MEDICATION USE IN OLDER ADULTS

May 2021

Nakiya Whitfield, PharmD
Benjamin Smith, PharmD, BCACP, CPP, BCGP
Objectives

• Review pharmacokinetic changes in older adults

• Discuss the 2019 Updated Beers Criteria for potentially inappropriate medication use in older adults

• Evaluate strategies to reduce adverse drug events in older adults

• Review DukeWELL pharmacy resources and strategies to improve adherence
• 65.7% of hospitalizations due to unintentional overdoses

• Four medications/drug classes contributed to 67% of hospitalizations:
  • Warfarin (Coumadin): 33.3%
  • Insulin: 13.9%
  • Oral antiplatelet medications: 13.3%
    • Aspirin, clopidogrel (Plavix), prasugrel (Effient), etc
  • Oral hypoglycemic agents: 10.7%
    • Glyburide (Diabeta), glimepiride (Amaryl), etc

ADEs Following Hospital Discharge in Patients ≥ 65

ADE occurred following 18.7% of discharges
- Over 50% within 14 days of discharge

16.5% of ADEs due to Beers Criteria med
- Most common ADE meds: CV, diuretics, opioids, antibiotics, anticoagulant/antiplatelet agents

35% of ADEs were considered preventable
- 32% of the preventable ADEs were considered serious
What are common ADEs in older adults?
How Age Influences Medication Response

- Changes in GI motility and acid content
  - Altered absorption
  - Poor absorption of oral medications

- Changes in body composition
  - Increased fatty tissue
  - Loss of muscle mass
  - Build up of drugs in fatty tissue

- Changes in liver function
  - Altered metabolism of medications
  - Increased medication levels

- Changes in kidney function
  - Diminished filtration
  - Increased medication levels
Prescribing Cascade

- Ibuprofen
  - ↑ BP
  - HCTZ
    - Oxybutynin
    - Urinary Retention
      - Terazosin
      - Orthostatic Hypotension
      - Falls
    - Hip Fracture

Slide from: Dr. Mitchell Heflin, MD, MHS
Polypharmacy Causes

**Patient Factors**
- Multiple comorbidities
- Mental Health conditions
- Non-adherence to current therapies

**Prescriber Factors**
- Inappropriate prescribing
- Lack of de-escalating therapies
- Poorly updated medical records
- Automated refill services

**System Factors**
- Multiple pharmacies, multiple prescribers
- Direct-to-consumer advertising
- A culture that promotes “a pill for every ill”
Polypharmacy Consequences

• Adverse drug reactions

• Increased risk of drug-drug interactions

• Worsened health outcomes

• Excessive costs
Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Created in 1991 by the late geriatrician Mark Beers, MD

A list of high-risk medications that should generally be avoided in older adults ≥ 65

Updated every ~3 years, available online at:
www.americangeriatrics.org

*Last published 2019
<table>
<thead>
<tr>
<th>Guideline Goals</th>
<th>Medication Inclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve medication selection</td>
<td>1. Potentially inappropriate in most older adults</td>
</tr>
<tr>
<td>Educate clinicians and patients</td>
<td>2. Avoid in older adults with certain conditions</td>
</tr>
<tr>
<td>Reduce adverse drug events</td>
<td>3. Use with caution in older adults</td>
</tr>
<tr>
<td>Serve as a tool for evaluating quality,</td>
<td>4. Significant drug-drug interactions</td>
</tr>
<tr>
<td>cost, and patterns of care</td>
<td>5. Need renal dose adjustment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Object Medication or Drug Class</th>
<th>Interacting Drug or Class</th>
<th>Rationale</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAAS inhibitors (ACEIs, ARBs, aliskiren) or potassium-sparing diuretics (amiloride, triamterene)</td>
<td>Other RAAS inhibitors</td>
<td>Hyperkalemia risk</td>
<td>Avoid routine use in patients with CKD stage ≥ 3</td>
</tr>
<tr>
<td>Anticholinergics</td>
<td>Anticholinergic</td>
<td>↑ Risk of cognitive decline</td>
<td>Avoid, minimize number of anticholinergics</td>
</tr>
<tr>
<td>Antidepressants Antipsychotics Antiepileptics Benzodiazepines Z-drugs Opioids</td>
<td>≥2 other CNS-active drugs</td>
<td>Fall and fracture risk</td>
<td>Minimize number of CNS-active drugs if possible</td>
</tr>
<tr>
<td>Corticosteroids</td>
<td>NSAIDs</td>
<td>Risk of ulcers</td>
<td>Avoid combination if possible or give GI protection</td>
</tr>
<tr>
<td>Syndrome/Disease</td>
<td>Agents to Avoid</td>
<td></td>
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</tr>
<tr>
<td>--------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------</td>
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<td></td>
</tr>
<tr>
<td>Heart Failure</td>
<td>• Certain calcium channel blockers (diltiazem, verapamil)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• NSAIDs (use with caution, avoid if symptomatic)</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• Thiazolidinediones (pioglitazone, rosiglitazone)</td>
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</tr>
<tr>
<td>Syncope</td>
<td>• Acetylcholinesterase inhibitors (e.g. donepezil, rivastigmine)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>• Tricyclic antidepressants</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Nonselective peripheral alpha-1 blockers (e.g. prazosin)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Certain antipsychotics (olanzapine, chlorpromazine)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dementia or Cognitive Impairment</td>
<td>• Anticholinergics</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Benzodiazepines</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Nonbenzodiazepine, benzo receptor agonists (e.g. zolpidem)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Antipsychotics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of Falls/Fractures</td>
<td>• Benzodiazepines &amp; Z-drug hypnotics</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Opioids</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Antidepressants (TCAs, SSRIs, SNRIs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Antiepileptics</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Beers Criteria Select Renal Dose Adjustments

