University of South Florida
GERIATRIC WORKFORCE ENHANCEMENT PROGRAM (GWEP)
Learn@Lunch Geriatric Education Series
Kathryn Hyer, PhD, MPP
Principal Investigator

This project is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS), under grant #U1QHP28739. USF Geriatric Workforce Enhancement Program for $2.24 M. This information or content and conclusions are those of the presenter and should not be construed as the official position or policy of, nor should any endorsements be inferred by, HRSA, HHS or the U.S. Government.

For additional information about this and other USF GWEP events, email amaynard@health.usf.edu

Making Life Better®
Identifying Inappropriate Medications and Deprescribing Strategies

ANGELA M. HILL, PHARM.D., RCPH
GWEP LEARN@LUNCH
JUNE 9, 2017
Objectives of Talk

- Identify inappropriate medications in a medication regimen in geriatric patients.
- Utilize various tools to determine how to address medication related problems in geriatric patients.
- Discuss strategies to minimize the effects of inappropriate medication use in geriatric patients.
- Identify the appropriate medications for deprescribing practices.
- Identify strategies for implementing deprescribing practices.
- Explain the role of all health professionals in the process of deprescribing.
Case

- Multivitamin 1 tab daily
- Aspirin 81mg daily
- Citracal + D 600mg/400IU one tab twice a day
- Citrucel one teaspoonful daily
- Triazolam 0.5mg one tablet as needed (started 2 years ago)
- Torsemide 10mg daily
- Tekturna 150mg once daily
- Oxybutynin 5mg TID
- Travatan 1 drop in each eye nightly
- TruSopt 1 drop in each eye three times daily
- Fentanyl patch 25mcg every 72h
- Toprol XR 25mg one tablet BID
- Nexium 20mg daily
Tools for Identifying Inappropriate Medications

- BEER’s Criteria
- STOPP/START
- PRISCUS
- Medication Appropriateness Index
- IPET (Canadian Criteria)
- FIT for the Aged Criteria
- Prescribing Indicators in Elderly Australians
The BEERs Criteria

- Originally conceived by Mark Beers, MD (geriatrician)
- First criteria designed to identify inappropriate medications in the elderly
Limitations to BEERS Criteria

- Poorly organized
- Not applicable outside of the United States
- Many of the medications are no longer available
- Includes drugs that are effective and arguably still have a role in treating the elderly, despite adverse effect concerns
- Focus on drugs in criteria diverts attention from other drugs that may pose serious risks and require cautious prescribing
- Absence of medications that have been independently associated with increased risk in the elderly
Limitations to BEERS Criteria

- Prescribing omissions are not addressed
- Limited number of drug-drug interactions are included
- Drug duplication from same drug class are not included
- Certain clinically important drug-disease interactions are omitted
- Have not been validated in hospitalized patients
STOPP/START CRITERIA

START:
- Divided into 6 prescribing omission categories
- Divided according to physiologic systems including cardiovascular, respiratory, and central nervous systems

STOPP:
- Broad in clinical scope
- Emphasis is on drug interactions
Advantages of STOPP/START Criteria

- Has been studied in various patient-care settings
- STOPP indicators have been found to be more sensitive than BEERS criteria in the inpatient setting, skilled nursing, and community settings
- STOPP indicators seem to be clinically up-to-date
- Have defined their role in identifying and preventing inappropriate prescribing in older adults
Limitations to STOPP/START Criteria

- References are mostly to primary and tertiary sources; however, a few citations are to the British National Formulary.
- STOPP criteria do not include drugs that other experts might argue are high risk.
## Comparison of Prescribing Criteria

<table>
<thead>
<tr>
<th>Medication or Medication Class</th>
<th>BEERS</th>
<th>PIEA</th>
<th>STOPP/START</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potentially Inappropriate Medication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alpha Blockers</td>
<td>√</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Beta-Blockers</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Calcium Channel Blockers</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Digoxin</td>
<td>√</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Warfarin</td>
<td></td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Glibenclamide</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Theophylline</td>
<td>√</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>NSAIDS</td>
<td>√</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Medication or Medication Class</td>
<td>BEERS</td>
<td>PIEA</td>
<td>STOPP/START</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------</td>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>Potentially Inappropriate Medication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estrogens</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>PPIs</td>
<td></td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Anticholinergics</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>√</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Prochlorperazine</td>
<td>√</td>
<td></td>
<td>√</td>
</tr>
</tbody>
</table>
# Comparison of Prescribing Criteria

