



University of South Florida
**GERIATRIC
WORKFORCE
ENHANCEMENT
PROGRAM (GWEP)**
Learn@Lunch
Geriatric Education Series

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Providers of
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Identifying Inappropriate Medications and Deprescribing Strategies

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GWEP LEARN@LUNCH

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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 the 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)
- ▶ 1991 → 1997 → 2003 → 2012 → 2015
- ▶ 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 arguable 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

Medication or Medication Class	BEERS	PIEA	STOPP/START
Potentially Inappropriate Medication			
Alpha Blockers	√		√
Beta-Blockers	√	√	√
Calcium Channel Blockers	√	√	√
Digoxin	√		√
Warfarin		√	√
Glibenclamide	√	√	√
Theophylline	√		√
NSAIDS	√		√

Comparison of Prescribing Criteria

Curtain, Drugs Aging 2013;30:935-943

Medication or Medication Class	BEERS	PIEA	STOPP/START
Potentially Inappropriate Medication			
Estrogens	√	√	√
PPIs		√	√
Anticholinergics	√	√	√
Antipsychotics	√		√
Benzodiazepines	√	√	√
Prochlorperazine	√		√

Comparison of Prescribing Criteria

Curtain, Drugs Aging 2013;30:935-943

Medication or Medication Class	BEERS	PIEA	STOPP/START
Potentially Prescribing Omission			
ACEIs or ARBS		√	√
Antiplatelets		√	√
Beta Blockers		√	√
Calcium and/or Vitamin D		√	√
Statins		√	√
Warfarin		√	√

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 Burden Index
- ▶ Priscus List

Tools for Nursing Home Patients

- ▶ The **A**ssess, **R**evue, **M**inimize, **O**ptimize, **R**eassess 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 4. Anticholinergic Risk Scale^a

3 Points	2 Points	1 Point
Amitriptyline hydrochloride	Amantadine hydrochloride	Carbidopa-levodopa
Atropine products	Baclofen	Entacapone
Benztropine mesylate	Cetirizine hydrochloride	Haloperidol
Carisoprodol	Cimetidine	Methocarbamol
Chlorpheniramine maleate	Clozapine	Metoclopramide hydrochloride
Chlorpromazine hydrochloride	Cyclobenzaprine hydrochloride	Mirtazapine
Cyproheptadine hydrochloride	Desipramine hydrochloride	Paroxetine hydrochloride
Dicyclomine hydrochloride	Loperamide hydrochloride	Pramipexole dihydrochloride
Diphenhydramine hydrochloride	Loratadine	Quetiapine fumarate
Fluphenazine hydrochloride	Nortriptyline hydrochloride	Ranitidine hydrochloride
Hydroxyzine hydrochloride and hydroxyzine pamoate	Olanzapine	Risperidone
Hyoscyamine products	Prochlorperazine maleate	Selegiline hydrochloride
Imipramine hydrochloride	Pseudoephedrine hydrochloride–triprolidine hydrochloride	Trazodone hydrochloride
Meclizine hydrochloride	Tolterodine tartrate	Ziprasidone hydrochloride
Oxybutynin chloride		
Perphenazine		
Promethazine hydrochloride		
Thioridazine hydrochloride		
Thiothixene		
Tizanidine hydrochloride		
Trifluoperazine hydrochloride		

^aTo 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.

