>	<p>Highly anticholinergic and greater risk of QT-interval prolongation. QE = Moderate; SR = Strong</p>
<p>Barbiturates</p> <ul style="list-style-type: none"> ■ Amobarbital* ■ Butabarbital* ■ Butalbital ■ Mephobarbital* ■ Pentobarbital* ■ Phenobarbital ■ Secobarbital* 	<p>Avoid.</p> <p>High rate of physical dependence; tolerance to sleep benefits; greater risk of overdose at low dosages.</p> <p>QE = High; SR = Strong</p>
<p>Benzodiazepines <i>Short- and intermediate-acting:</i></p> <ul style="list-style-type: none"> ■ Alprazolam ■ Estazolam ■ Lorazepam ■ Oxazepam ■ Temazepam ■ Triazolam <p><i>Long-acting:</i></p> <ul style="list-style-type: none"> ■ Chlorazepate ■ Chlordiazepoxide ■ Chlordiazepoxide-amitriptyline ■ Clidinium-chlordiazepoxide ■ Clonazepam ■ Diazepam ■ Flurazepam ■ Quazepam 	<p>Avoid benzodiazepines (any type) for treatment of insomnia, agitation, or delirium.</p> <p>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.</p> <p>May be appropriate for seizure disorders, rapid eye movement sleep disorders, benzodiazepine withdrawal, ethanol withdrawal, severe generalized anxiety disorder, perioperative anesthesia, end-of-life care.</p> <p>QE = High; SR = Strong</p>
<p>Chloral hydrate*</p>	<p>Avoid.</p> <p>Tolerance occurs within 10 days and risk outweighs the benefits in light of overdose with doses only 3 times the recommended dose. QE = Low; SR = Strong</p>
<p>Meprobamate</p>	<p>Avoid.</p> <p>High rate of physical dependence; very sedating. QE = Moderate; SR = Strong</p>



<p>Growth ho</p>
<p>Insulin, slidi</p>
<p>Megestrol</p>
<p>Sulfonylure</p> <ul style="list-style-type: none"> ■ Chlorpro ■ Glyburid
<p>Gastrointest</p> <p>Metoclopra</p>
<p>Mineral oil,</p>
<p>Trimethobe</p>

Table 1 (continued from page 3)

TABLE 1: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults	
Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Nonbenzodiazepine hypnotics ■ Eszopiclone ■ Zolpidem ■ Zaleplon	Avoid chronic use (>90 days) Benzodiazepine-receptor agonists that have adverse events similar to those of benzodiazepines in older adults (e.g., delirium, falls, fractures); minimal improvement in sleep latency and duration. QE = Moderate; SR = Strong
Ergot mesylates* Isoxsuprine*	Avoid. Lack of efficacy. QE = High; SR = Strong
<i>Endocrine</i>	
Androgens ■ Methyltestosterone* ■ Testosterone	Avoid unless indicated for moderate to severe hypogonadism. Potential for cardiac problems and contraindicated in men with prostate cancer. QE = Moderate; SR = Weak
Desiccated thyroid	Avoid. Concerns about cardiac effects; safer alternatives available. QE = Low; SR = Strong
Estrogens with or without progestins	Avoid oral and topical patch. Topical vaginal cream: Acceptable to use low-dose intravaginal estrogen for the management of dyspareunia, lower urinary tract infections, and other vaginal symptoms. Evidence of carcinogenic potential (breast and endometrium); lack of cardioprotective effect and cognitive protection in older women. Evidence that vaginal estrogens for treatment of vaginal dryness is safe and effective in women with breast cancer, especially at dosages of estradiol <25 mcg twice weekly. QE = High (Oral and Patch), Moderate (Topical); SR = Strong (Oral and Patch), Weak (Topical)
Growth hormone	Avoid, except as hormone replacement following pituitary gland removal. Effect on body composition is small and associated with edema, arthralgia, carpal tunnel syndrome, gynecomastia, impaired fasting

Drug-disease/syndrome Interactions

- Table 2 in the pocket guide



Table 1 (continued from page 4)

