

# AN ORIENTATION TO THE 3<sup>RD</sup> EDITION GERI-RXFILES: ASSESSING MEDICATIONS IN OLDER ADULTS

## Purpose

The Geri-RxFiles was created to assist health care providers in assessing medication use in older adults. It is also intended to highlight potentially problematic medications in older adults based primarily on the Beers Criteria<sup>2019</sup> and the STOPP<sup>2014</sup> Criteria.

## The Beers Criteria & STOPP Criteria

**The Beers Criteria** is a list of potentially inappropriate medications (PIMs) in older adults; these criteria have evolved to include discussion of various clinical factors that need to be included in the equation. A similar list is **The STOPP Criteria** (STOPP = Screening Tool of Older Persons' potentially inappropriate Prescriptions). Medications from these two lists are highlighted throughout the Geri-RxFiles to allow for easy identification using **S** and **B** to denote the medications found on the two lists. Additional medications not identified within these two lists, but potentially problematic are indicated by **RxFiles**.

## Familiarizing Yourself with the Geri-RxFiles

### Table of Contents

The table of contents lists all the topics & their corresponding page #s.

### Introduction (page 1)

The *Introduction* discusses medication therapy & frailty in older adults, highlighting various considerations for optimal prescribing & deprescribing. Practical ideas are provided to help health care providers optimize medication therapy in the older adult population including how to avoid common pitfalls such as prescribing cascades.


### Therapeutic Topics

Seven systems are covered in the Geri-RxFiles including: cardiology; endocrine & metabolic; gastrointestinal; genitourinary; musculoskeletal & connective tissue; neurology & psychiatry; & finally respiratory. A variety of miscellaneous topics are also covered. The therapeutic topics cover both an approach to assessing & optimizing the disease or condition, as well as highlights medications that may be potentially problematic in older adults. A more detailed description is contained in the section entitled "*The Anatomy of a Geri-RxFiles Therapeutic Topic*" (located in the column to the right).

### Geri-RxFiles Features & Tools include:

- Clinical Frailty Score on page 5
- Deprescribing algorithms ([from \*\*deprescribing.org\*\*](http://fromdeprescribing.org)) on pages: 65, 74, 134, & 146
- Table of medications associated with QT prolongation on page 46
- Outcomes comparison table for diabetes agents on page 64
- Reference list of medications associated with falls & fracture risk on page 100
- Reference list of medications with anticholinergic effects on page 116
- Inhaler tips (choosing the right device & inhaler technique) starting on page 159
- Approaching drug interactions in older adults on page 166
- Medication administration challenges – *can this be crushed?* – on page 181

### Tapering Information (page 208)

 This symbol indicates that a medication should be tapered upon discontinuation. Within the tapering section you will find the rationale for tapering a medication, common withdrawal symptoms, & a suggested tapering approach. This section is divided by medication classes, except for clonidine.

## The Anatomy of a Geri-RxFiles Therapeutic Topic

**Chronic Heart Failure with Reduced Ejection Fraction (≤40%) in Older Adults** [www.RxFiles.ca](http://www.RxFiles.ca)

**Medications That May Worsen or Exacerbate HF**

- Attempt to discontinue any medications that may worsen or exacerbate HF.
- If a medication is unable to be discontinued or switched to an alternative, a ↓ in dose may limit the risk of exacerbation or worsening of HF.

**Conditions/Issues Potentially Exacerbating Medication:** **Diabetes**, **Pain**, **Cardiovascular**

**Medication Tapering Information:**

Drug Class	All-Cause Mortality	AMI Hospitalizations	HF Hospitalizations
ACEI/ARB	✓	✓	✓
Direct Renin Inhibitor	✓	✓	✓
Beta-Blocker	✓	✓	✓
Mineralocorticoid Antagonist	✓	✓	✓
SGLT2 Inhibitor	✓	✓	✓
Hydralazine + Isosorbide Dinitrate	✓	✓	✓
Diuretics (e.g. furosemide)	✓	✓	✓
Digoxin	✓	✓	✓
Levodopa	✓	✓	✓

**For individuals with HF-EF, determine if he/she is on HF triple therapy to reduce the risk of morbidity & mortality, unless contraindicated:**














- 1) ACEI (or ARB if an ACEI is not tolerated) + 2) HF β-blocker + 3) mineralocorticoid receptor antagonist (MRA) (e.g. spironolactone, eplerenone, or finerenone)
- 2) If not on HF triple therapy to target dose or maximally tolerated doses, 100 mg/100 mg/20 mg (see following page for details)
- 3) Assess the need & dose of diuretics, other anti-hypertensives. These agents have not been proven to reduce the risk of mortality and morbidity in HF and can limit toleration of HF triple therapy.