<table>
<thead>
<tr>
<th>Medication</th>
<th>CrCl (mL/min)</th>
<th>Rationale</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spironolactone</td>
<td>&lt; 30</td>
<td>↑ K</td>
<td>Avoid</td>
</tr>
<tr>
<td>Triamterene</td>
<td>&lt; 30</td>
<td>↑ K, ↓ Na</td>
<td>Avoid</td>
</tr>
<tr>
<td>Duloxetine</td>
<td>&lt; 30</td>
<td>↑ GI effects</td>
<td>Avoid</td>
</tr>
<tr>
<td>Gabapentin</td>
<td>&lt; 60</td>
<td>CNS adverse effects</td>
<td>Reduce dose</td>
</tr>
<tr>
<td>Levetiracetam</td>
<td>&lt; 80</td>
<td>CNS adverse effects</td>
<td>Reduce dose</td>
</tr>
<tr>
<td>Pregabalin</td>
<td>&lt; 60</td>
<td>CNS adverse effects</td>
<td>Reduce dose</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>&lt; 30</td>
<td>Increased risk of seizures, tendon rupture, confusion</td>
<td>Avoid or dose reduce</td>
</tr>
<tr>
<td>Trimethoprim-sulfamethoxazole</td>
<td>&lt; 30</td>
<td>↑ K, ↓ eGFR</td>
<td>Reduce dose if 15-29 mL/min, avoid if &lt;15</td>
</tr>
</tbody>
</table>
Caring For Older Adult Populations
Anticoagulation

- High risk agents
- Assessment and monitoring
  - S/S of bleeding and/or thrombosis
  - Renal and/or hepatic changes
  - Drug interactions
  - Dietary considerations (warfarin)
  - Upcoming procedures
  - Duration of therapy
Warfarin

- Increase INR
  - “FAB-4”
    - Fluconazole
    - Amiodarone
    - Bactrim (sulfamethoxazole/trimethoprim)
    - Flagyl (metronidazole)
  - Consider proactively reducing warfarin for these agents
  - Ensure anticoagulation clinic follow-up

- Decrease INR
  - Rifampin, carbamazepine

- Maintain consistent dietary vitamin k intake
  - High vitamin k intake → decreased INR

This is not a comprehensive list!
Direct Oral Anticoagulants

• Agents:
  • Apixaban (Eliquis), rivaroxaban (Xarelto), dabigatran (Pradaxa), edoxaban (Savaysa)
  • Dabigatran and rivaroxaban: Use with caution in patients > 75
    • Greater risk of GI bleeding vs. warfarin

• Duke Anticoagulation Fact Sheets
  • Available on the Duke Intranet Formweb site, under Medication Usage Guidelines:
    • http://formweb.com/duke/

• Anticoagulation Forum DOAC Playbook
  • Microsoft Word - M314 ACForum Playbook v14 Final.DOCX (acforum-excellence.org)
## Direct Oral Anticoagulants

<table>
<thead>
<tr>
<th>Medication</th>
<th>Renal Dose Adjustment</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apixaban (Eliquis)</td>
<td>ESRD on dialysis</td>
<td>Dose reduction vs. not</td>
</tr>
<tr>
<td></td>
<td>Afib with ≥ 2 of: SCr &gt; 1.5, age &gt; 80, wt &lt; 60 kg</td>
<td>Reduce dose</td>
</tr>
<tr>
<td>Dabigatran (Pradaxa)</td>
<td>CrCl &lt; 30 mL/min</td>
<td>Avoid</td>
</tr>
<tr>
<td>Edoxaban (Savaysa)</td>
<td>CrCl 15-50 mL/min, CrCl &lt; 15 OR &gt; 95 mL/min</td>
<td>Reduce dose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Avoid</td>
</tr>
<tr>
<td>Rivaroxaban (Xarelto)</td>
<td>CrCl 30-50 mL/min, CrCl &lt; 30 mL/min</td>
<td>Decrease dose</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Avoid</td>
</tr>
</tbody>
</table>

**Monitoring:** CBC, SCr, hepatic function panel

Lexicomp online; Duke Anticoagulation Fact Sheets: dabigatran, apixaban, rivaroxaban.
Antiplatelet Agents

- Prasugrel (Effient ®): Use with caution in patients > 75
  - Greater risk of bleeding

- Aspirin for **primary** prevention of cardiovascular disease in patients > 70
  - The ASPREE trial confirms there is a lack of evidence of benefit when compared to risks
  - Use with caution
Aimed to evaluate the effect of aspirin on cardiovascular events and bleeding in healthy elderly (age ≥ 65-70)

- No coronary heart disease, cerebrovascular disease, atrial fibrillation, dementia, uncontrolled hypertension, high risk of bleed, or anemia
- Patients on anticoagulation or with compelling indication for aspirin were excluded

Randomized patients in a 1:1 ratio to aspirin 100 mg daily vs. placebo

ASPREE Trial Results

When used for primary prophylaxis in elderly patients, low dose aspirin:

1. Does not significantly reduce risk of CVD
2. Increases risk of GI & intracranial bleed
Medications that Affect Dementia/Cognitive Impairment

- Anticholinergics
- Benzodiazepines
  - Increase risk for cognitive impairment, delirium, falls, fractures
  - Chronic uses have higher risk of cognitive decline
- Non-benzodiazepine hypnotics ("Z-drugs")
  - Similar adverse effect profile to benzodiazepines
- $H_2$-receptor antagonists
- Anti-psychotics
Anticholinergic Side Effects

**Anti-SLUD**: Salivation, Lacrimation, Urination, Defecation

“Hot as a hare, blind as a bat, dry as a bone, red as a beet, mad as a hatter”

“Can’t see, can’t pee, Can’t spit, can’t... ...defecate”
Which Medications Have Anticholinergic Properties?