TABLE 1: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Pain Medications	
Meperidine	Avoid. Not an effective oral analgesic in dosages commonly used; may cause neurotoxicity; safer alternatives available. QE = High; SR = Strong
Non-COX-selective NSAIDs, oral <ul style="list-style-type: none"> ■ Aspirin >325 mg/day ■ Diclofenac ■ Diflunisal ■ Etodolac ■ Fenoprofen ■ Ibuprofen ■ Ketoprofen ■ Meclufenamate ■ Mefenamic acid ■ Meloxicam ■ Nabumetone ■ Naproxen ■ Oxaprozin ■ Piroxicam ■ Sulindac ■ Tolmetin 	Avoid chronic use unless other alternatives are not effective and patient can take gastroprotective agent (proton-pump inhibitor or misoprostol). Increases risk of GI bleeding/peptic ulcer disease in high-risk groups, including those ≥75 years old or taking oral or parenteral corticosteroids, anticoagulants, or antiplatelet agents. Use of proton pump inhibitor or misoprostol reduces but does not eliminate risk. Upper GI ulcers, gross bleeding, or perforation caused by NSAIDs occur in approximately 1% of patients treated for 3–6 months, and in about 2%–4% of patients treated for 1 year. These trends continue with longer duration of use. QE = Moderate; SR = Strong
Indomethacin Ketorolac, includes parenteral	Avoid. Increases risk of GI bleeding/peptic ulcer disease in high-risk groups (See Non-COX selective NSAIDs) Of all the NSAIDs, indomethacin has most adverse effects. QE = Moderate (Indomethacin), High (Ketorolac); SR = Strong
Pentazocine*	Avoid. Opioid analgesic that causes CNS adverse effects, including confusion and hallucinations, more commonly than other narcotic drugs; is also a mixed agonist and antagonist; safer alternatives available. QE = Low; SR = Strong
Skeletal muscle relaxants <ul style="list-style-type: none"> ■ Carisoprodol ■ Chlorzoxazone ■ Cyclobenzaprine ■ Metaxalone ■ Methocarbamol ■ Orphenadrine 	Avoid. Most muscle relaxants poorly tolerated by older adults, because of anticholinergic adverse effects, sedation, increased risk of fractures; effectiveness at dosages tolerated by older adults is questionable. QE = Moderate; SR = Strong
*Infrequently used drugs. Table 1 Abbreviations: ACEI, angiotensin converting-enzyme inhibitors; ARB, angiotensin receptor blockers; CNS, central nervous system; COX, cyclooxygenase; CrCl, creatinine clearance; GI, gastrointestinal; NSAIDs, nonsteroidal anti-inflammatory drugs; SIADH, syndrome of inappropriate antidiuretic hormone secretion; SR, Strength of Recommendation; TCAs, tricyclic antidepressants; QE, Quality of Evidence	

TABLE 2: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults Due to Drug-Disease or Drug-Syndrome Interactions That May Exacerbate the Disease or Syndrome

Disease or Syndrome	Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Cardiovascular		
Heart failure	NSAIDs and COX-2 inhibitors	Avoid. Potential to promote fluid retention and/or exacerbate heart failure. QE = Moderate (NSAIDs, CCBs, Dronedarone), High (Thiazolidinediones (glitazones)), Low (Clotazone); SR = Strong
	Nondihydropyridine CCBs (avoid only for systolic heart failure) <ul style="list-style-type: none"> ■ Diltiazem ■ Verapamil 	
	Pioglitazone, rosiglitazone	
	Cilostazol Dronedarone	

Table 2 (continued from page 5)

TABLE 2: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults Due to Drug-Disease or Drug-Syndrome Interactions That May Exacerbate the Disease or Syndrome

Disease or Syndrome	Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Syncope	Acetylcholinesterase inhibitors (AChEIs) Peripheral alpha blockers ■ Doxazosin ■ Prazosin ■ Terazosin Tertiary TCAs Chlorpromazine, thioridazine, and olanzapine	Avoid. Increases risk of orthostatic hypotension or bradycardia. QE = High (Alpha blockers), Moderate (AChEIs, TCAs and antipsychotics); SR = Strong (AChEIs and TCAs), Weak (Alpha blockers and antipsychotics)
<i>Central Nervous System</i>		
Chronic seizures or epilepsy	Bupropion Chlorpromazine Clozapine Maprotiline Olanzapine Thioridazine Thiothixene Tramadol	Avoid. Lowers seizure threshold; may be acceptable in patients with well-controlled seizures in whom alternative agents have not been effective. QE = Moderate; SR = Strong
Delirium	All TCAs Anticholinergics (see online for full list)	Avoid.



Central Nervous System		
Chronic seizures or epilepsy	Bupropion Chlorpromazine Clozapine Maprotiline Olanzapine Thioridazine Thiothixene Tramadol	Avoid. Lowers seizure threshold; may be acceptable in patients with well-controlled seizures in whom alternative agents have not been effective. <i>QE = Moderate; SR = Strong</i>
Delirium	All TCAs Anticholinergics (see online for full list) Benzodiazepines Chlorpromazine Corticosteroids H ₂ -receptor antagonist Meperidine Sedative hypnotics Thioridazine	Avoid. 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. <i>QE = Moderate; SR = Strong</i>
Dementia & cognitive impairment	Anticholinergics (see online for full list) Benzodiazepines H ₂ -receptor antagonists Zolpidem Antipsychotics, chronic and as-needed use	Avoid. 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. <i>QE = High; SR = Strong</i>
History of falls or fractures	Anticonvulsants Antipsychotics Benzodiazepines	Avoid unless safer alternatives are not available; avoid anticonvulsants except for seizure.