**Monitor for orthostatic hypotension when initiating & titrating HF triple therapy, as it can increase the risk of falls. These medications should be initiated with orthostatic hypotension. Consider separating the medication administration times of agents that lower BP, and/or dose at bedtime.**

The **first section** of most therapeutic topics provides a stepwise approach to assessing a disease/condition including exploring potential contributors such as other medical conditions or medications. This section also discusses the non-pharmacological & medications treatments options.


**Heart Failure in Older Adults: STOPP & Beers Criteria** [www.RxFiles.ca](http://www.RxFiles.ca)

For more detailed medication information, see the **RxFiles Drug Comparison Charts**.

Drug or Drug Class	STOPP	Beers	When a Medication Could Be Problematic for Older Adults	Clinical Concern
<b>Angiotensin Converting Enzyme Inhibitors (ACEI)</b>				
Benazepril  Captopril  Cilazapril  Enalapril  Fosinopril 			<ul style="list-style-type: none"> <li>↓ With HYPERKALEMIA</li> <li>COMBINED RAAS INHIBITOR (ACEI, ARB, RAASIN) OR TRIPLE-THERAPY (COMBINED RAAS INHIBITOR WITH ANOTHER RAAS INHIBITOR) (e.g. Lisinopril + 2mg)</li> <li>WITH TRIMETHOPRIM-SULFAMETHOXAZOLE &amp; DECREASED CREATININE CLEARANCE (e.g. + dose, ↓ dose)</li> <li>AVOID ACEI WITH LITHIUM (e.g. + dose, ↓ dose)</li> <li>WITH CONCOMITANT USE OF ALDOSTERONE ANTAGONISTS (e.g. spironolactone, eplerenone) WITHOUT MONITORING OF SERUM K<sup>+</sup></li> </ul>	<ul style="list-style-type: none"> <li>Worsened hypokalemia</li> <li>Avoid routine use in those with chronic kidney disease Stage 3 or higher</li> <li>Increased risk of hyperkalemia</li> <li>Increased risk of hyperkalemia when an ACEI or ARB is used with the antibiotic in presence of decreased creatinine clearance</li> <li>May increase lithium concentrations &amp; toxicity</li> <li>Avoid, or monitor lithium levels</li> <li>Risk of angiotensin hyperkalemia (e.g. ↓ serum K<sup>+</sup>)</li> <li>Serum potassium should be monitored after 1 week &amp; regularly (i.e. at least every 4 months)</li> </ul>
<b>Angiotensin Receptor Blockers (ARB)</b>				
Candesartan  Eprosartan  Irbesartan  Losartan 			<ul style="list-style-type: none"> <li>WITH PERSISTENT POSTURAL TERTROPHIC HYPOKALEMIA (e.g. recurrent drop in systolic blood pressure &gt;20mmHg)</li> <li>WITH CONCOMITANT USE OF ALDOSTERONE ANTAGONISTS (e.g. spironolactone, eplerenone) WITHOUT MONITORING OF SERUM K<sup>+</sup></li> </ul>	<ul style="list-style-type: none"> <li>Risk of syncope, falls</li> </ul>
<b>Beta-Blockers (βB)</b>				
Cardio-Selective: Acetabutozolol  Atenolol  Bisoprolol  Metoprolol 			<ul style="list-style-type: none"> <li>NON-SELECTIVE BETA-BLOCKERS WITH A HISTORY OF ASTHMA REQUIRING TREATMENT</li> <li>β<sub>1</sub> SELECTIVE BETA-BLOCKER, especially at low doses, may lead to or worsen asthma</li> <li>IN COMBINATION WITH VERAPAMIL OR DILTIAZEM</li> <li>WITH BENDROFLUMETHAZOLE (e.g. 5mg, 10mg, 15mg) WITH BLOOD OR COAGULATION TESTS</li> </ul>	<ul style="list-style-type: none"> <li>↑ Risk of bronchospasm, especially in severe asthma</li> <li>Agents with proven benefits in HF:                             <ul style="list-style-type: none"> <li>Cardio-selective: bisoprolol, metoprolol</li> <li>Non-cardio-selective: carvedilol</li> </ul> </li> <li>↑ Risk of symptomatic heart block or bradycardia</li> <li>Risk of complete heart block, asymptotic</li> </ul>

The **second section** of most therapeutic topics is a table of the potentially problematic medications used in the treatment of the disease/condition. This section indicates if the medication appears on either the **Beers** or **STOPP** Criteria, in whom the medications are problematic, & other clinical concerns.

## Renal & Hepatic Dose Adjustment

 Medications with the kidney or liver image next to them are eliminated by these organs & may require a dose adjustment in renal/hepatic impairment.

## Indices & Tables (starting on page 226)

In these sections you will find what all the acronyms stand for, as well as key terms related to medications including **BRAND** (trade name) or **BRAND** (discontinued trade name), **chemical name**, **TRIALS**, & other key words.