clopidogrel (PLAVIX) 75 mg tablet take one tablet daily

diclofenac sodium 1 % Gel apply to affected area four times daily

DIPHENHYDRAMINE HCL (ALLERGY MEDICINE ORAL) take one tablet daily

escitalopram oxalate (LEXAPRO) 5 mg tablet take one tablet daily

isosorbide mononitrate (ISMO,MONOKET) 10 mg tablet take one tablet daily

mirabegron (MYRBETRIQ) 25 mg Tb24 take one tablet daily

mirtazapine (REMERON) 15 mg tablet take one tablet daily

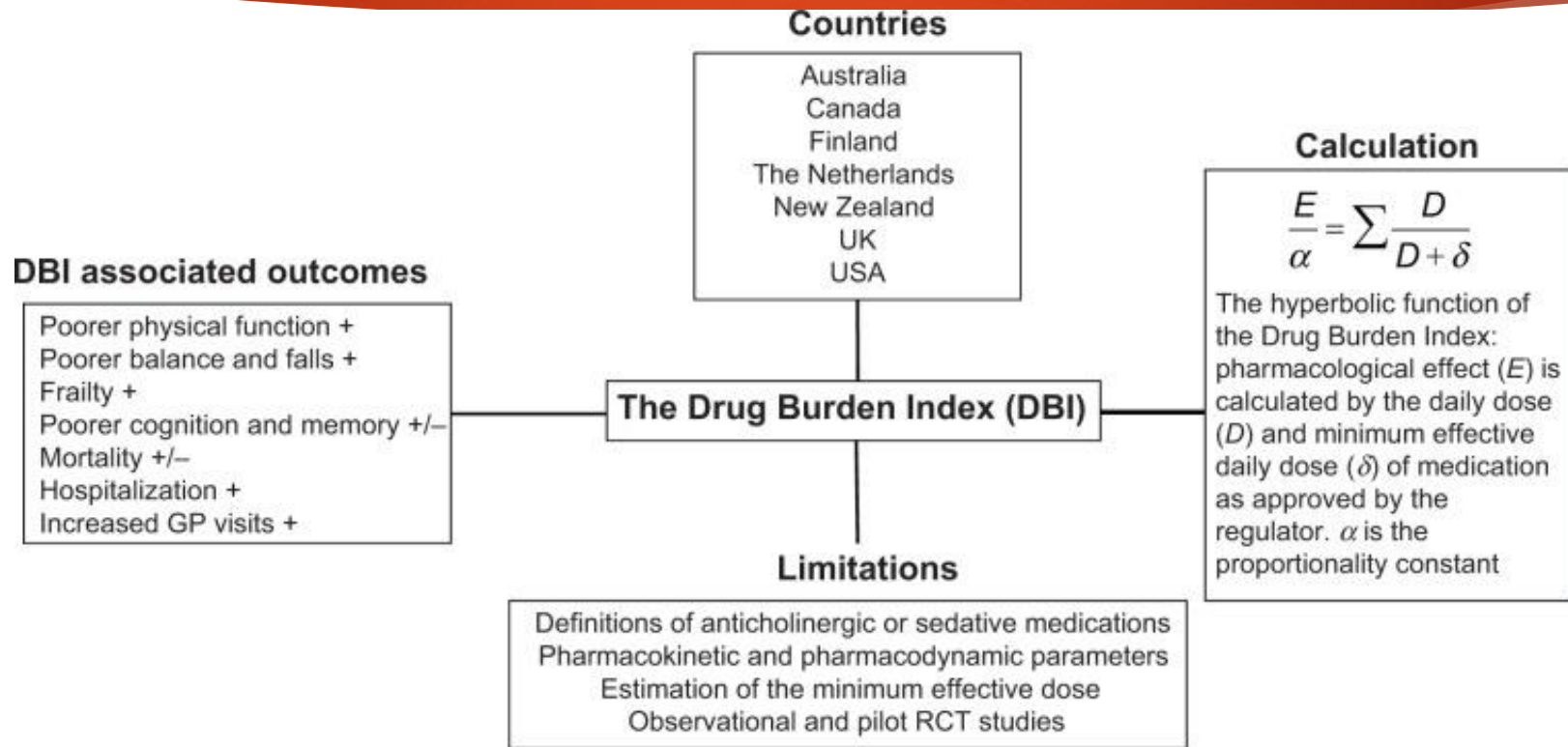
predniSONE (DELTASONE) 20 mg tablet take one tablet daily

rivastigmine (EXELON) 9.5 mg/24 hr apply daily

UBIDECARENONE (COQ-10 ORAL) take one tablet daily

vitamin B complex tablet take one tablet daily

Drug Burden Index



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.

Am J Med 2012: 125:529-537

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 patient adherence.

Am J Med 2012: 125:529-537

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

American Geriatrics Society. *J Am Geriat Soc.* 2015; 63:2227-46.