*Curtain, Drugs Aging 2013;30:935-943*

<table>
<thead>
<tr>
<th>Medication or Medication Class</th>
<th>BEERS</th>
<th>PIEA</th>
<th>STOPP/START</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potentially Prescribing Omission</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACEIs or ARBS</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Antiplatelets</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Beta Blockers</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Calcium and/or Vitamin D</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Statins</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Warfarin</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Limitations of Both Criteria

- Non-prescription medications are not emphasized in the criteria
- Herbal medications are not mentioned in the criteria
- Recommendations from therapeutic guidelines are not comprehensively incorporated into the criteria
Tools for Managing Polypharmacy

- Good Palliative-Geriatric Algorithm
- Geriatric Risk Assessment Guide
- Prescribing Optimization Method
- Anticholinergic Risk Scale
- Drug Bruden Index
- Priscus List
Tools for Nursing Home Patients

- The Assess, Review, Minimize, Optimize, Reassess Tool
- The Good Palliative-Geriatric Practice Algorithm
- Patient–Focused Drug Surveillance
- Geriatric Risk Assessment Medguide
Tools for Minimizing Anticholinergic burden

- Anticholinergic Risk Scale
- Drug Burden Index
<table>
<thead>
<tr>
<th>3 Points</th>
<th>2 Points</th>
<th>1 Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amitriptyline</td>
<td>Amantadine hydrochloride</td>
<td>Carbidopa-levodopa</td>
</tr>
<tr>
<td>Hydrochloride</td>
<td>Baclofen</td>
<td>Entacapone</td>
</tr>
<tr>
<td>Atropine</td>
<td>Betahistine hydrochloride</td>
<td>Haloperidol</td>
</tr>
<tr>
<td>Products</td>
<td>Ceftriaxone hydrochloride</td>
<td>Methocarbamol</td>
</tr>
<tr>
<td>Benztropine</td>
<td>Cimetidine</td>
<td>Metoclopramide hydrochloride</td>
</tr>
<tr>
<td>Mesylate</td>
<td>Clozapine</td>
<td>Mirtazapine</td>
</tr>
<tr>
<td>Chlorpropham</td>
<td>Cyclobenzapine hydrochloride</td>
<td>Mirtazapine</td>
</tr>
<tr>
<td>Maleate</td>
<td>Desipramine hydrochloride</td>
<td>Paroxetine</td>
</tr>
<tr>
<td>Chlorpromazine</td>
<td>Loperamide hydrochloride</td>
<td>Promipexolhydrochloride</td>
</tr>
<tr>
<td>Hydrochloride</td>
<td>Loratadine</td>
<td>Quetiapine fumarate</td>
</tr>
<tr>
<td>Cyproheptadine</td>
<td>Nortriptyline hydrochloride</td>
<td>Rasitidine</td>
</tr>
<tr>
<td>Hydrochloride</td>
<td>Olanzapine</td>
<td>Risperidone</td>
</tr>
<tr>
<td>Diphenhydramine</td>
<td>Nortriptyline hydrochloride</td>
<td>Rasitidine</td>
</tr>
<tr>
<td>Hydrochloride</td>
<td>Olanzapine</td>
<td>Risperidone</td>
</tr>
<tr>
<td>Fluphenazine</td>
<td>Procainamide maleate</td>
<td>Selegiline hydrochloride</td>
</tr>
<tr>
<td>Hydrochloride</td>
<td>Pseudoprophedrine hydrochloride–</td>
<td>Trazozone hydrochloride</td>
</tr>
<tr>
<td>Hydrochloride</td>
<td>Triprolidine hydrochloride</td>
<td>Trazozone hydrochloride</td>
</tr>
<tr>
<td>Hysocynine</td>
<td>Tolfertidine tartrate</td>
<td>Ziprasidone hydrochloride</td>
</tr>
<tr>
<td>Products</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*To calculate the Anticholinergic Risk Scale score for a patient, identify medications the patient is taking and add the total points for each medication.*
## Calculate the Anticholinergic Burden for this patient.

