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Geriatric Syndrome

Polypharmacy

Learning Objectives

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Polypharmacy

At the conclusion of the module on polypharmacy and the older adult, the learner should:

KNOW

- The two most common definitions of polypharmacy
- Common factors contributing to the occurrence of polypharmacy
- The concepts of medication optimization and deprescribing

DO

- Identify resources to aid in the recognition and management of polypharmacy
- Practice deprescribing in patients with identified polypharmacy
- Optimize medications for an individual older adult

Case
Mrs. Herrin

- Annabelle Herrin, 79-year-old black female, recently discharged from hospital
- Admitted for fatigue and feeling like “my heart was going to fly out of my chest"
- Discharge diagnoses of atrial fibrillation and heart failure
- Discharged to her small home where she lives alone with no family nearby
- Self described as the "healthy one" among her friends
- Her diagnoses prior to admission were OP, OA, hypertension, and T2DM; all controlled with medications
- Post discharge she is now taking 22 medications, with 6 of the 22 added at hospital discharge and another 6 that are self-prescribed. Ten of the 22 medications are available without prescription

- Mrs. Herrin arrives at the pharmacy to pick up her prescriptions that were prescribed by the hospitalist and she also has a list of nonprescription medications that she asks for assistance in locating in the pharmacy

- Point-of-care testing from the patient’s encounter with the pharmacist reveals the following:
  BP 120/82 (sitting) 116/78 (standing); P= 80
  Total Cholesterol = 180 mg/dL(non-fasting fingerstick)
  BG = 160 mg/dL (non-fasting fingerstick)
  and the pharmacist directs Ms. Herrin to the nonprescription products section of the pharmacy to find her requested medications

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Case

Mrs. Herrin – Medication List

Meds Taken Prior to Hospital Admission:

- lisinopril (Prinivil) 5 mg once daily
- simvastatin (Zocor) 40 mg once daily
- hydrochlorothiazide (Hydrodiuril) 25 mg once daily
- oxybutynin (Ditropan) 10 mg once daily
- citalopram (Celexa) 20 mg once daily
- alendronate (Fosamax) 70 mg once weekly
- metformin (Glucophage) 850 mg once daily

Meds added at Hospital Discharge:

- aspirin 81 mg once daily
- metoprolol tartrate (Lopressor) 50 mg twice daily
- lisinopril (Prinivil) 20 mg once daily
- warfarin (Coumadin) 5 mg once daily*

  *followed by anticoagulation clinic pharmacist
- amlodipine (Norvasc) 10 mg once daily
- omeprazole (Prilosec) 20 mg once daily

OTC Meds Suggested by PCP:

- calcium (Tums) 500 mg twice daily with food
- vitamin D_3 400 IU twice daily
- senior multivitamin once daily

Self-care Meds Taken by Patient

- acetaminophen/ diphenhydramine (Tylenol PM) 500/25 mg for sleep
- ginkgo biloba once daily for memory support
- acetaminophen 325 mg for pain
- calcium citrate 400 mg/vitamin D_3 500 IU (Citracal) twice daily with food
- omega-3 fish oil 1000 mg once daily
- supplies to check BG twice daily (Accu-Check Aviva Plus Test Strips)

Definitions

Geriatric Syndrome

- A multifactorial condition prevalent in older adults that develops when an individual experiences accumulated impairments in multiple systems that compromise their compensatory abilities.

Overarching Topics	Geriatric Syndromes		
Age-Friendly Care	Chronic Pain	Falls	Polypharmacy
Ageism	Cognitive Impairment	Frailty	Pressure Injury
	Delirium	Incontinence	Sleep Disturbance
	Depression	Malnutrition	

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Definitions

Screening

- Screening tools are tests or measures to evaluate for diseases and health conditions before symptoms appear.
- Screenings allow for earlier management and referral to appropriate providers.
- An age-friendly provider conducts screenings for conditions that are prevalent in older adults.

Definitions

Assessment

- Assessment tools are tests and measures used to evaluate the patient's presenting problem, confirm a diagnosis, determine its severity, and aid in identifying specific treatment options.

- An age-friendly provider uses appropriate assessments, makes referrals, and communicates with the patient's care providers.

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Definitions

Treatment

- An age-friendly care provider considers the 4Ms when making treatment recommendations so that **what matters** to the patient is always part of the plan of care.

- An age-friendly provider communicates with the patient, family, and interdisciplinary team.

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Definitions

Polypharmacy

- The prescription, administration, and/or use of more medications than are clinically indicated in a given patient. While often referenced as the use of five or more medications, polypharmacy is when more medications are used than needed, despite the number.

- Multiple medications are a major risk factor for adverse drug events, medication adherence problems, and adverse health outcomes.
- Half of patients expect to receive a prescription following a healthcare encounter.
- Providers are often reluctant to override other prescribers' decisions.