Medication	Indication	Concerns
Diphenhydramine, hydroxyzine, promethazine	Itching, insomnia, nausea	Cognitively impairing, highly anticholinergic
Benzodiazepines, Non-benzodiazepines	Insomnia, anxiety	Cognitively impairing, increased risk for falls, sleep impairment,
Tricyclic antidepressants	Insomnia, pain	Highly anticholinergic; prolonged Q-T Interval
Antipsychotics	Psychosis, agitation, delirium	Increased risk of mortality and morbidity
Opioid, Non-opioid analgesics	Pain	Cognitively impairing, Constipating, Increased risk of falls

Strategies for Addressing the Use of Inappropriate Medications

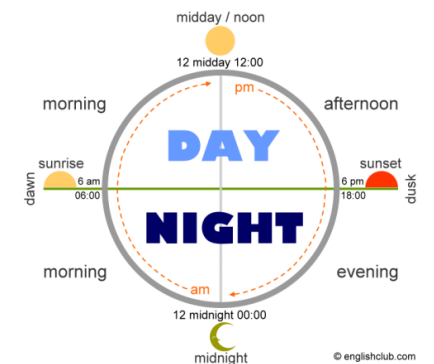
- ▶ Implementation of Effective Polypharmacy Management Strategies
- ▶ Intentional Medication Reviews
- ▶ Patient Education Sessions
- ▶ Pick the Best Poison
- ▶ Deprescribing

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

Drug Categories	Ideal Time of Administration
Antihypertensives	Morning
Lipid lowering agents	Evening
Bisphosphonates	Morning, on an empty stomach
Synthroid	Morning, on an empty stomach >30 minutes away from other medications and food
Sex Hormones	Morning
Antiplatelets	Morning
Acid Secretion inhibitors	Evening
Sedating agents	Evening
Diuretics	Morning
Stimulating Drugs	Morning
Sleep Aids	Evening
Coumadin	Evening

Picking the Best Poison

- ▶ 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

▶ Scott I, Anderson K, Freeman C, et. al., MJA 2014;201(7):1-3.

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>

- ▶ Use Disease Risk Protocols

<http://www.medal.org><http://www.medal.org>

- ▶ Use Prognostic Tools

<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

Scott et. al., Evid. Based Med; 2013;18(4):121-124.

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 if 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

Scott et. al., Evid. Based Med; 2013;18(4):121-124.

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)

Statistics

- ▶ If polypharmacy were a disease, it would rank 6th behind diabetes, but ahead of osteoarthritis in terms of costs of diseases affecting 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....

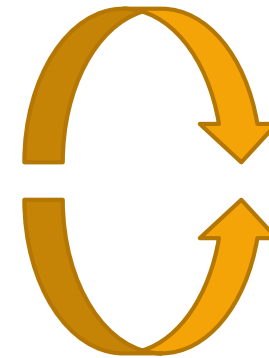
Reasons for Polypharmacy

- ▶ 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

Medication
Related
Problems



Polypharmac
y

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

Hearing
Impairment

Incontinence

Cognitive
Impairment

Low Body
Index

Vision
Impairment

Dizziness



Clinical and Non-Clinical Settings that are Ideal for Deprescribing

- ▶ Hospice
- ▶ Home
- ▶ Hospitals
- ▶ Retail Settings
- ▶ Ambulatory Care Clinics
- ▶ Other