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Dosage/Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>clopidogrel (PLAVIX) 75 mg tablet</td>
<td>take one tablet daily</td>
</tr>
<tr>
<td>diclofenac sodium 1% Gel</td>
<td>apply to affected area four times daily</td>
</tr>
<tr>
<td>DIPHENHYDRAMINE HCL (ALLERGY MEDICINE ORAL)</td>
<td>take one tablet daily</td>
</tr>
<tr>
<td>escitalopram oxalate (LEXAPRO) 5 mg tablet</td>
<td>take one tablet daily</td>
</tr>
<tr>
<td>isosorbide mononitrate (ISMO,MONOKET) 10 mg tablet</td>
<td>take one tablet daily</td>
</tr>
<tr>
<td>mirabegron (MYRBETRIQ) 25 mg Tb24</td>
<td>take one tablet daily</td>
</tr>
<tr>
<td>mirtazapine (REMERON) 15 mg tablet</td>
<td>take one tablet daily</td>
</tr>
<tr>
<td>predniSONE (DELTASONE) 20 mg tablet</td>
<td>take one tablet daily</td>
</tr>
<tr>
<td>rivastigmine (EXELON) 9.5 mg/24 hr apply</td>
<td>daily</td>
</tr>
<tr>
<td>UBIDECARENONE (COQ-10 ORAL)</td>
<td>take one tablet daily</td>
</tr>
<tr>
<td>vitamin B complex tablet</td>
<td>take one tablet daily</td>
</tr>
</tbody>
</table>
**Drug Burden Index**

**Countries**
- Australia
- Canada
- Finland
- The Netherlands
- New Zealand
- UK
- USA

**DBI associated outcomes**
- Poorer physical function +
- Poorer balance and falls +
- Frailty +
- Poorer cognition and memory +/-
- Mortality +/-
- Hospitalization +
- Increased GP visits +

**The Drug Burden Index (DBI)**

**Limitations**
- Definitions of anticholinergic or sedative medications
- Pharmacokinetic and pharmacodynamic parameters
- Estimation of the minimum effective dose
- Observational and pilot RCT studies

**Calculation**

\[
E = \frac{\sum D}{\alpha (D + \delta)}
\]

The hyperbolic function of the Drug Burden Index pharmacological effect \( E \) is calculated by the daily dose \( D \) and minimum effective daily dose \( \delta \) of medication as approved by the regulator. \( \alpha \) is the proportionality constant.
Framework Steps and Operational Strategies for Minimizing Inappropriate Medications

- Ascertain all drugs.
- Identify patients at high risk of or experiencing ADRs.
- Estimate life expectancy.
- Define care goals in reference to life expectancy, level of functional incapacity, QOL, and patient & caregiver priorities.

Framework Steps and Operational Strategies for Minimizing Inappropriate Medications

- Define & confirm existent indications for ongoing treatment with references to defined care goals.
- Determine time until benefit for preventive disease-specific medications.
- Determine disease-specific benefit-harm thresholds.
- Review the relative utility of individual drugs.
- Identify drugs that may be discontinued or have their dosing modified.
- Implement and monitor revised therapeutic plan with ongoing reappraisal of drug utility and patience adherence.

Clinical Scenarios where the rules are broken

- Hospice
- Psychiatric stabilization units
- Aged-Care Facilities
- Transitions of Care
### Common Medications Used in Hospice that are Considered Inappropriate Based on BEERS


<table>
<thead>
<tr>
<th>Medication</th>
<th>Indication</th>
<th>Concerns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphenhydramine, hydroxyzine, promethazine</td>
<td>Itching, insomnia, nausea</td>
<td>Cognitively impairing, highly anticholinergic</td>
</tr>
<tr>
<td>Benzodiazepines, Non-benzodiazepines</td>
<td>Insomnia, anxiety</td>
<td>Cognitively impairing, increased risk for falls, sleep impairment,</td>
</tr>
<tr>
<td>Tricyclic antidepressants</td>
<td>Insomnia, pain</td>
<td>Highly anticholinergic; prolonged Q-T Interval</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>Psychosis, agitation, delirium</td>
<td>Increased risk of mortality and morbidity</td>
</tr>
<tr>
<td>Opiod, Non-opiod analgesics</td>
<td>Pain</td>
<td>Cognitively impairing, Constipating, Increased risk of falls</td>
</tr>
</tbody>
</table>
Strategies for Addressing the Use of Inappropriate Medications

- Implementation of Effective Polypharmacy Management Strategies
- Intentional Medication Reviews
- Patient Education Sessions
- Pick the Best Poison
- Deprescribing
Strategies for Managing Polypharmacy

- Check medication administration timing
- Check for potential drug interactions
- Identify duplication of therapy
  - Vitamins
  - Nonprescription vs prescription
  - Herbals vs prescription
- Check doses of each medication
- Perform side effect inquiries
- Identify cognitive-impacting medications
- Identify fall-risk medications
- Identify swallowing-risk medications
Tips on Scheduling of Medications

- For medications given once a day, take the medication at the same time every day. Ask dispenser to indicate the appropriate time for administration.