- Check “Anticholinergic Burden” of specific medications: www.acbcalc.com

<table>
<thead>
<tr>
<th>Select Strong Anticholinergic Medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amitriptyline (Elavil)</td>
</tr>
<tr>
<td>Benztropine (Cogentin)</td>
</tr>
<tr>
<td>Clozapine (Clozaril)</td>
</tr>
<tr>
<td>Diphenhydramine (Benadryl)</td>
</tr>
<tr>
<td>Doxepin (Sinequan) at doses &gt; 6 mg</td>
</tr>
<tr>
<td>Doxylamine (Unisom)</td>
</tr>
<tr>
<td>Hydroxyzine (Atarax, Vistaril)</td>
</tr>
<tr>
<td>Meclizine (Antivert)</td>
</tr>
<tr>
<td>Oxybutynin (Ditropan)</td>
</tr>
<tr>
<td>Paroxetine (Paxil)</td>
</tr>
</tbody>
</table>

Anticholinergic Impact on Cognition

Anticholinergics may increase the risk of cognitive impairment

- A 46% increase over 6 years has been shown

Anticholinergic medications have been associated with increased mortality at 2 years

- Dose-response effect

Medications that Increase Constipation Risk

- Opioids
- Anticholinergics (see prior slide)
- Tricyclic antidepressants:
  - (Amitriptyline (Elavil®), Nortriptyline (Pamelor®))
- Calcium channel blockers
  - E.g., verapamil (Calan ®)
- Antacids
  - Calcium carbonate (Tums)
- Iron products

• Target BP
  • <130/80 mmHg (per the 2017 AHA/ACC HTN guidelines) for most patients
  • DPC and HEDIS metrics are < 140/90
  • Goal can be individualized

• Utilize HTN Algorithm
Hypertension Algorithm

Hypertension Step-wise Therapy

**STEP 1**
- ARB or ACEi
  - prefer ARB due to fewer side effects
  - avoid in pregnancy
- Dihydropyridine Calcium Channel Blocker (e.g., amlodipine)
- OR
- Thiazide Diuretic
  - use as single agent with pregnancy potential
  - chlorthalidone > hctz due to available evidence
  - hctz has more combinations available

**STEP 2**
- Recheck in 2-4 weeks, if not in control
- Add class (CCB or Thiazide) not previously used in Step 1
- OR
- If patient is on ≥ 3 antihypertensives, consider secondary etiologies**

**STEP 3**
- Recheck in 2-4 weeks, if not in control
- Mineralocorticoid Receptor Antagonists (MRAs)
  - ensure eGFR ≥ 60 AND K < 4.5

**STEP 4**
- Recheck in 2-4 weeks, if not in control
- Beta Blocker
  - prefer carvedilol due to greater blood pressure lowering potential
  - maintain pulse of > 55

**STEP 5**
- Recheck in 2-4 weeks, if not in control
- Consider additional agents (e.g., hydralazine, clonidine, minoxidil, etc.)
American Geriatrics Society and Choosing Wisely recommend:

- Avoid using medications other than metformin to achieve A1c < 7.5% in most older adults

ADA Goal Recommendations:

<table>
<thead>
<tr>
<th>Consider A1c Goal &lt; 8%:</th>
<th>Consider Goal &lt; 8.5%:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Intermediate life expectancy</td>
<td>- Moderate-to-severe cognitive impairment</td>
</tr>
<tr>
<td>- Falls or hypoglycemia risks, including 2+ ADL impairments</td>
<td>- Very complex/poor health with limited life expectancy</td>
</tr>
<tr>
<td>- Mild to moderate cognitive impairment</td>
<td></td>
</tr>
</tbody>
</table>

Diabetes Care. 2017;40(Suppl. 1):S1–S134
http://www.choosingwisely.org/clinician-lists/american-geriatrics-society-medication-to-control-type-2-diabetes/
• Avoid glyburide, glimepiride due to increased risk of prolonged hypoglycemia
  • Consider glipizide as an alternative

• Metformin dosing in renal impairment

<table>
<thead>
<tr>
<th>eGFR Cutoff</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 45 mL/min/1.73m²</td>
<td>No dose adjustment necessary</td>
</tr>
<tr>
<td>30-45 mL/min/1.73m²</td>
<td>• Do not initiate metformin</td>
</tr>
<tr>
<td></td>
<td>• If already on metformin consider risk vs. benefit of continuing therapy</td>
</tr>
<tr>
<td></td>
<td>• If continuing, dose reduce by 50%</td>
</tr>
<tr>
<td>&lt; 30 mL/min/1.73m²</td>
<td>Use is contraindicated</td>
</tr>
</tbody>
</table>

Diabetes Care. 2017;40(Suppl. 1):S1–S134
# Diabetes Algorithm

## Type 2 Diabetes Step-Wise Therapy

All patients at diagnosis: Start lifestyle interventions, add metformin & titrate to max dose (if not contraindicated), refer to DM education for lifestyle change education, and complete DM health maintenance. Reassess in 3 months.

- **ASCVD risk predominates?**
  - If yes, proceed to GLP-1 agonists or SGLT2 inhibitors.
  - If no, proceed to HF/CKD risk predominates?