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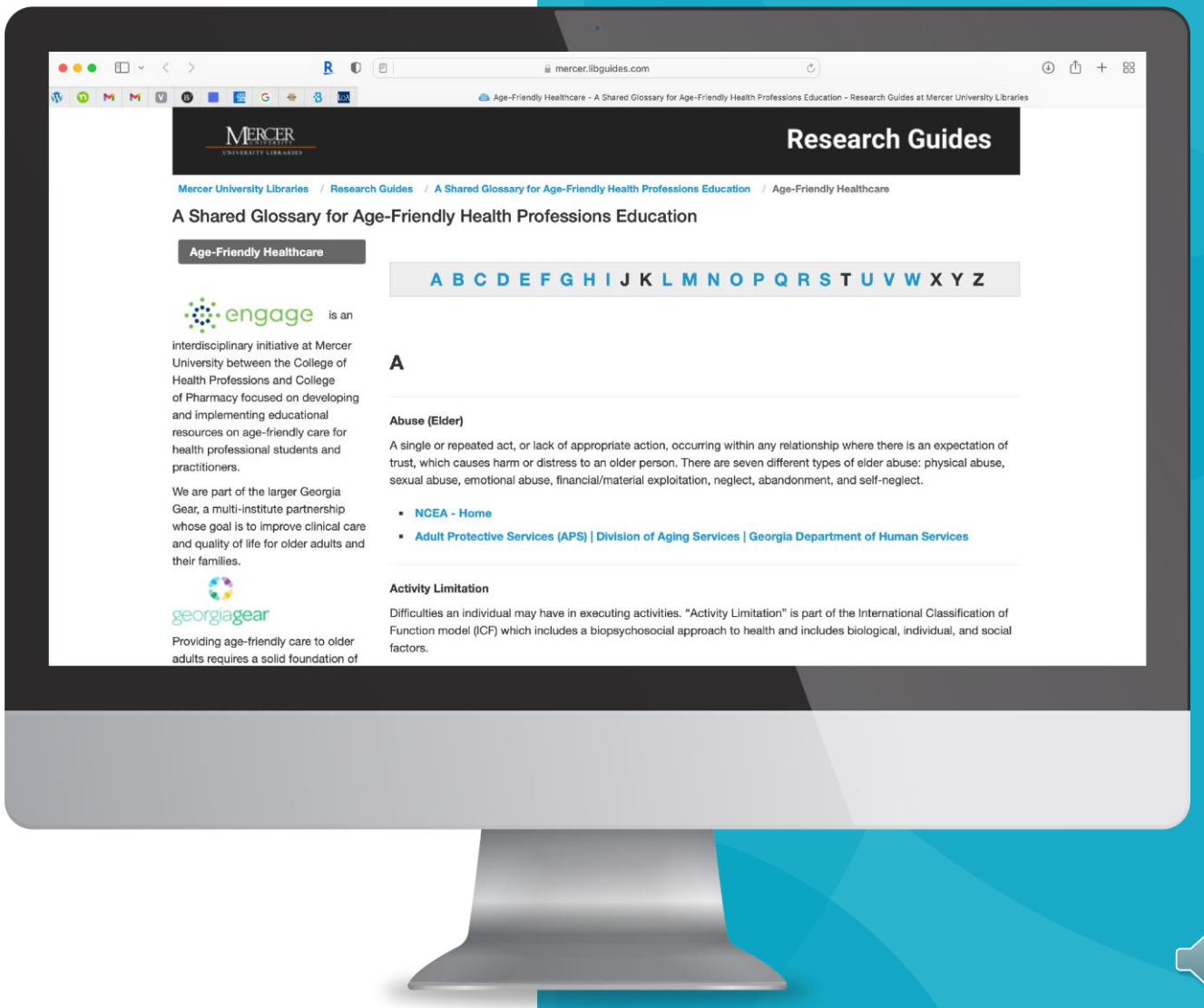
Know and Use the Shared Language…

we are all connected

GLOSSARY



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Statistics

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Polypharmacy Statistics[1-3]

20%
Of older adults have 5 or more chronic comorbidities managed by multiple medications

25%
Of 65- to 69-year-old adults take 5 or more medications

46%
Of 70- to 79-year-old adults take at least 5 medications

68%
Of older adults taking prescription medications are also concurrently taking nonprescription medications and supplements

2x
Polypharmacy is associated with 2 times the total health care expenditures (198%)

3x
Polypharmacy is associated with 3 times the pharmacy expenditures (287%)

Risk Factors

Polypharmacy Risk Factors[4]

- Prescribing Cascade
- Multiple Chronic Diseases managed with Clinical Practice Guidelines (CPGs)
- Wellness/Preventive Care and Self Care
- Care Transitions