- For medications administered twice a day, space individual doses at least 10-12 hours apart.

- For medications administered three times per day, space individual doses 8 hours apart.

- For medications administered four times per day, space individual doses 4-6 hours apart.
Suggested Times of Administration for Select Medications

<table>
<thead>
<tr>
<th>Drug Categories</th>
<th>Ideal Time of Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antihypertensives</td>
<td>Morning</td>
</tr>
<tr>
<td>Lipid lowering agents</td>
<td>Evening</td>
</tr>
<tr>
<td>Bisphosphonates</td>
<td>Morning, on an empty stomach</td>
</tr>
<tr>
<td>Synthroid</td>
<td>Morning, on an empty stomach &gt;30 minutes away from other medications and food</td>
</tr>
<tr>
<td>Sex Hormones</td>
<td>Morning</td>
</tr>
<tr>
<td>Antiplatelets</td>
<td>Morning</td>
</tr>
<tr>
<td>Acid Secretion inhibitors</td>
<td>Evening</td>
</tr>
<tr>
<td>Sedating agents</td>
<td>Evening</td>
</tr>
<tr>
<td>Diuretics</td>
<td>Morning</td>
</tr>
<tr>
<td>Stimulating Drugs</td>
<td>Morning</td>
</tr>
<tr>
<td>Sleep Aids</td>
<td>Evening</td>
</tr>
<tr>
<td>Coumadin</td>
<td>Evening</td>
</tr>
</tbody>
</table>
Clinicians should be mindful of the variances in side effect potential within classes of medications

- Example: Ditropan & Detrol are more cognitively impairing than Vesicare, Eneblex, Sanctura or Myrbetriq

- Example: Zyprexa, Risperdal may cause more metabolic syndrome than quetiapine and aripiprazole

- Example: Paxil is more sedating than Zoloft, Prozac, Celexa, and Lexapro
Strategies for Deprescribing

- Reframe the issue with patient and prescriber
- Discuss the benefit-harm-trade offs and assess willingness
- Target patients according to highest ADE risk
- Target drugs more likely to be non-beneficial
- Access and apply specific discontinuation regimens
- Foster shared education and training
- Extend the time frame with the same clinician

Ideal Patients for Deprescribing

- Aging patients
- Patients taking more than 5 prescription and nonprescription medications.
- Institutionalized patients
- Patients at the end of life
- Others
Target Medications for Deprescribing

- Proton Pump Inhibitors/H2A blockers
- Benzodiazepines
- Psychotropics
- Polypharmacy regimens for specific diseases
- Nonprescription and Herbal Medications
Ideal Opportunities for Deprescribing

- MTM sessions
- Monthly chart reviews in the nursing home setting
- Transition of Care
- Discharge Counseling from a hospital, rehab center, mental health facilities
- Admission into hospice
- Therapeutic Optimization
- Medicare Annual Wellness Visits
- Other.....
Considerations for Deprescribing

- Calculate Life Expectancy
  [http://media.nmfn.com/tnetwork/lifespan/#0](http://media.nmfn.com/tnetwork/lifespan/#0)

- Use Disease Risk Protocols
  [http://www.medal.org](http://www.medal.org)

- Use Prognostic Tools
  [http://eprognosis.ucsf.edu](http://eprognosis.ucsf.edu)

- Determine Drug Utility
Steps on Determining Drug Utility

- Determine
  - Strength of Drug Utility
  - Potential for misuse
  - Potential for toxicity
  - Likelihood of non-adherence

How to Determine the Strength of the Indication  
(in order of decreasing utility)

The medication should:

- Provide immediate relief of distressing symptoms (i.e. analgesics, antipruritics)
- Effectively modify an acute condition that is life threatening or will soon result in distressing symptoms if not treated (i.e. antibiotics for sepsis, diuretics for acute heart failure, bronchodilators for asthma)
- Effectively modifies a chronic condition that might progress and become life threatening or cause distressing symptoms of not treated (i.e., methotrexate for rheumatoid arthritis, ACE inhibitors for heart failure)

Scott et. al., Evid. Based Med; 2013;18(4):121-124
How to Determine the Strength of the Utility (in order of decreasing utility)

- The medication should:
  - Have the potential to prevent serious diseases or adverse events in the future, without immediate effect (i.e., antiplatelet agents to prevent cardiovascular disease, bisphosphonates to prevent osteoporotic fractures, antihypertensives to prevent stroke)
  - Is unlikely to be useful in either short or long term (i.e., vitamins or herbal supplements)
  - Is prescribed where a non-drug therapy (i.e. physiotherapy instead of a NSAIA for lower back pain) is more beneficial.