- **HF/CKD risk predominates?**
  - If yes, proceed to A1C ≥ 10% or Symptomatic Hyperglycemia.
  - If no, continue with lifestyle interventions and metformin.

### A1C ≥ 10% or Symptomatic Hyperglycemia

- At diagnosis: Strongly consider insulin, especially if BMI < 25 or symptomatic; OR consider 2nd agent to metformin.

---

## Add additional agent by prioritizing individual patient characteristics

### Patient Characteristic

- Degree of hyperglycemia
- Risk of hypoglycemia
- Overweight or obesity
- Renal disease
- Preferences & medication access
- NASH

### Choice of Agent

- Consider A1c lowering potential
- Rare hypoglycemia
- Weight loss or weight neutral
- Sex below therapeutic considerations, consider eGFR
- See cost column and consider access
- Consider pioglitazone or liraglutide

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## Therapeutic Algorithm

### Class

- **Insulin**
- **GLP-1 agonists**
- **Sulfonylureas**
- **Thiazolidinediones**
- **SGLT2 inhibitors**
- **DPP-4 inhibitors**
- **Meglinidines**
- **Dipeptidyl peptidase-4 (DPP-4) inhibitors**
- **Alpha-glucosidase inhibitors**

### Expected A1c | Hypoglycemia | Cardiovascular Disease/Renal/Heart Failure Benefits | Effect on Weight | Other Considerations

<table>
<thead>
<tr>
<th>Class</th>
<th>Expected A1c</th>
<th>Hypoglycemia</th>
<th>Cardiovascular Disease/Renal/Heart Failure Benefits</th>
<th>Effect on Weight</th>
<th>Other Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulin</td>
<td>Greatest ↓</td>
<td>Yes</td>
<td>Neutral → CVD</td>
<td>↑</td>
<td>Lowest cash price is fiDiOn brand at Sam’s Club or Wal-Mart (8, 16, 48, and 70 IU)</td>
</tr>
<tr>
<td>GLP-1 agonists</td>
<td>1-2.5</td>
<td>None as monotherapy</td>
<td>CVF, Renal Heart Failure</td>
<td>↑</td>
<td>Or side effects: ↓ P, ↓ BP. Exenatide (Byetta/Bydureon) not recommended CVR &lt; 30 and islet autoimmune (Achalin) not recommended CVR &lt; 35. Weekly option: semaglutide, dulaglutide, exendin-4.</td>
</tr>
<tr>
<td>Sulfonylureas</td>
<td>1-2.5</td>
<td>Yes</td>
<td>Unknown</td>
<td>↑</td>
<td>↑ Hypoglycemia risk × 4. Glukinide, glimepiride; Prefer glipizide</td>
</tr>
<tr>
<td>Thiazolidinediones</td>
<td>1-2.5</td>
<td>None as monotherapy</td>
<td>CVF → pioglitazone (Actos)</td>
<td>↑</td>
<td>Edema, ↑ TSH risk; Pioglitazone: ↑ TG, ↓, ↑ bladder cancer risk. ↑ Fracture risk Rosiglitazone (Avandia): ↑ LDL.</td>
</tr>
<tr>
<td>SGLT2 inhibitors</td>
<td>0.5-1</td>
<td>None as monotherapy</td>
<td>CVF, Renal Heart Failure</td>
<td>↓</td>
<td>↑ SBP. Do not initiate with eGFR &lt; 45. Concomitantly with eGFR &lt; 30, volume depletion, GU Infections, DKA. ↓ progression of renal disease.</td>
</tr>
<tr>
<td>DPP-4 inhibitors</td>
<td>0.5-1 (actual effect may be ≥ 80%)</td>
<td>None as monotherapy</td>
<td>Neutral</td>
<td>Neutral</td>
<td>Saxagliptin (Onglyza) and albiglutide (Tesam) associated with increased HF admissions. Initiate at max dose unless renal dose adjustment indicated. Lixagliptin (Kombiglyze): no renal adjustment.</td>
</tr>
<tr>
<td>Meglinidines</td>
<td>0.5-1</td>
<td>Yes</td>
<td>Unknown</td>
<td>↑</td>
<td>↓ PB, can replace sulfonylurea if hypoglycemic, or irregular meal schedule.</td>
</tr>
<tr>
<td>Dipeptidyl peptidase-4 (DPP-4) inhibitors</td>
<td>0.5-1</td>
<td>None as monotherapy</td>
<td>Unknown</td>
<td>Unknown</td>
<td>↓ LDL, ↑ TIO, ↓, ↑ other med absorption, conspilation</td>
</tr>
<tr>
<td>Alpha-glucosidase inhibitors</td>
<td>0.5-1</td>
<td>None as monotherapy</td>
<td>Unknown</td>
<td>↑</td>
<td>GI side effects, ↓ PP, PB</td>
</tr>
</tbody>
</table>

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## Notes

- Consider insulin as initial therapy for type 2 diabetes.
- GLP-1 agonists are recommended for weight loss and improve CV outcomes.
- SGLT2 inhibitors are recommended for reducing CV events and improving outcomes in patients with heart failure.
- DPP-4 inhibitors may be used as an initial therapy or in combination with other medications.
- Meglinidines may be used as an initial therapy or in combination with other medications.
- Dipeptidyl peptidase-4 (DPP-4) inhibitors may be used as an initial therapy or in combination with other medications.
- Alpha-glucosidase inhibitors may be used as an initial therapy or in combination with other medications.