Use with Caution

- Table 3 in the pocket guide

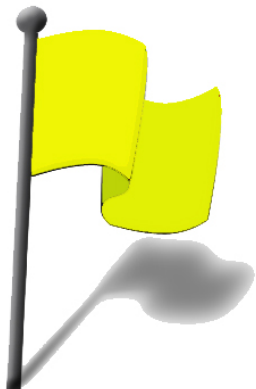


Table 2 (continued from page 7)

TABLE 2: 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults Due to Drug-Disease or Drug-Syndrome Interactions That May Exacerbate the Disease or Syndrome

Disease or Syndrome	Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Lower urinary tract symptoms, benign prostatic hyperplasia	Inhaled anticholinergic agents Strongly anticholinergic drugs, except antimuscarinics for urinary incontinence (see Table 9 for complete list).	Avoid in men. May decrease urinary flow and cause urinary retention. QE = Moderate; SR = Strong (Inhaled agents), Weak (All others)
Stress or mixed urinary incontinence	Alpha-blockers ■ Doxazosin ■ Prazosin ■ Terazosin	Avoid in women. Aggravation of incontinence. QE = Moderate; SR = Strong

Table 2 Abbreviations: CCBs, calcium channel blockers; AChEIs, acetylcholinesterase inhibitors; CNS, central nervous system; COX, cyclooxygenase; NSAIDs, nonsteroidal anti-inflammatory drugs; SR, Strength of Recommendation; SSRIs, selective serotonin reuptake inhibitors; TCAs, tricyclic antidepressants; QE, Quality of Evidence

TABLE 3: 2012 AGS Beers Criteria for Potentially Inappropriate Medications to Be Used with Caution in Older Adults

Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Aspirin for primary prevention of cardiac events	Use with caution in adults ≥80 years old. Lack of evidence of benefit versus risk in individuals ≥80 years old. QE = Low; SR = Weak
Dabigatran	Use with caution in adults ≥75 years old or if CrCl <30 mL/min. Increased risk of bleeding compared with warfarin in adults ≥75 years old; lack of evidence for efficacy and safety in patients with CrCl <30 mL/min QE = Moderate; SR = Weak
Prasugrel	Use with caution in adults ≥75 years old. Greater risk of bleeding in older adults; risk may be offset by benefit in highest-risk older patients (eg, those with prior myocardial infarction or diabetes). QE = Moderate; SR = Weak
Antipsychotics Carbamazepine Carboplatin Cisplatin Mirtazapine SNRIs SSRIs TCAs Vincristine	Use with caution. 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
Vasodilators	Use with caution. May exacerbate episodes of syncope in individuals with history of syncope. QE = Moderate; SR = Weak

Table 3 Abbreviations: CrCl, creatinine clearance; SIADH, syndrome of inappropriate antidiuretic hormone secretion; SSRIs, selective serotonin reuptake inhibitors; SNRIs, serotonin-norepinephrine reuptake inhibitors; SR, Strength of Recommendation; TCAs, tricyclic antidepressants; QE, Quality of Evidence

The American Geriatrics Society gratefully acknowledges the support of the John A. Hartford Foundation, Retirement Research Foundation and Robert Wood Johnson Foundation.

Table 2 Abbreviations: CCBs, calcium channel blockers; AChEIs, acetylcholinesterase inhibitors; CNS, central nervous system; COX, cyclooxygenase; NSAIDs, nonsteroidal anti-inflammatory drugs; SR, Strength of Recommendation; SSRIs, selective serotonin reuptake inhibitors; TCAs, tricyclic antidepressants; QE, Quality of Evidence

TABLE 3: 2012 AGS Beers Criteria for Potentially Inappropriate Medications to Be Used with Caution in Older Adults

Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Aspirin for primary prevention of cardiac events	<p>Use with caution in adults ≥ 80 years old.</p> <p>Lack of evidence of benefit versus risk in individuals ≥ 80 years old. QE = Low; SR = Weak</p>
Dabigatran	<p>Use with caution in adults ≥ 75 years old or if CrCl < 30 mL/min.</p> <p>Increased risk of bleeding compared with warfarin in adults ≥ 75 years old; lack of evidence for efficacy and safety in patients with CrCl < 30 mL/min QE = Moderate; SR = Weak</p>
Prasugrel	<p>Use with caution in adults > 75 years old.</p> <p>Greater risk of bleeding in older adults; risk may be offset by benefit in highest-risk older patients (eg, those with prior myocardial infarction or diabetes). QE = Moderate; SR = Weak</p>
Antipsychotics Carbamazepine Carboplatin Cisplatin Mirtazapine SNRIs SSRIs TCAs Vincristine	<p>Use with caution.</p> <p>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</p>