Scott et. al., Evid. Based Med; 2013;18(4):121-124
Determining the Likelihood of Misuse, Toxicity, or Non-adherence

The Medication:

- Is associated with little benefit and high risk of toxicity in most older patients
- Is a duplication of therapy
- Is prescribed for an adverse drug reaction
- Is potentially a beneficial drug, but is prescribed at a dose that is likely to cause toxicity or an ADR

Determining the Likelihood of Misuse, Toxicity, or Non-adherence

The Medication:

- Has the potential for significant drug-drug or drug-disease interactions
- Is taken more than once daily
- Can be safely administered as a combination medication
- Is causing significant difficulties with adherence
- Has a narrow therapeutic window
Common Missed Opportunities for Deprescribing

- PPIs after hospitalization
- Chronic care in hospice care
- Psychotropics after hospitalization
- Pain medications after surgery
- Resolution of depression and anxiety symptoms
- Improvement of symptoms when polypharmacy is employed to address symptoms of a disease (i.e., hypertension, diabetes)
If polypharmacy were a disease, it would rank 6th behind diabetes, but ahead of osteoarthritis in terms of costs of diseases effecting persons over 65 years of age, yet Medicare reimburses for 30 minute diabetic consults in primary care, but not sufficiently for even a 10 minute overall medication consult.
Reasons Why Deprescribing is Necessary

- Minimize ADRs
- Minimize cost to patient
- Improve adherence
- Simplify regimens
- Minimize polypharmacy
- Minimize hospitalizations
- Other....
Reasons for Polypharmacy

- Prescribing Cascade
- Off-Label Use of Medications
- Multiple Prescribers
- Overuse of Vitamins
- Overuse of Herbals
The “Prescribing Cascade”

Some common examples:
- NSAID -> HTN -> antihypertensive therapy
- Metoclopramide -> Parkinsonism - Sinemet
- Dihydropyridine -> edema - furosemide
- NSAIA -> H2 blocker -> delirium - Haldol
- HCTZ -> gout -> NSAIA -> 2nd antihypertensive
- Sudafed -> urinary retention - alpha blocker
Risks Associated with Polypharmacy

- Noncompliance with drug therapy
- Over- or under-dosage of medication
- Therapeutic duplication
- Contraindicated use of medications together
- Drug-drug interactions
- Adverse drug reactions
- Mounting medication expenses
- Increased ER visits
- Increased hospitalizations
- Increased medication-related problems
- Minimize Geriatric Syndromes
Geriatric Syndromes

- Falls
- Incontinence
- Low Body Index
- Dizziness
- Hearing Impairment
- Cognitive Impairment
- Vision Impairment
Clinical and Non-Clinical Settings that are Ideal for Deprescribing

- Hospice
- Home
- Hospitals
- Retail Settings
- Ambulatory Care Clinics
- Other
Strategies for Managing Polypharmacy

- Check medication administration timing
- Check for potential drug interactions
- Identify duplication of therapy
  - Vitamins
  - Nonprescription vs prescription
  - Herbals vs prescription
- Check doses of each medication
- Perform side effect queries
- Identify cognitive-impacting medications
- Identify fall-risk medications
- Identify swallowing-risk medications
CEASE Deprescribing Framework

- **Current Medication Analysis** (medication reconciliation)
- **Elevated Risk Medication Identification**
  - Consider risk factors such as number of meds, age, adherence patterns, use of high risk drugs, multiple prescribers, cognitive status, substance use, mental health problems
- **Assess usefulness of each medication**
  - Confirm indication based on diagnoses, evaluate effects of med on disease state, determine future benefit of medication
- **Sort or prioritize deprescribing meds with lowest utility**
- **Eliminate or implement a discontinuation regimen that includes monitoring**

*Scott, IMJ, 2015;45:352-355*
Good Palliative-Geriatric Practice Algorithm

Discuss the following with the patient/guardian

- An evidence-based consensus exists for using the drug for the indication given in its current dosing rate in this patient's age group and disability level, and the benefit outweighs all possible known adverse effects.