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## Additional Information

- Consider monitoring for side effects, including hypoglycemia, weight loss, and weight gain.
- Consider monitoring for CV outcomes, including CV events, CV death, and hospitalization.
- Consider monitoring for renal outcomes, including eGFR and proteinuria.
- Consider monitoring for other outcomes, including HbA1c, triglycerides, and lipids.

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## Conclusion

- The choice of medication will depend on the individual patient's characteristics and preferences.
- Monitoring and adjustment of medication may be necessary to achieve optimal glycemic control.
- Lifestyle interventions, including diet, exercise, and weight management, are important adjuncts to medication therapy.

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## References

- American Diabetes Association. (2023). Management of Type 2 Diabetes Mellitus in Adults. Diabetes Care, 46(Supplement 1), S239--S268.
• Avoid first-generation antihistamines
  • Examples: diphenhydramine, chlorpheniramine, hydroxyzine
  • Use of diphenhydramine for acute treatment may be appropriate
    • e.g., severe allergic reactions

• Use loratadine (Claritin), cetirizine (Zyrtec), fexofenadine (Allegra)
Optimize treatment for contributing conditions
  - Depression, pain, etc.

Sleep hygiene

Cognitive behavioral therapy for insomnia
  - Veteran’s Affairs developed app: CBT-I Coach
  - Go! to Sleep
  - Sleepio
  - www.cbtforinsomnia.com

Find local therapists:
  - Psychology Today

Find online therapists:
  - Better Help
  - https://www.online-therapy.com/

• Avoid sedative hypnotics, benzodiazepines, diphenhydramine, and amitriptyline

• Benzodiazepines
  • Increase risk for cognitive impairment and falls (as previously discussed)

• Non-BZD Hypnotics
  • Minimal improvement in sleep latency/duration
  • Similar adverse events to BZDs
  • Zolpidem in women: Limit IR to 5 mg and ER form to 6.25 mg
Insomnia

• Non-pharmacological options 1st line

• Pharmacologic considerations:
  • Melatonin 3-5 mg daily
  • Doxepin 3-6 mg daily within 30 minutes prior to bedtime, do not exceed 6 mg/day

• Avoid benzodiazepines, if possible

• Consider counseling
  • Silver Linings or other local therapists
  • Online therapists

• Consider trial of SSRI, SNRI, or buspirone
  • Typically trial for at least 6 weeks prior to declaring ineffective
  • Educate patient regarding need for 6 week trial and good adherence
  • Start low, but titrate dose if no or limited response prior to declaring ineffective

Anxiety: Tapering Benzodiazepines

• Generally, 2nd half of taper should be longer than 1st half

• Educating patients ≥ 65 about harms of benzo use increased likelihood benzo would be discontinued or use reduced five-fold

• For panic disorder, taper no more than 10% weekly (complete taper over 2-4 months)
## Benzodiazepine Direct Taper Options

<table>
<thead>
<tr>
<th>Option 1:</th>
<th>↓ 25% 1\textsuperscript{st} week and 2\textsuperscript{nd} week, then approximately 10% every week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 2:</td>
<td>Taper to diazepam 10 mg (or equivalent), maintain for 1-2 months, then taper over 4-8 weeks</td>
</tr>
<tr>
<td>Option 3:</td>
<td>Taper by 10% every 1-2 weeks until 20% of original dose is reached. Then taper by 5% every 2-4 weeks</td>
</tr>
<tr>
<td>Option 4:</td>
<td>Taper by no more than diazepam 5 mg (or equivalent) every week. When diazepam 20 mg (or equivalent) is reached slow the taper rate to 1-2 mg of diazepam (or equivalent) per week</td>
</tr>
</tbody>
</table>

Anxiety: Tapering Benzodiazepines

• Switch and taper method
  • May be preferred if intolerant to direct taper
  • Switch to equipotent clonazepam dose

<table>
<thead>
<tr>
<th>Clonazepam</th>
<th>Alprazolam</th>
<th>Lorazepam</th>
<th>Temazepam</th>
<th>Diazepam</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 mg</td>
<td>1 mg</td>
<td>2 mg</td>
<td>30 mg</td>
<td>10 mg</td>
</tr>
</tbody>
</table>

• Decrease clonazepam by ½ tab daily every 1-2 weeks
• Monitor for side effects of cholinesterase inhibitors
  • GI symptoms (diarrhea, N/V)
  • Wt loss
  • Bradycardia or hypotension
  • Sleep disturbances (vivid dreams)

• Duke Dementia Family Support Program
Pain

• Non-pharmacologic
  • Heat and cold, physical therapy, and massage

• Pharmacologic
  • Avoid NSAIDs and skeletal muscle relaxants due to sedation risk and anticholinergic effects
  • Consider scheduled acetaminophen 1000 mg TID
  • Consider topical capsaicin or lidocaine
  • If opioids are required, ensure appropriate education
    • GI, CNS, falls, and respiratory risks
Gastroesophageal Reflux (GERD)

• Proton Pump Inhibitors are often overused and carry risks:
  • Increased risk of *C difficile* infections
  • Increased bone loss and fracture risk
  • B12 malabsorption (reasonable to periodically assess with long-term use)

• Avoid use > 8 weeks unless high-risk
  • Chronic NSAID use
  • Erosive esophagitis
  • Failure of discontinuation trial etc.
• Avoid promethazine, meclizine
• Avoid metoclopramide
  • May cause extrapyramidal effects, including tardive dyskinesia
  • Risk may be increased in frail elderly
  • Consider for gastroparesis if benefits > risks
• Consider ondansetron
### Medication Management in Older Adults