TABLE 3: 2012 AGS Beers Criteria for Potentially Inappropriate Medications to Be Used with Caution in Older Adults

Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Aspirin for primary prevention of cardiac events	Use with caution in adults ≥ 80 years old. Lack of evidence of benefit versus risk in individuals ≥ 80 years old. <i>QE = Low; SR = Weak</i>
Dabigatran	Use with caution in adults ≥ 75 years old or if CrCl < 30 mL/min. Increased risk of bleeding compared with warfarin in adults ≥ 75 years old; lack of evidence for efficacy and safety in patients with CrCl < 30 mL/min <i>QE = Moderate; SR = Weak</i>
Prasugrel	Use with caution in adults ≥ 75 years old. Greater risk of bleeding in older adults; risk may be offset by benefit in highest-risk older patients (eg, those with prior myocardial infarction or diabetes). <i>QE = Moderate; SR = Weak</i>
Antipsychotics Carbamazepine Carboplatin Cisplatin Mirtazapine SNRIs SSRIs TCAs Vincristine	Use with caution. 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. <i>QE = Moderate; SR = Strong</i>
Vasodilators	Use with caution. May exacerbate episodes of syncope in individuals with history of syncope. <i>QE = Moderate; SR = Weak</i>

Table 3 Abbreviations: CrCl, creatinine clearance; SIADH, syndrome of inappropriate antidiuretic hormone secretion; SSRIs, selective serotonin reuptake inhibitors; SNRIs, serotonin–norepinephrine reuptake inhibitors; SR, Strength of Recommendation; TCAs, tricyclic antidepressants; QE, Quality of Evidence

BEERS drugs not available in Canada

- Eszopiclone (hypnotic)
- Carbinoxamine (antihistamine)
- Carisoprodol (skeletal muscle relaxant)
- Cilostazol (for intermittent claudication)
- Hyoscyamine (anticholinergic)
- Pemoline (stimulant)
- Propantheline (antispasmodic)
- Quazepam (long-acting benzodiazepine)
- Tolmetin (NSAID)
- Trimethobenzamide (antiemetic)



Where does Beers fit into the big picture?

Beers Criteria are only one part of quality prescribing

- Correct drug for correct diagnosis
- Appropriate dose
- Avoid underuse of potentially important medication *START Criteria
- Avoid overuse
- **Avoid potentially inappropriate drugs** *STOPP & Beers Criteria
- Avoid withdrawal effects with discontinuation
- Consideration of cost



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



What's Missing?

- Patient preferences
 - medication preferences, lifestyle values
- Drugs with risks not unique to elderly
- Drug-drug interactions
- List of alternatives
 - requires patient specific judgement (complex)





How Common Is the Use of Beers Drugs in Sask LTC?

In 2011, long-term care population:

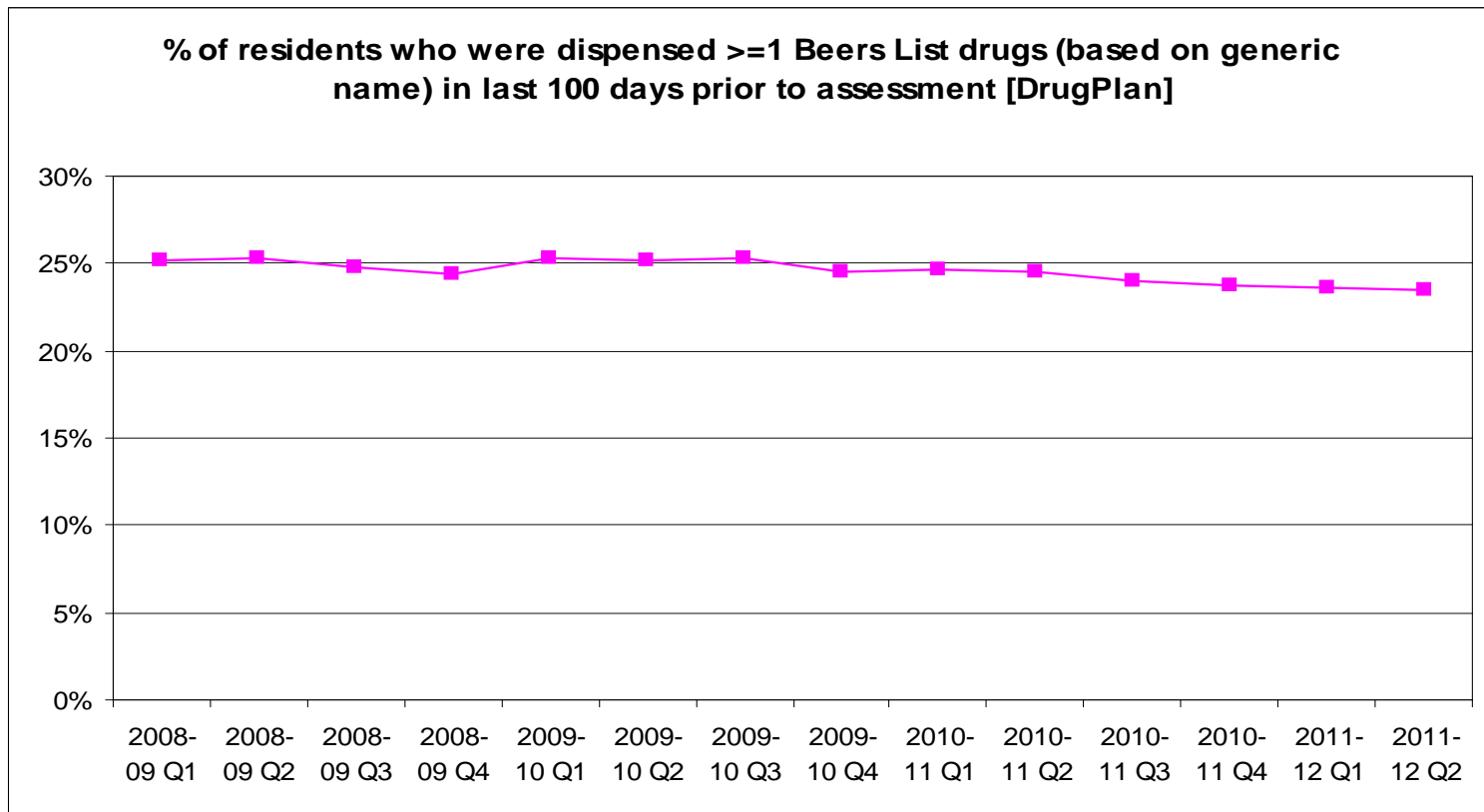
- **1 Beers List Drug**
 - 1302/1400 → 93%
- **2 Beers List Drugs**
 - 248/1400 → 18%
- **3 Beers List Drugs**
 - 26/1400 → 2%
- **4 Beers List Drugs**
 - 1/1400 → 0.1%

Snapshot in time



How Common Is the Use of Beers Drugs in Sask LTC?

- Since 2008, we consistently see 25% or 1 in 4 long-term care residents being dispensed at least 1 Beers List drug



Other Tools/Resources



Other Tools/Resources

- RxFiles Reference List of Drugs with Anticholinergic Effects
- STOPP Criteria 2006
- START Criteria 2006
- Medication Appropriateness Index
- Others?
 - The Improving Prescribing in the Elderly Tool (IPET) 2000
 - McLeod Criteria 1997



STOPP Criteria

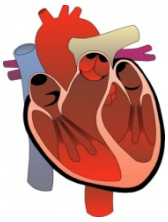
Screening Tool of Older Persons' potentially inappropriate Prescriptions

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 hospitalized patients. *Arch Intern Med*. 2011 Jun 13;171(11):1013-9.





A. Cardiovascular System

1. **Digoxin at a long-term dose > 125µg/day with impaired renal function *** *(increased risk of toxicity). * estimated GFR <50ml/min*
2. **Loop diuretics:**
 - **for dependent ankle oedema only i.e. no clinical signs of heart failure** *(no evidence of efficacy, compression hosiery usually more appropriate).*
 - **as first-line monotherapy for hypertension** *(safer, more effective alternatives available).*
3. **Thiazide diuretic with a history of gout** *(may exacerbate gout).*
4. **Beta-blockers:**
 - **with Chronic Obstructive Pulmonary Disease (COPD)** *(risk of increased bronchospasm).*
 - **in combination with verapamil** *(risk of symptomatic heart block).*
5. **Use of diltiazem or verapamil with NYHA Class III or IV heart failure** *(may worsen heart failure).*
6. **Calcium channel blockers with chronic constipation** *(may exacerbate constipation).*
7. **Dipyridamole as monotherapy for cardiovascular secondary prevention** *(no evidence for efficacy).*



8. Aspirin:

- with a past history of peptic ulcer disease without histamine H2 receptor antagonist or
- Proton Pump Inhibitor (*risk of bleeding*).
- at dose > 150mg day (*increased bleeding risk, no evidence for increased efficacy*).
- with no history of coronary, cerebral or peripheral vascular symptoms or occlusive event (*not indicated*).
- to treat dizziness not clearly attributable to cerebrovascular disease (*not indicated*).