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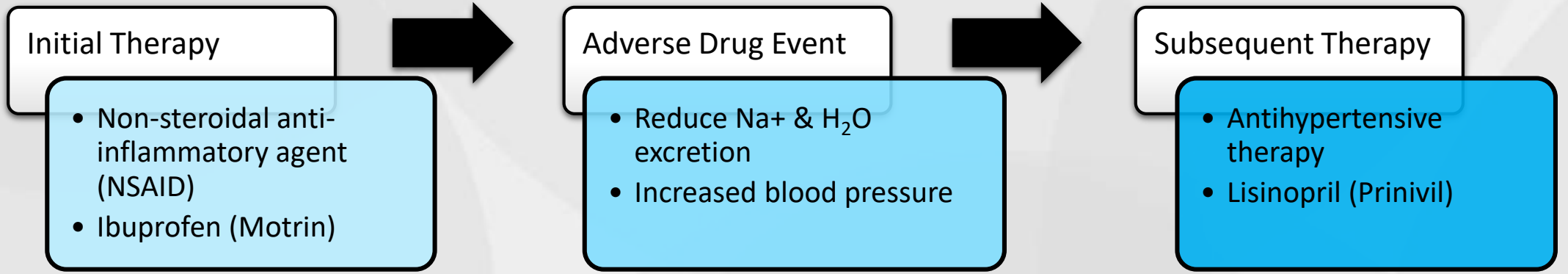
Risk Factors

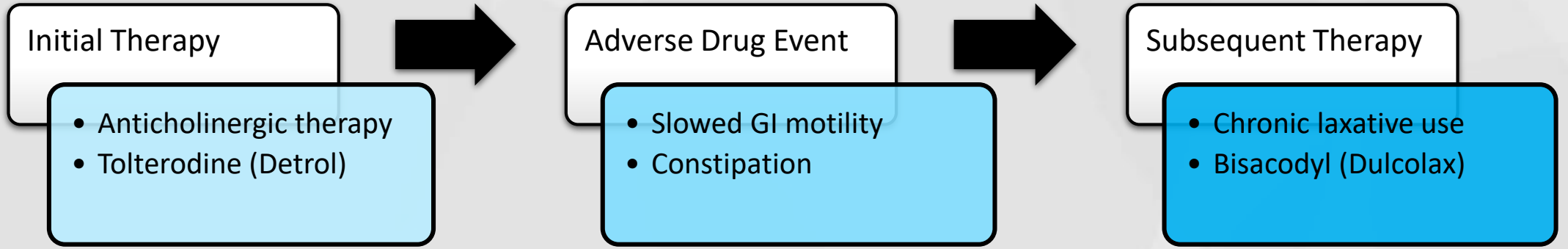
The Prescribing Cascade[5]

- Prescribing Cascade - Misrepresentation of an adverse drug event as a new medical condition that leads to the prescribing of additional medications

- Impacts of prescribing cascade: Increased cost for drug therapy, Increased risk of adverse drug events and **POLYPHARMACY**

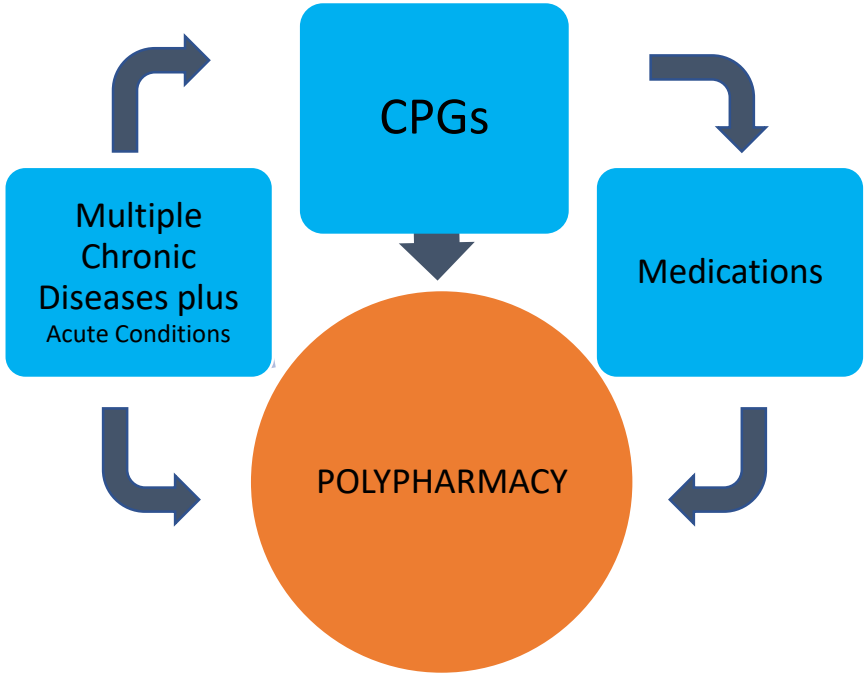
Prescribing Cascade - Examples





Risk Factors

Multiple Chronic Diseases[6]



- Many older adults average 4 or more conditions which are managed using Evidence Based Medicine that often involves applying Clinical Practice Guidelines (expert opinions) to guide care.
- The Institute of Medicine recommends use of CPGs to improve the quality of healthcare while prescribers follow CPGs to ensure best practice and to meet quality-of-care goals.
- Most of the over 3000 published CPGs are for a single disease and do not take into consideration multiple conditions or comorbidities as is common in the older adult.