<table>
<thead>
<tr>
<th>Obstacles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childproof caps</td>
</tr>
<tr>
<td>Ability to correctly use nebulizer</td>
</tr>
<tr>
<td>Ability to correctly use inhalers</td>
</tr>
<tr>
<td>Ability to use blood glucose meter</td>
</tr>
<tr>
<td>Interpretation of medication labels</td>
</tr>
<tr>
<td>Difficulty recognizing color of pills</td>
</tr>
<tr>
<td>Large pill size</td>
</tr>
</tbody>
</table>
Deprescribing Resource

Deprescribing:

"The planned and supervised process of

DOSE REDUCTION or STOPPING

of medication that may be

CAUSING HARM

or

NO LONGER PROVIDING BENEFIT"

Reducing medications safely to meet life's changes
Summary: Master Medication Management

M = Minimize number of drugs used
A = Alternatives should be considered
S = Start low and go slow
T = Titrate therapy
E = Educate the patient and caregiver
R = Review regularly
Resource: DukeWELL Ambulatory Referral

Ambulatory Referral to DukeWell

Process Inst.:
DukeWELL provides services for your eligible patients who may be at increased risk of an unplanned hospital admission or acute episode. Through this order, you can place requests for care management, pharmacy support, and/or a specialty case review. Ineligible patients may still qualify for select services.

Our services do not represent a transfer in care; we partner with you and your patient to improve their chances of a better health outcome.

Is DukeWELL elig. = Y in the header of the patient’s record? (Ineligible patients may still qualify for select services)
Yes [ ] No [ ]

Reason for Referral?
- Check the boxes for the reasons for referral:
  - Care Management [ ]
  - Pharmacy Support [ ]
  - Specialty Case Review [ ]

Pharmacy Support
- Check the boxes for the pharmacy support reasons:
  - Medication access / affordability [ ]
  - Medication education (pharmacist patient outreach) [ ]
  - Medication regimen clarification (home visit) [ ]
  - Pharmacist review and recommendation to provider [ ]

Disease States (select all that apply):
- Check the boxes for the disease states:
  - Asthma [ ]
  - COPD/Lung disease [ ]
  - Diabetes [ ]
  - Heart failure [ ]
  - Heart disease [ ]
  - Hypertension [ ]
  - Kidney disease [ ]
  - Other (explain below) [ ]

Comments:

Next Required

Accept [ ] Cancel [ ]
A team of pharmacy professionals dedicated to **improving medication safety and adherence** for high-need patients.

**Provide assistance regardless of DukeWELL Eligibility status.**

**DukeWELL clinical pharmacists** conduct chart reviews or directly interact with patients to improve medication management, education, adherence, and safety.

---

*Benjamin Smith, PharmD, BCACP, CPP, BCGP*
**Director, Population Health Pharmacy Services**

*Sarah Jenelle Hollis, PharmD, BCPP, BCPS*
**Clinical Pharmacist**

*Yolanda Williams, PharmD, PhD*
**Clinical Pharmacist**

*Holly Alvarado, PharmD, BCPS*
**Clinical Pharmacist**

*Cindy Leslie Roberson, PharmD, BCACP*
**Clinical Pharmacist**

*Patrick Gregory, PharmD, BCACP, CPP*
**Coordinator, Primary Care Population Health Pharmacy Services**

*Lee Jackson Carter, PharmD, BCACP*
**Senior Clinical Account Specialist, Express Scripts**

*Amit Patel, PharmD, BCACP*
**Primary Care Population Health Clinical Pharmacist**

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---
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Stephanie Johnson, CPhT II  
**Lead Pharmacy Tech**

Sean Kitson, CPhT II  
**Pharmacy Tech**

Shinita Monger, CPhT II  
**Pharmacy Tech**

Virginia T McQuillan, CPhT II  
**Pharmacy Tech**

Jeffica Cotton, CPhT II  
**Pharmacy Tech**

DukeWELL pharmacy technicians work with patients directly to obtain medication histories and improve adherence, medication access, and safety.
The percentage of Medicare Part D beneficiaries age 18 or older adhering to their prescribed drug therapy

Numerator

- Number of member-years of beneficiaries, age 18 or older, with a proportion of days covered (PDC) at 80% or over for DM/RASA/Statins

Denominator

- Number of member-years of beneficiaries, age 18 or older, with at least two fills of medication(s) (DM/RASA/Statins)

What Can Providers Do To Improve Adherence?

• Normalize adherence challenges
  • “Keeping up with medications is hard. It can also be expensive. How often do you miss a dose of this medication?”

• Prescribe 90 day supplies when appropriate

• Ensure prescriptions are updated to reflect current dosing
  • E.g., If patient is asked to take a statin every other day instead of daily, then send updated Rx to pharmacy
  • Ideal to also ensure old Rx is discontinued at the pharmacy
What Can Providers Do To Improve Adherence

• Ensure patient is aware that you want to:
  • “Make sure you filled your prescriptions and that you are taking medicine as directed”
  • Above language reflects Medicare survey language

• Assess for side effect barriers and options to improve tolerance
  • E.g., Can’t tolerate metformin, but are they taking as directed and with food?
  • Proactively ask about urinary incontinence

• Assess for transportation or financial barriers
On the Medications Tab Under Chart Review:

- Single click on any medication, as below
- Since in chart review, you do not need to be in an encounter
Scroll down to “Medication Dispense History”
Click the arrow to expand the fill history, which allows you to assess adherence.
Medication Adherence: Checking Claims Data – Option 2