9. Warfarin:

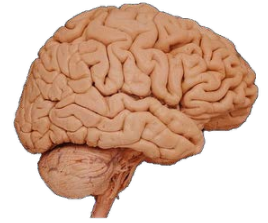
- for first, uncomplicated deep venous thrombosis for longer than 6 months duration (*no proven added benefit*).
- for first uncomplicated pulmonary embolus for longer than 12 months duration (*no proven benefit*).

10. Use of aspirin and warfarin in combination without histamine H2 receptor antagonist (except cimetidine because of interaction with warfarin) or proton pump inhibitor (*high risk of gastrointestinal bleeding*).

11. Aspirin, clopidogrel, dipyridamole or warfarin with concurrent bleeding disorder (*high risk of bleeding*).



B. Central Nervous System and Psychotropic Drugs



1. Tricyclic antidepressants (TCA's):

- **with dementia** (*risk of worsening cognitive impairment*).
- **with glaucoma** (*likely to exacerbate glaucoma*).
- **with cardiac conductive abnormalities** (*pro-arrhythmic effects*).
- **with constipation** (*likely to worsen constipation*).
- **with an opiate or calcium channel blocker** (*risk of severe constipation*).
- **with prostatism or prior history of urinary retention** (*risk of urinary retention*).



2. Long-term (i.e. > 1 month)

- **long-acting benzodiazepines e.g. chlordiazepoxide, fluazepam, nitrazepam, chlorazepate and benzodiazepines with long-acting metabolites e.g. diazepam** (*risk of prolonged sedation, confusion, impaired balance, falls*).
- **neuroleptics as long-term hypnotics** (*risk of confusion, hypotension, extra-pyramidal side effects, falls*).
- **neuroleptics in those with parkinsonism** (*likely to worsen extra-pyramidal symptoms*)

3. Phenothiazines in patients with epilepsy (*may lower seizure threshold*).

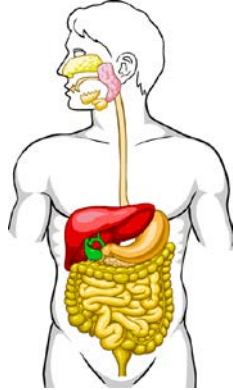
4. Anticholinergics to treat extra-pyramidal side-effects of neuroleptic medications (*risk of anticholinergic toxicity*).

5. Selective serotonin re-uptake inhibitors (SSRI's) with a history of clinically significant hyponatraemia (*non-iatrogenic hyponatraemia <130mmol/l within the previous 2 months*).

6. Prolonged use (> 1 week) of first generation antihistamines i.e. diphenhydramine, chlorpheniramine, cyclizine, promethazine (*risk of sedation and anti-cholinergic side effects*).



C. Gastrointestinal System



1. 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*)

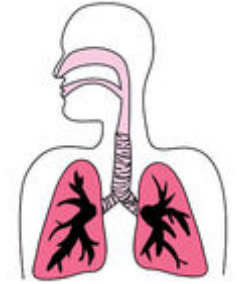
2. Prochlorperazine (Stemetil) or metoclopramide with Parkinsonism (*risk of exacerbating Parkinsonism*).

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

4. Anticholinergic antispasmodic drugs with chronic constipation (*risk of exacerbation of constipation*).



D. Respiratory System



- 1. Theophylline as monotherapy for COPD** (*safer, more effective alternative; risk of adverse effects due to narrow therapeutic index*)
- 2. Systemic corticosteroids instead of inhaled corticosteroids for maintenance therapy in moderate to severe COPD** (*unnecessary exposure to long-term side-effects of systemic steroids*).
- 3. Nebulised ipratropium with glaucoma** (*may exacerbate glaucoma*).



E. Musculoskeletal System



1. Non-steroidal anti-inflammatory drug (NSAID):

- with history of peptic ulcer disease or gastrointestinal bleeding, unless with concurrent histamine H2 receptor antagonist, PPI or misoprostol (*risk of peptic ulcer relapse*).
- with moderate-severe hypertension (moderate: 160/100mmHg – 179/109mmHg; severe: $\geq 180/110$ mmHg) (*risk of exacerbation of hypertension*).
- with heart failure (*risk of exacerbation of heart failure*).
- long-term use of NSAID (>3 months) for relief of mild joint pain in osteoarthritis (*simple analgesics preferable and usually as effective for pain relief*).
- warfarin and NSAID together (*risk of gastrointestinal bleeding*).
- with chronic renal failure * (*risk of deterioration in renal function*). * estimated GFR 20-50ml/min.

2. Long-term corticosteroids (>3 months) as monotherapy for rheumatoid arthritis or osteoarthritis (*risk of major systemic corticosteroid side-effects*).