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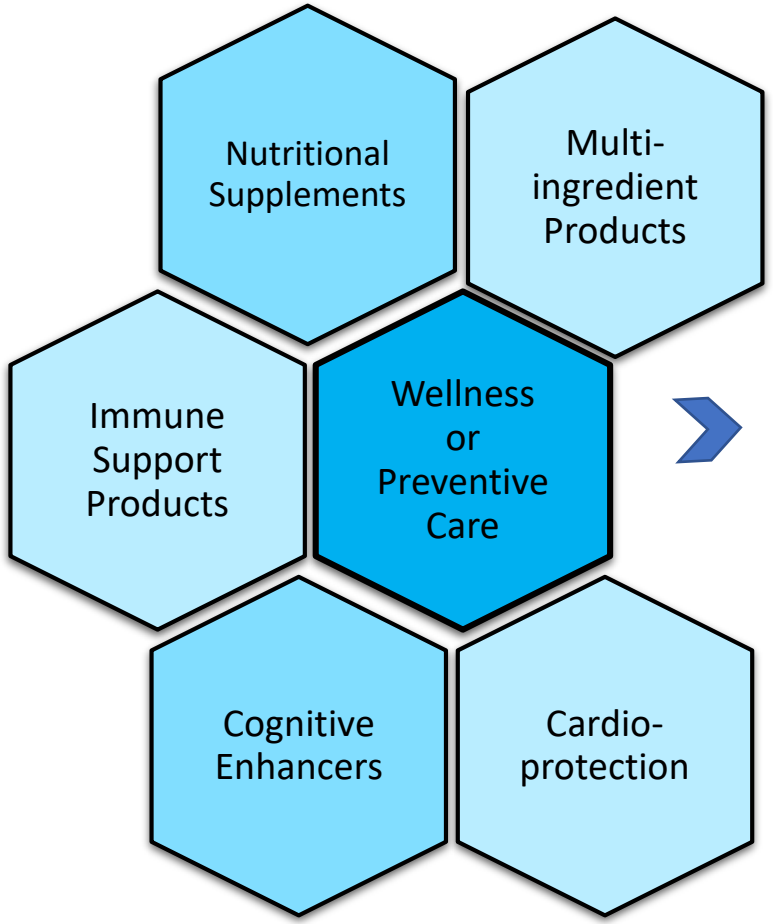
Risk Factors

Wellness or Preventive Care



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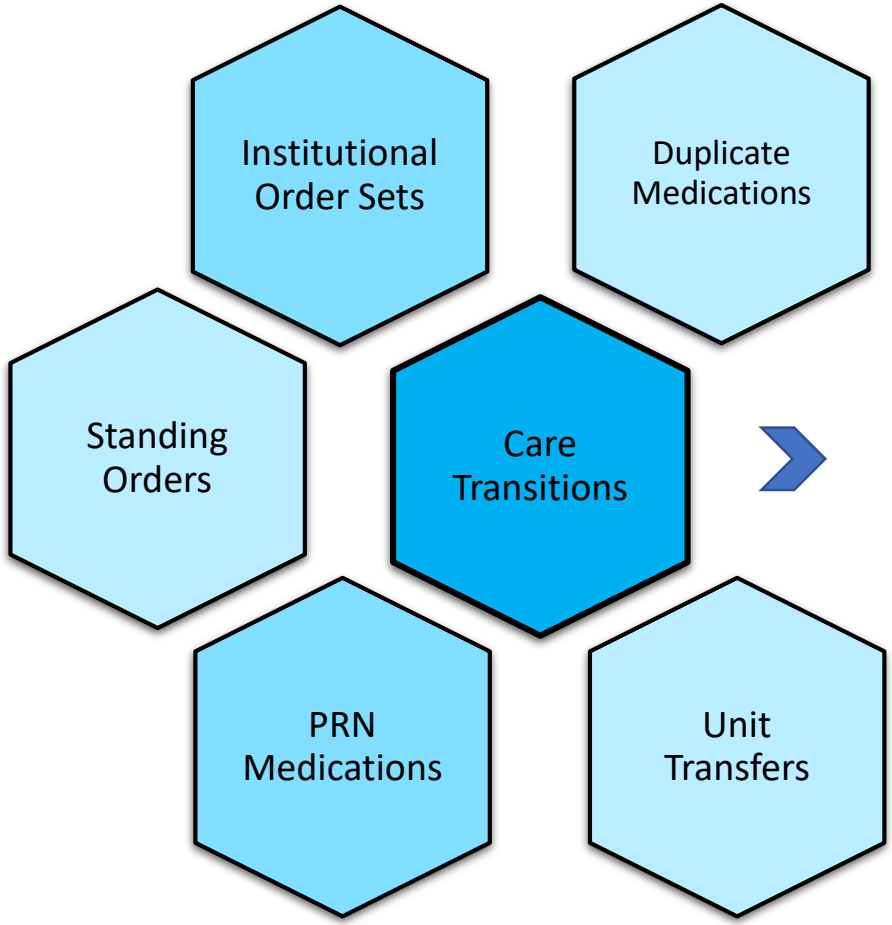
Risk Factors