- Go to Medications Tab (instead of Chart Review)
- Double click on any medication
- Similar to Option 1, you do not have to be in an encounter
Medication Adherence: Checking Claims Data – Option 2

After double clicking, you can see Prescription Details

<table>
<thead>
<tr>
<th>Order Report</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Order Details</strong></td>
</tr>
<tr>
<td><strong>rosuvastatin (CRESTOR) 5 MG tablet [509986136]</strong></td>
</tr>
<tr>
<td><strong>Dose:</strong> 10 mg</td>
</tr>
<tr>
<td><strong>Dispense Quantity:</strong> 180 tablet</td>
</tr>
<tr>
<td><strong>Frequency:</strong> Every other day</td>
</tr>
<tr>
<td><strong>Sig:</strong> Take 2 tablets (10 mg total) by mouth every other day</td>
</tr>
<tr>
<td><strong>Written Date:</strong> 11/30/20</td>
</tr>
<tr>
<td><strong>Start Date:</strong> 11/30/20</td>
</tr>
<tr>
<td><strong>Ordering Provider:</strong> Howe, Catherine Rhea, MD</td>
</tr>
<tr>
<td><strong>Authorizing Provider:</strong> Howe, Catherine Rhea, MD</td>
</tr>
<tr>
<td><strong>Supervising Provider:</strong> Greenslatt, Lawrence J. MD</td>
</tr>
<tr>
<td><strong>Diagnosis Association:</strong> Hyperlipidemia, unspecified hyperlipidemia type (E78.5)</td>
</tr>
<tr>
<td><strong>Original Order:</strong> rosuvastatin (CRESTOR) 5 MG tablet [479317476]</td>
</tr>
<tr>
<td><strong>Pharmacy:</strong> Walmart Pharmacy 4250 - MORRISVILLE, NC - 1001 SHALOM GLENN DR,</td>
</tr>
<tr>
<td><strong>DEA #:</strong> --</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Pharmacy Contact</strong></td>
</tr>
<tr>
<td><strong>Telephone:</strong> 919-941-5170</td>
</tr>
<tr>
<td><strong>Fax:</strong> 919-941-5171</td>
</tr>
<tr>
<td><strong>Order Class</strong></td>
</tr>
<tr>
<td><strong>Electronic</strong></td>
</tr>
<tr>
<td><strong>Warnings History</strong></td>
</tr>
<tr>
<td><strong>No Interaction Warnings Shown</strong></td>
</tr>
<tr>
<td><strong>Outpatient Medication Detail</strong></td>
</tr>
<tr>
<td><strong>rosuvastatin (CRESTOR) 5 MG tablet</strong></td>
</tr>
<tr>
<td><strong>Sig - Route:</strong> Take 2 tablets (10 mg total) by mouth every other day - Oral</td>
</tr>
</tbody>
</table>
Scroll down to medication dispense history information

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dispensed</th>
<th>Days Supply</th>
<th>Quantity</th>
<th>Provider</th>
<th>Pharmacy</th>
</tr>
</thead>
<tbody>
<tr>
<td>amlodipine besylate</td>
<td>02/06/2019</td>
<td>30</td>
<td>30 each</td>
<td>ASUZU CHRISTOPHER</td>
<td>Walmart Pharmacy 4250...</td>
</tr>
<tr>
<td>amlodipine besylate</td>
<td>04/07/2019</td>
<td>30</td>
<td>30 Unspecified</td>
<td>ASUZU CHRISTOPHER</td>
<td>Walmart Pharmacy 4250...</td>
</tr>
<tr>
<td>amlodipine besylate</td>
<td>03/17/2019</td>
<td>30</td>
<td>30 Unspecified</td>
<td>ASUZU CHRISTOPHER</td>
<td>Walmart Pharmacy 4250...</td>
</tr>
<tr>
<td>desmopressin complex no.1</td>
<td>03/27/2019</td>
<td>30</td>
<td>30 each</td>
<td>ASUZU CHRISTOPHER</td>
<td>Walmart Pharmacy 4250...</td>
</tr>
<tr>
<td>ergocalciferol (vitamin D2)</td>
<td>03/27/2019</td>
<td>30</td>
<td>30 each</td>
<td>ASUZU CHRISTOPHER</td>
<td>Walmart Pharmacy 4250...</td>
</tr>
<tr>
<td>ferrous sulfate</td>
<td>03/27/2019</td>
<td>30</td>
<td>30 each</td>
<td>ASUZU CHRISTOPHER</td>
<td>Walmart Pharmacy 4250...</td>
</tr>
<tr>
<td>hydrochlorothiazide</td>
<td>03/27/2019</td>
<td>30</td>
<td>30 each</td>
<td>ASUZU CHRISTOPHER</td>
<td>Walmart Pharmacy 4250...</td>
</tr>
<tr>
<td>losartan potassium</td>
<td>03/27/2019</td>
<td>30</td>
<td>30 each</td>
<td>ASUZU CHRISTOPHER</td>
<td>Walmart Pharmacy 4250...</td>
</tr>
<tr>
<td>metronidazole</td>
<td>03/27/2019</td>
<td>30</td>
<td>30 each</td>
<td>ASUZU CHRISTOPHER</td>
<td>Walmart Pharmacy 4250...</td>
</tr>
<tr>
<td>rosuvastatin calcium</td>
<td>03/27/2019</td>
<td>30</td>
<td>30 each</td>
<td>ASUZU CHRISTOPHER</td>
<td>Walmart Pharmacy 4250...</td>
</tr>
<tr>
<td>triamcinolone acetonide</td>
<td>03/27/2019</td>
<td>30</td>
<td>30 each</td>
<td>ASUZU CHRISTOPHER</td>
<td>Walmart Pharmacy 4250...</td>
</tr>
<tr>
<td>warfarin sodium</td>
<td>03/27/2019</td>
<td>30</td>
<td>30 each</td>
<td>ASUZU CHRISTOPHER</td>
<td>Walmart Pharmacy 4250...</td>
</tr>
</tbody>
</table>
You can also access dispense history by clicking on “Dispense Report” when in the “Outside Meds” Activity.
Dispense date: 1/14/2020  Qty: 90.00  Unspecified
Pharmacy: Walmart Pharmacy 2255 - HENDERSON, NC - 200 NORTH COOPER ROAD