3. Long-term NSAID or colchicine for chronic treatment of gout where there is no contraindication to allopurinol (*allopurinol first choice prophylactic drug in gout*)



F. Urogenital System



1. Bladder antimuscarinic drugs:

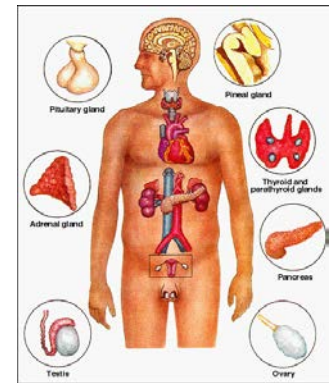
- **with dementia** (*risk of increased confusion, agitation*).
- **with chronic glaucoma** (*risk of acute exacerbation of glaucoma*).
- **with chronic constipation** (*risk of exacerbation of constipation*).
- **with chronic prostatism** (*risk of urinary retention*).

2. Alpha-blockers:

- **in males with frequent incontinence i.e. one or more episodes of incontinence daily** (*risk of urinary frequency and worsening of incontinence*).
- **with long-term urinary catheter *in situ* i.e. more than 2 months** (*drug not indicated*).



G. Endocrine System



- 1. Glibenclamide or chlorpropamide with type 2 diabetes mellitus**
(risk of prolonged hypoglycaemia).
- 2. Beta-blockers in those with diabetes mellitus and frequent hypoglycaemic episodes i.e. ≥ 1 episode per month**
(risk of masking hypoglycaemic symptoms).
- 3. Oestrogens:**
 - with a history of breast cancer or venous thromboembolism**
(increased risk of recurrence)
 - without progestogen in patients with intact uterus**
(risk of endometrial cancer).



H. Drugs that adversely affect those prone to falls (≥ 1 fall in past three months)



1. **Benzodiazepines** (*sedative, may cause reduced sensorium, impair balance*).
2. **Neuroleptic drugs** (*may cause gait dyspraxia, Parkinsonism*).
3. **First generation antihistamines** (*sedative, may impair sensorium*).
4. **Vasodilator drugs known to cause hypotension in those with persistent postural hypotension i.e. recurrent $> 20\text{mmHg}$ drop in systolic blood pressure** (*risk of syncope, falls*).
5. **Long-term opiates in those with recurrent falls** (*risk of drowsiness, postural hypotension, vertigo*).



I. Analgesic Drugs

- 1. Use of long-term powerful opiates e.g. morphine or fentanyl as first line therapy for mild-moderate pain** (*WHO analgesic ladder not observed*).
- 2. Regular opiates for more than 2 weeks in those with chronic constipation without concurrent use of laxatives** (*risk of severe constipation*).
- 3. Long-term opiates in those with dementia unless indicated for palliative care or management of moderate/severe chronic pain syndrome** (*risk of exacerbation of cognitive impairment*).



J. Duplicate Drug Classes

Any duplicate drug class prescription e.g. two concurrent opiates, NSAID's, SSRI's, loop diuretics, ACE inhibitors (*optimisation of monotherapy within a single drug class should be observed prior to considering a new class of drug*).



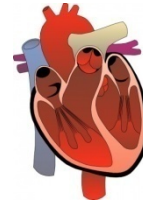
START Criteria

Screening Tool to Alert doctors to the Right
Treatment

22 rules relating to common instances of
prescribing omission



A. Cardiovascular System



1. Warfarin in the presence of chronic atrial fibrillation, where there is no contraindication to warfarin.
2. Aspirin in the presence of chronic atrial fibrillation, where warfarin is contraindicated, but not aspirin.
3. Aspirin or clopidogrel with a documented history of coronary, cerebral or peripheral vascular disease in patients in sinus rhythm, where therapy is not contraindicated.
4. Antihypertensive therapy where systolic BP consistently >160 mmHg, where antihypertensive therapy is not contraindicated.
5. 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
6. ACE inhibitor:
 - in chronic heart failure, where no contraindication exists
 - following acute myocardial infarction.
7. Beta blocker in chronic stable angina, where no contraindication exists.



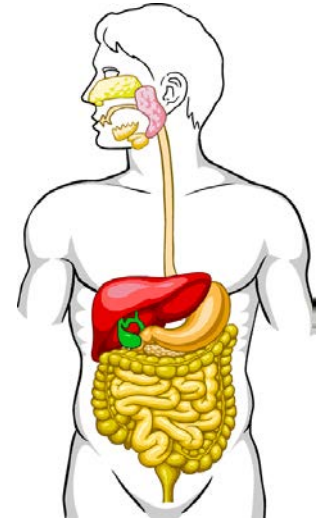
B. Central Nervous System and Psychotropic Drugs



1. **L-DOPA in idiopathic Parkinson's disease with definite functional impairment and resultant disability.**
2. **Antidepressant in the presence of clear-cut depressive symptoms, lasting at least 3 months.**



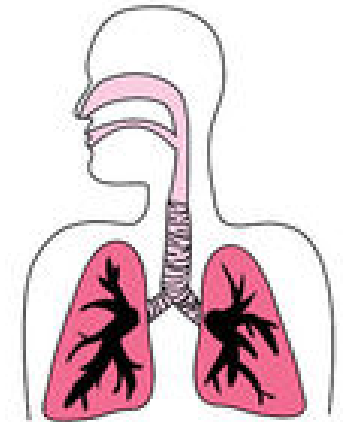
C. Gastrointestinal System



1. Proton pump inhibitor in the presence of chronic severe gastro-oesophageal acid reflux or peptic stricture requiring dilatation.
2. Fibre supplement for chronic, symptomatic diverticular disease with constipation.