Care Transitions



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Screening

Assessment

Treatment

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Screening for Polypharmacy

The Medication Appropriateness Index[7]

10 questions to ask about each medication on the older adult's drug list

Question	Yes (Points)	No (Points)
Is there an indication for the medication?	0	3
Is the medication effective for the condition?	0	3
Is the dosage correct?	0	2
Are the directions correct?	0	2
Are the directions practical or capable of being put into practice?	0	2
Are there clinically significant drug-drug interactions?	2	0
Are there clinically significant drug-disease interactions?	1	0
Is there unnecessary duplication with other medications?	1	0
Is the duration of therapy acceptable?	0	1
Is the medication the least expensive alternative compared to others of equal utility?	0	1
Total (add points): Maximum score is 18 which implies maximum inappropriateness		

Polypharmacy Assessment Tool [8]

The American Geriatrics Society Beers Criteria

- Medications considered potentially inappropriate in older adults
- Medications considered potentially inappropriate when used in older adults with certain diseases or conditions
- Medications considered potentially inappropriate based on kidney function
- Medications that should be used with caution in older adults
- Drug-drug interactions that are highly associated with harmful outcomes in older adults

Medications Considered Potentially Inappropriate in Older Adults [8]

ACH
- First generation Antihistamines
- Antiparkinson agents
- Antispasmodics

CV
- Central alpha agonists
- Digoxin as first line therapy
- Nifedipine-immediate release

CNS
- Antidepressants
- First & second generation Antipsychotics
- Benzodiazepines/ Nonbenzodiazepines

ENDO
- Androgens
- Estrogens +/- progestins
- Sliding scale dosing of Insulin

GI
- Metoclopramide
- Mineral Oil
- Proton Pump Inhibitors

Pain
- Some NSAIDs
- Aspirin > 325 mg daily
- Ketorolac

SMR
- Carisoprodol
- Cyclobenzaprine
- Methocarbamol

GU
- Desmopressin
- Oxybutynin
- Tolterodine

Medications Considered Potentially Inappropriate in Older Adults…with Certain Diseases or Conditions [8]

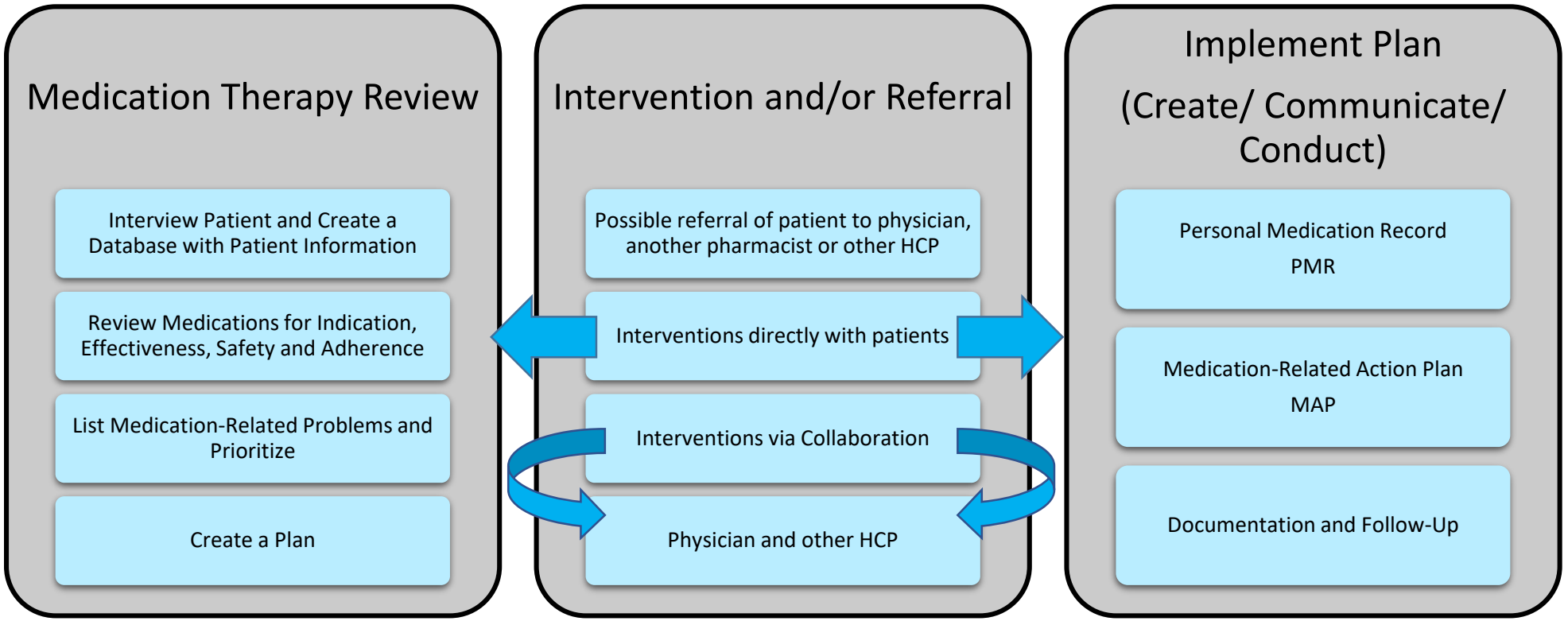
Medications to AVOID in patients with certain conditions:

Condition	AVOID
Cognitive Impairment	Anticholinergics; Benzodiazepines; Nonbenzodiazepines; Antipsychotics
History of Falls or Fracture	Antiepileptics; Antipsychotics; Benzodiazepines; Nonbenzodiazepines; Antidepressants
BPH	Anticholinergics
History of GI Ulcers	Aspirin > 325 mg daily; Non-COX-2-selective NSAIDs
Parkinson's Disease	Antiemetics; ALL Antipsychotics except Quetiapine, Clozapine, Pimavanserin

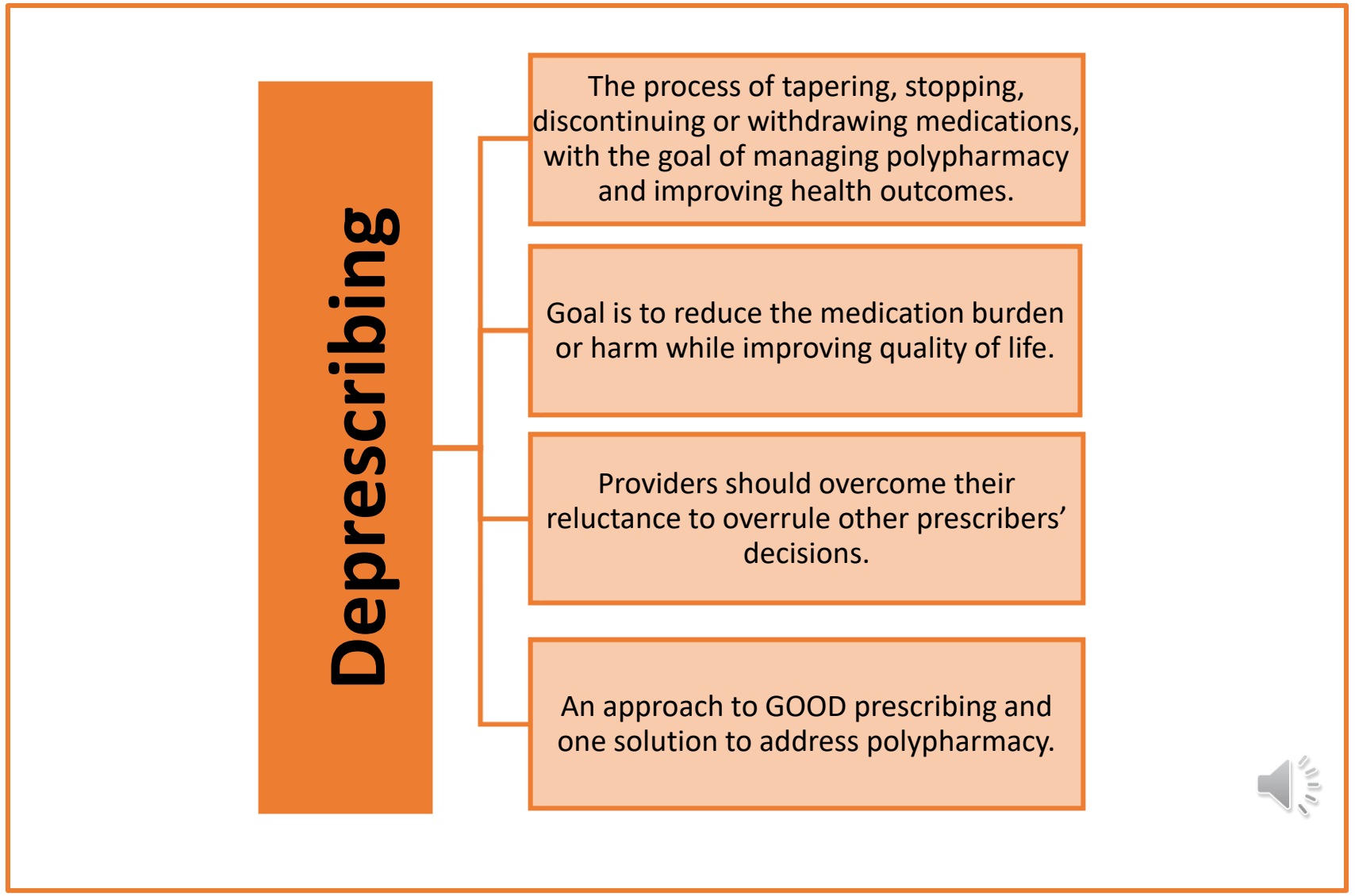
Medications Considered Potentially Inappropriate in Older Adults…Additional Classifications [8]