## The Colours of the Geri-RxFiles

Various colours of highlighting & text are used throughout the Geri-RxFiles to denote various things:

- **Important facts to draw your attention to will be highlighted in yellow**
- **AVOID** denotes doses/medications very likely to cause patient harm are bolded & red or **CAUTION** may be warranted for key points when highlighted in orange
- **Lifestyle, non-pharmacological, herbal or natural products are highlighted in green**
- Other **RxFiles Documents** that may be of interest are highlighted in teal with yellow text
- **Facts specific to older adults** are highlighted in tan in RxFiles charts & other resources

## INTRODUCTION

Drug Therapy in the Older Adult: Considerations for Optimal Prescribing, Prescribing Cascade & Deprescribing .....	1-3
<b>New</b> Frailty, Clinical Frailty Scale (from EGMR, Dalhousie – with permission from Kenneth Rockwood, MD) .....	4-5

## CARDIOLOGY

Antiplatelets & Anticoagulants: DAPT, Dual & Triple Therapy .....	6-9
Atrial Fibrillation: Antithrombotics for Stroke Prevention .....	10-17
Atrial Fibrillation: Rate versus Rhythm Control .....	18-20
Dyslipidemia .....	21-24
Heart Failure with Reduced Ejection Fraction .....	25-32
Hypertension .....	33-44
QT Prolongation & Torsades de Pointes: Drugs & Sudden Death .....	45-46
Stable Ischemic Heart Disease .....	47-54

## ENDOCRINE &amp; METABOLIC

Diabetes .....	55-63
Diabetes Agents – Outcomes Comparison Summary Table (a colour comparison) .....	64
<b>New</b> Diabetes: Deprescribing Algorithm for Antihyperglycemics (from <a href="http://deprescribing.org">deprescribing.org</a> ) .....	65-66

## GASTROINTESTINAL

Acid Suppression .....	67-72
PPI Formulations & Alternative Routes of Administration .....	73
<b>New</b> PPI Deprescribing Algorithm (from <a href="http://deprescribing.org">deprescribing.org</a> ) .....	74-75
Constipation .....	76-81

## GENITOURINARY

Renal Insufficiency .....	82-86
Urinary Incontinence .....	87-94
Urinary Tract Infections .....	95-98

## MUSCULOSKELETAL &amp; CONNECTIVE TISSUE

Falls .....	99-101
Osteoporosis .....	102-106
Pain Management .....	107-115

## NEUROLOGY &amp; PSYCHIATRY

Anticholinergics: Reference List of Medications with Anticholinergic Effects .....	116-117
Dementia & Cognitive Impairment .....	118-122
Dementia: Behavioural & Psychological Symptoms .....	123-133
<b>New</b> Dementia: Deprescribing Algorithm for Cholinesterase Inhibitors & Antipsychotics (from <a href="http://deprescribing.org">deprescribing.org</a> ) .....	134-137
Depression .....	138-145
<b>New</b> Insomnia & Deprescribing Algorithm (from <a href="http://deprescribing.org">deprescribing.org</a> ) .....	146-152

## RESPIRATORY

COPD .....	153-158
<b>New</b> How to Pick an Inhaler .....	159-160
COPD Inhaler Technique .....	161

## MISCELLANEOUS

<b>New</b> Dermatitis .....	162-165
Drug Interactions - Managing Pre-Existing and Potential Dis – Typical LTC Resident Example .....	166-175
<b>New</b> Dry Eye Disease .....	176
Electrolytes Imbalances .....	177-180
Medication Administration Challenges: Dosage Form Alterations “Crush List” ☹ .....	181-191
Nutritional Supplements & Dietary Considerations for Disease Management .....	192-203
<b>New</b> Vaccines: Tetanus & Travel, Herpes Zoster (Shingles), Pneumococcal Disease, Influenza .....	204-207

<b>TAPERING &amp; DEPREScribing MEDICATIONS IN OLDER ADULTS</b> ⚠ .....	208-209
Acetylcholinesterase Inhibitors .....	210
Anticholinergics .....	211
Anticonvulsants .....	211-212
Antidepressants .....	213-214
Antihistamines .....	215
Anti-Parkinson Agents .....	216
Antipsychotics .....	217
Beta-Blockers .....	218
Benzodiazepines & Non-Benzodiazepine “Z” Drugs .....	219-220
Clonidine .....	221
Corticosteroids .....	221
Nitrates .....	222
Opioids .....	223
Proton Pump Inhibitors .....	224
Skeletal Muscle Relaxants .....	225

## INDICES

Abbreviations .....	226-230
Key Terms Listed by Drug, Disease & Trial .....	231-248

## APPENDICES

Older Adults: Drug Treatment & Select Considerations .....	249
--	-----

## ACKNOWLEDGEMENTS .....

References available online at [www.RxFiles.ca](http://www.RxFiles.ca) under the title/search terms: “REFERENCES: Geri-RxFiles – 3<sup>rd</sup> Ed”