SPIRONOLACTONE

`spironolactone (ALDACTONE) 25 MG tablet` On chart
3 dispenses in past 24 months
Dispense date: 1/2/2020  Qty: 90.00 each  Pharmacy: Walmart Pharmacy 2256 - HENDERSON, NC - 200 NORTH COOPER ROAD

⚠️ Dispense Information Disclaimer ⚠️

Certain information may not be available or accurate in this report, including over-the-counter medications, low cost prescriptions, prescriptions paid for by the patient or non-participating sources, or errors in insurance claims information. The provider should independently verify medication history with the patient.
Data is only current through most recent encounter
  • Claims data is only updated when patients have an encounter in Maestro Care

Prescription claims data comes from either a patient’s pharmacy or the company that processes their prescription claims
  • Some patients go to a pharmacy or have insurance that do not transmit fill data

Often “unspecified” may indicate Rx was never picked up or other issue

Claims Data is helpful, but questionable adherence or data should be confirmed by calling a patient’s pharmacy
Medication Adherence Patient Education

• Available in Healthwise and Maestro Care Clinical References

Taking Your Medicine as Prescribed

It is important to take your medicine just as your provider prescribes. Taking your medicine correctly may help you feel better, and it may prevent future health problems. It may also prevent problems like having to go to the emergency room. It is important to tell your provider if you are not taking any of your medicine as prescribed and why. Your provider and pharmacist will work with you to find ways to help you take your medicine as prescribed. They may also be able to change your medicine so you have fewer side effects or lower the number of medicines that you take.

Tips to Help with Taking Medicine

Many different things can affect how people take their medicine. There may be more than one reason why people do not take their medicine. Follow these tips to make sure you take the medicine your provider has prescribed correctly.

<table>
<thead>
<tr>
<th>Reason</th>
<th>What To Do</th>
</tr>
</thead>
</table>
| You don’t think your medicine is helpful. | It is very important to always talk with your provider or pharmacist before stopping a medicine. Ask your provider or pharmacist these questions:  
  - Why is this medicine prescribed?  
  - How do I know if it is working?  
  - How can I keep taking it on my own? |
| You forget to take your medicine. | Take your medicine at the same time as another daily activity. This could be something such as brushing your teeth, eating breakfast, or going to bed.  
  - Use stickies. Place notes on an item you use daily around the time you need to take your medicine. Examples: near your hairbrush, toothbrush, or on the refrigerator or nightstand  
  - Use a pillbox.  
  - Ask your provider or pharmacist for special packaging or “blister packs.” These keep you from having to fill a pillbox each week.  
  - Use an alarm or reminder on your cellphone or clock.  
  - Use a free reminder app on your smartphone.  
  - Ask your provider or pharmacist if any medicine that you take more than once a day can be changed to medicine that is taken less often. You may be able to switch from a medicine you have to take three times a day to one you only take once a day. Remember to call your provider or pharmacist as soon as you realize you forgot to take a dose to decide when to take the next dose. |
| Your medicine has a side effect or makes you feel bad. | Tell your provider or pharmacist about your symptoms before you stop taking your medicine. There may be a different medicine you can take or a way to prevent the side effect. Read the information that came with your prescriptions to know if there are side effects that could create an emergency. |
| Your medicine is too expensive. | Ask your provider or pharmacist if there is a lower cost medicine that you can take instead. If not, they may be able help you find other programs to assist.  
  - You may be able to save money overall by filling a 90-day supply.  
  - If you have Medicare, you can call 1-800-MEDICARE (1-800-633-4227) for more information about Medicare drug plans and other savings programs. North Carolina residents may also call 1-855-400-1212 (toll-free) for Medicare counseling. If you have a Medicare Part D plan, it's helpful to call every year during open enrollment to be sure you are signed up for the best plan for you.  
  - Ask if there are any discount cards or programs from the drug company.  
  - Look for websites that offer coupons at your pharmacy for your medicine. |
| You cannot drive or have other problems getting to your pharmacy to pick up your medicine. | Consider using a local pharmacy that offers to deliver medicines to your home.  
  - Consider using a mail order pharmacy that delivers medicines directly to your home. Often, getting set up is as easy as asking your provider to write a new prescription and sending it to that pharmacy. |

For medicine that you take daily:

- Ask your pharmacy if they offer automatic refills. Let them know when your provider starts a medicine.  
- Ask your provider for a prescription for a 90-day supply.  
- Ask your pharmacy if they can arrange your refills so that they are all due at the same time of the month.  
- Use a reminder on your calendar or smartphone to help you remember when to request a refill before you run out of medicine. Mail-order pharmacies will need 2 weeks.  
- Write the number of refills you have left on the top of your bottle.
To find the Preferred Drug List, bookmark [https://phmo.dukehealth.org/resources/pharmacy](https://phmo.dukehealth.org/resources/pharmacy)
THANK YOU!