Classification	Medications
Use of Medication is Inappropriate Based on Kidney Function	Ciprofloxacin Trimethoprim-Sulfamethoxazole Dabigatran Apixaban Rivaroxaban Dofetilide Gabapentin Tramadol Colchicine
Medications that Should be Used with Caution in Older Adults (specific age limits)	Aspirin: primary prevention of CV disease or colorectal CA Dabigatran or Rivaroxaban: treatment of VTE or Afib in ≥ 75 yrs old Prasugrel: (≥ 70 yrs old) Trimethoprim-Sulfamethoxazole Quinidine-Dextromethorphan Meds that may exacerbate or cause SIADH: Tramadol, Carbamazepine Oxcarbazepine, Antipsychotics, Mirtazapine, SNRIs, SSRIs, TCAs
Drug-Drug Interactions that are Highly Associated with Harmful Outcomes in Older Adults	Opioids **PLUS** Benzodiazepines Anticholinergic **PLUS** Anticholinergic Antidepressant **PLUS** Antiepileptic **PLUS** Antipsychotic **PLUS** Benzodiazepine (or Non-Benzodiazepine) **PLUS** Opioid (any combination of 3 or more) Lithium **PLUS** ACEI Warfarin **PLUS** Amiodarone Warfarin **PLUS** NSAIDs

Polypharmacy Assessment Tool: Medication Therapy Management - MTM



Addressing Polypharmacy: Deprescribing



Steps in the Protocol of Deprescribing[10,11]

CREATE: comprehensive list of all medications a patient is taking

ASSESS: potential for patient harm to the patient, based on medications and individual patient factors

CONSIDER: medication(s) eligible for discontinuation based on clinical risk-benefit and patient autonomy

PRIORITIZE: Medications for discontinuation in order of greatest potential for harm and/or least benefit

IMPLEMENT: the plan and monitor for adverse effects or disease exacerbations

Create a timeline for deprescribing; Medications with a high risk of withdrawal or discontinuation side-effects should be tapered