D. Respiratory System



1. Regular inhaled b2-agonist or anticholinergic agent for mild to moderate asthma or COPD.
2. Inhaled steroid in moderate-severe asthma or COPD, where reversibility of airflow obstruction has been shown.
3. Home continuous oxygen where chronic type 1 respiratory failure ($pO_2 < 8.0\text{kPa}$, $pCO_2 < 6.5\text{kPa}$) or type 2 respiratory failure ($pO_2 < 8.0\text{kPa}$, $pCO_2 > 6.5\text{kPa}$) has been well documented and where there is no contraindication to continuous oxygen therapy.



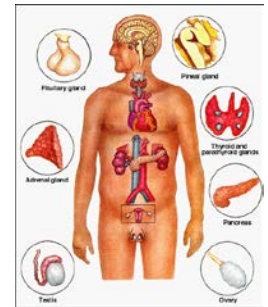
E. Locomotor System



1. **Disease-modifying anti-rheumatic drug (DMARD) with known, moderate–severe rheumatoid disease lasting more than 12 weeks.**
2. **Bisphosphonate in patients taking glucocorticoids for more than 1 month (i.e. chronic corticosteroid therapy).**
3. **Calcium and vitamin D supplement in patients with known osteoporosis (previous fragility fracture, acquired dorsal kyphosis).**



F. Endocrine System



1. **Metformin with type 2 diabetes +/- Metabolic Syndrome (in the absence of renal impairment present i.e. blood urea >12.0 mmol/l, ± serum creatinine >200 μmol/l).**
2. **ACE inhibitor or Angiotension Receptor Blocker in diabetes with nephropathy i.e. overt dipstick proteinuria or microalbuminuria (>30 mg/24 h) ± serum biochemical renal impairment (blood urea > 8.0 mmol/l or serum creatinine >130 μmol/l).**
3. **Aspirin therapy in diabetes mellitus with well controlled blood pressure.**
4. **Statin therapy in diabetes mellitus if fasting serum cholesterol >5.0 mmol/l or additional cardiovascular risk factor(s) present.**



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?
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?





Long Term Care

Long-Term Care & Residential Care: Evidence-Based Resources

These resources are the result of a collaboration between RxFiles & CADTH

RxFiles is an academic detailing program providing objective, comparative drug information to physicians, pharmacists and allied health professionals. The program began in 1997 as a service to Saskatoon family physicians and has expanded broadly to now support a wide range of multidisciplinary health care professionals with evidence-informed information.

The Canadian Agency for Drugs and Technologies in Health (CADTH) is an independent not-for profit agency that delivers timely, evidence-based information to health care leaders about the effectiveness and efficiency of health technologies including drugs, medical devices, vaccines, and medical/surgical, and therapeutic procedures.

The works of both organizations mesh effectively to support the collective sharing of unbiased clinical information on drug and non-drug technologies and treatments in all health care sectors.

While most included resources on this website originate from the RxFiles and CADTH, additional resources (after careful review) have also been included to support practical usage and implementation of quality improvement practices.

Note: Some of the resources listed under "Health Care Providers" may require a subscription to the RxFiles website in order to access the content. Saskatchewan health care providers can gain access through shirp.ca (must sign up for a FREE account).

Health Care Providers
Anti-infectives - HCP
 Antibiotic Resistance - VRE & ESBL
Beers Criteria 2012 - HCP

www.rxfiles.ca

Membership

Saskatoon Health Region - SCH
Logout

Your subscription will expire on 01/07/2015 12:00:00 AM

Subscribe for
Free Email Updates

RxFiles - 9th Edition - STANDARD size - Package of 3



Special price on 3 STANDARD size books. See orderform for other bulk pricing options on larger quantities.

Usual cover price \$79 each. See Orderform <http://www.rxfiles.ca/Book-ORDERFORM.pdf>

More...

Next steps...



- Coming soon from RxFiles...
 - Combined STOPP & Beers Medication Review Tool
 - Value in the expansion of a Therapeutic Alternatives & Clinical Comments section
- Multidisciplinary Medication Reviews
 - Provincial policies to improve the process
 - Guide containing RxFiles excerpt