Strategies for Managing Polypharmacy

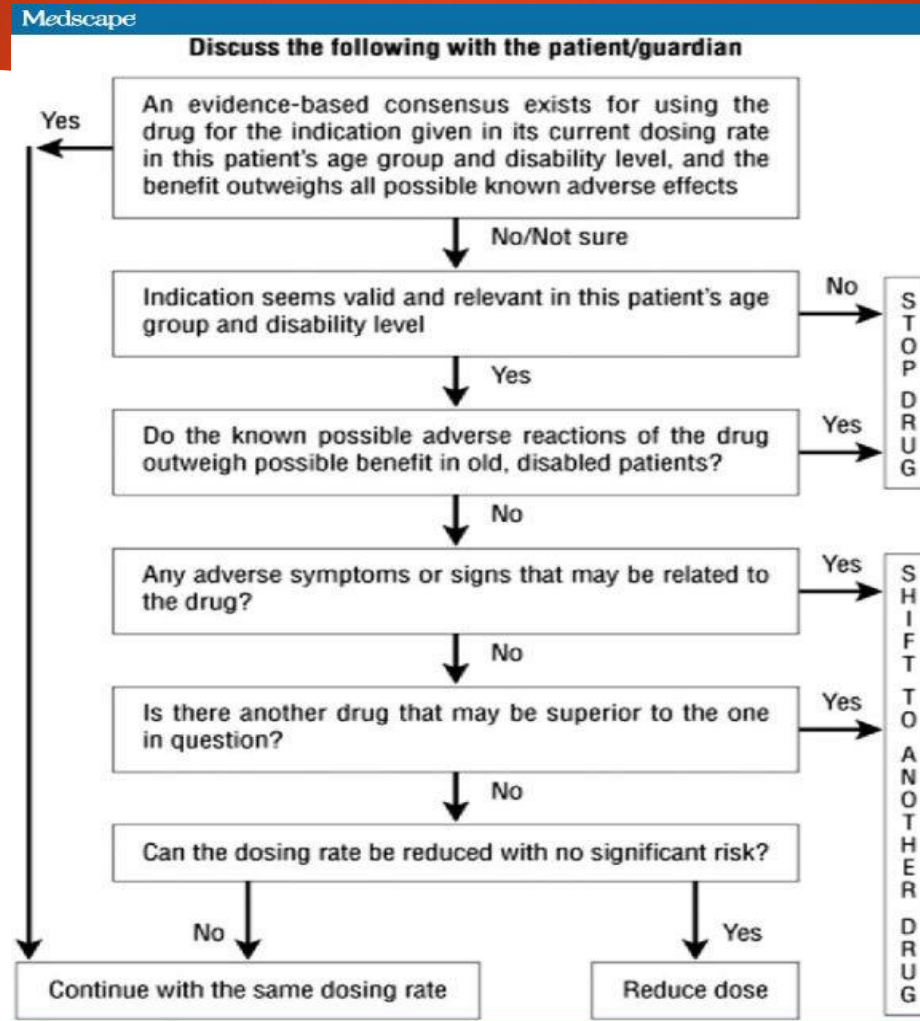
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- ▶ Identify cognitive-impacting medications
- ▶ Identify fall-risk medications
- ▶ Identify swallowing-risk medications

CEASE Deprescribing Framework

- ▶ **C**urrent Medication Analysis (medication reconciliation)
- ▶ **E**levated 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
- ▶ **A**ssess usefulness of each medication
 - ▶ Confirm indication based on diagnoses, evaluate effects of med on disease state, determine future benefit of medication
- ▶ **S**ort or prioritize deprescribing meds with lowest utility
- ▶ **E**liminate or implement a discontinuation regimen that includes monitoring

Scott, IMJ, 2015;45:352-355

Good Palliative-Geriatric Practice Algorithm



CNS Medications Associated with Discontinuation Syndromes

Medication	Withdrawal	Rebound	Disease Recurrence
Anticonvulsants	√		√
Antidepressants	√		√
Antipsychotics	√		
Anticholinergics	√		
Benzodiazepines	√		
Baclofen	√	√	
Antiparkinsonian	√	√	√

CV Medications Associated with Discontinuation Syndromes

Medication	Withdrawal	Rebound	Disease Recurrence
Alpha -Blockers	√	√	
ACE-Inhibitors			√
Antianginal Agents			√
Beta-Blockers	√		
Digoxin			√
Diuretics			√

Other Medications Associated with Discontinuation Syndromes

Medication	Withdrawal	Rebound	Disease Recurrence
Narcotic Analgesics	√		
NSAIDS			√
Corticosteroids	√	√	√

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?

Case Background

- ▶ 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
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- ▶ Fentanyl patch 25mcg every 72h
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- ▶ Nexium 20mg daily

Case Discussion

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For further questions:



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