- Indication seems valid and relevant in this patient's age group and disability level.
  - Yes
  - No/Not sure

- Do the known possible adverse reactions of the drug outweigh possible benefit in old, disabled patients?
  - Yes
  - No

- Any adverse symptoms or signs that may be related to the drug?
  - Yes
  - No

- Is there another drug that may be superior to the one in question?
  - Yes
  - No

- Can the dosing rate be reduced with no significant risk?
  - Yes
  - No

- Continue with the same dosing rate
- Reduce dose

Source: American College of Nurse Practitioners © 2013 Elsevier Inc.
### CNS Medications Associated with Discontinuation Syndromes

<table>
<thead>
<tr>
<th>Medication</th>
<th>Withdrawal</th>
<th>Rebound</th>
<th>Disease Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticonvulsants</td>
<td>✓</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>✓</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anticholinergics</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baclofen</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Antiparkinsonian</td>
<td>✓</td>
<td>✓</td>
<td>√</td>
</tr>
</tbody>
</table>
## CV Medications Associated with Discontinuation Syndromes

<table>
<thead>
<tr>
<th>Medication</th>
<th>Withdrawal</th>
<th>Rebound</th>
<th>Disease Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha-Blockers</td>
<td>√</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>ACE-Inhibitors</td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Antianginal Agents</td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Beta-Blockers</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digoxin</td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>Diuretics</td>
<td></td>
<td></td>
<td>√</td>
</tr>
</tbody>
</table>
### Other Medications Associated with Discontinuation Syndromes

<table>
<thead>
<tr>
<th>Medication</th>
<th>Withdrawal</th>
<th>Rebound</th>
<th>Disease Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narcotic Analgesics</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSAIDS</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Corticosteroids</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Activity: Case

- What medication related problems exist in this case?
- How would you address the medication related problems in this case?

- Which of these medications are considered inappropriate based on the use of polypharmacy tools?
- What strategies would you implement to address the use of the inappropriate medications?

- What medications could be “deprescribed” in this case?
- How would you “deprescribe” those medications?

- What other modifications or recommendations could be made to manage polypharmacy in this case?
A 75y/o woman is brought to the physician’s office by her niece, with whom she lives. The niece was not able to stay for the appointment. Starting 6 months ago she started complaining of fatigue and decreased appetite. She lost about 30 pounds prior to moving in with her niece, but she has only regained 10 pounds since the move. She has been sleeping more than usual. She hasn’t been eating or drinking a lot of fluids. This morning, she seemed a bit disoriented and fell going into the bathroom. She is very irritable and belligerent about her ADLs, and has lost interest in playing BRIDGE at the Senior Center.
Case

- SH: Non-smoker, Non-drinker. She has been living with her niece for the past six months. Her niece pays the bills and handles her other “business.” She has Medicare A, B, and D. She is not driving.
- FH: Not relevant
- PMH: High blood pressure, Feet /ankle swelling, urinary incontinence, chronic back pain from arthritis, insomnia, glaucoma, constipation
- Vitals: Temp 98.5, BP 108/68, Pulse 68, RR 18 unlabored, weight 140lbs, height 5’7”
- Mental Status: Alert and oriented X 2 (Person, place), MMSE 25/30
Case Medications

- Multivitamin 1 tab daily
- Aspirin 81mg daily
- Citracal + D 600mg/400IU one tab twice a day
- Citrucel one teaspoonful daily
- Triazolam 0.5mg one tablet as needed (started 2 years ago)
- Torsemide 10mg daily
- Tekturna 150mg once daily
- Oxybutynin 5mg TID
- Travatan 1 drop in each eye nightly
- TruSopt 1 drop in each eye three times daily
- Fentanyl patch 25mcg every 72h
- Toprol XR 25mg one tablet BID
- Nexium 20mg daily
Case Discussion

- What medication related problems exist in this case?
- How would you address the medication related problems in this case?

- Which of these medications are considered inappropriate based on the use of polypharmacy tools?
- What strategies would you implement to address the use of the inappropriate medications?

- What medications could be “deprescribed” in this case?
- How would you “deprescribe” those medications?

- What other modifications or recommendations could be made to manage polypharmacy in this case?
For further questions:

Angela M. Hill, Pharm.D., RCPh
ahill2@health.usf.edu
813.974.2551