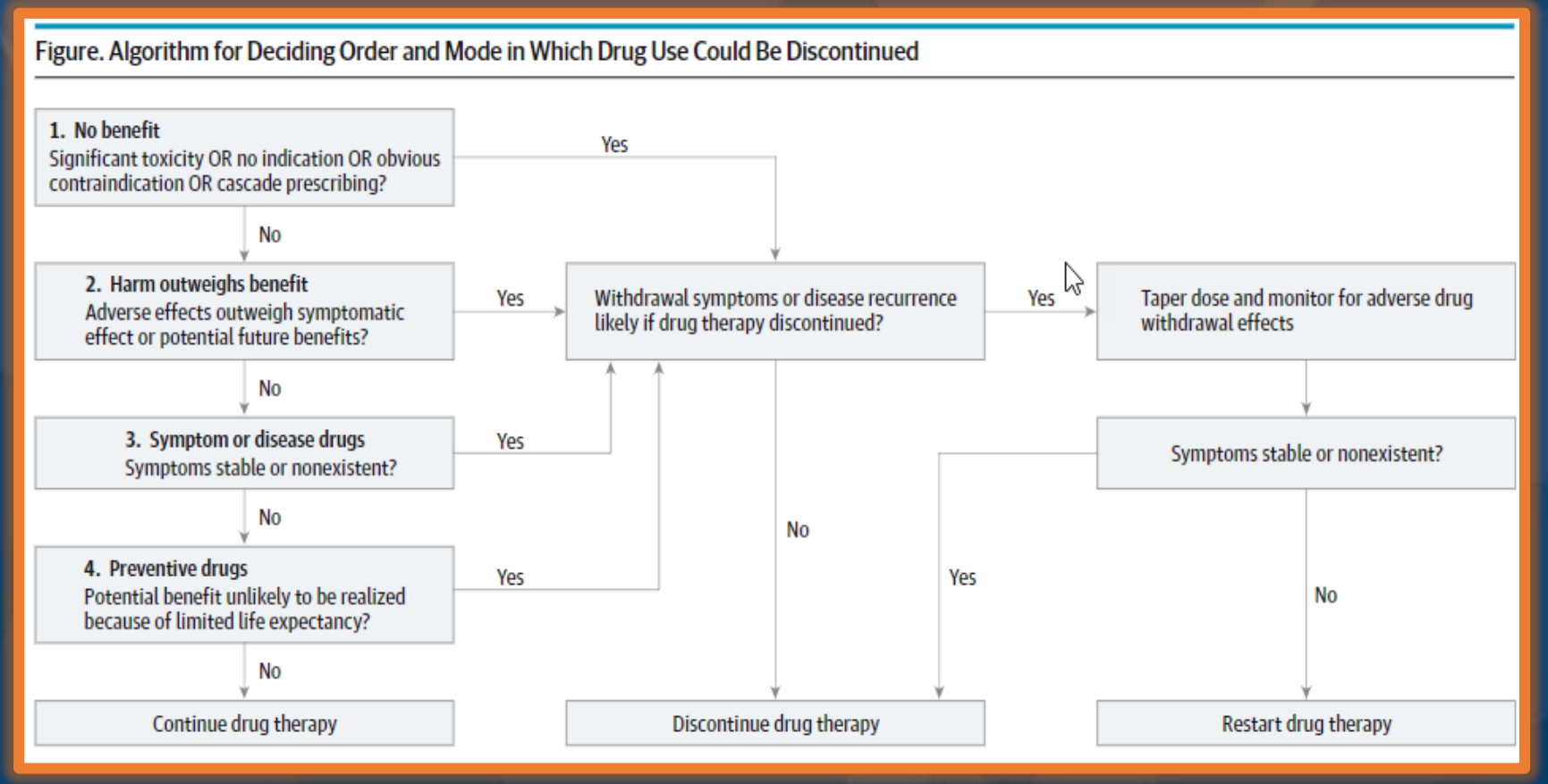
Polypharmacy: Tools for Deprescribing

Example Algorithm for Deprescribing [11]

In-depth information and algorithms for deprescribing

-Proton Pump Inhibitors
-Antihyperglycemics
-Antipsychotics
-Benzodiazepines
-Cholinesterase Inhibitors

More information available at https://deprescribing.org



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Referral to Community Support

- Information on managing medications for older adults is available at HelpWithMyMeds.org, a resource of the ASCP Foundation (American Society of Consultant Pharmacists). Available information and resources on managing medications for older adults includes:
  - Contact information for Senior Care Pharmacists who can:
    - Provide recommendations about a patient's medications to share with the healthcare team.
    - Prevent, identify, and resolve medication-related problems.
    - Complete comprehensive medication reviews.
    - Enable older adults and caregivers to take a more active role in decisions about medications.
  - Printable materials for managing medications.

- The local community pharmacist is a valuable resource who is qualified to provide an individualized comprehensive medication review; these are best done by setting up a consultative appointment with your community pharmacist as these may take some time.

- Pop-up Health Fairs in a patient's community or at a local senior center that may offer an on-site medication review; it is best for the patient to have a complete list of their medications or have the prescription packages with them at the time of the review.

Remember Mrs. Herrin?

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Case
Mrs. Herrin – Simplified Medication List

Meds Taken Prior to Hospital Admission:

- lisinopril (Prinivil) 5 mg once daily
- simvastatin (Zocor) 40 mg once daily
- ~~hydrochlorothiazide (Hydrodiuril) 25 mg once daily~~
- ~~oxybutynin (Ditropan) 10 mg once daily~~
- citalopram (Celexa) 20 mg once daily
- ~~alendronate (Fosamax) 70 mg p.o. once weekly~~
- metformin (Glucophage) 850 mg once daily

Meds added at Hospital Discharge:

- aspirin 81 mg once daily
- metoprolol tartrate (Lopressor) 50 mg twice daily
- lisinopril (Prinivil) 20 mg once daily
- warfarin (Coumadin) 5 mg once daily* (*followed by anticoagulation clinic pharmacist)
- amlodipine (Norvasc) 10 mg once daily
- ~~omeprazole (Prilosec) 20 mg once daily~~

OTC Meds Suggested by PCP:

- ~~calcium (Tums) 500 mg twice daily with food~~
- ~~vitamin D_3 400 IU twice daily~~
- senior multivitamin once daily

Self-care Meds Taken by Patient

- ~~acetaminophen/ diphenhydramine (Tylenol PM) 500/25 mg for sleep~~
- ~~ginkgo biloba once daily for memory support~~
- acetaminophen 325 mg for pain
- calcium citrate 400 mg/vitamin D_3 500 IU (Citracal) twice daily with food
- ~~omega3 fish oil 1000 mg once daily~~
- supplies to check BG twice daily (Accu-Check Aviva Plus Test Strips)

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Case

Mrs. Herrin – Simplified Medication List following Deprescribing

Meds Prescribed by PCPs:

- simvastatin (Zocor) 40 mg once daily
- citalopram (Celexa) 20 mg once daily
- metformin (Glucophage) 850 mg once daily
- aspirin 81 mg once daily
- metoprolol tartrate (Lopressor) 50 mg twice daily
- lisinopril (Prinivil) 20 mg once daily
- warfarin (Coumadin) 5 mg once daily*
  (*followed by anticoagulation clinic pharmacist)
- amlodipine (Norvasc) 10 mg once daily

OTC/Self-Care Meds:

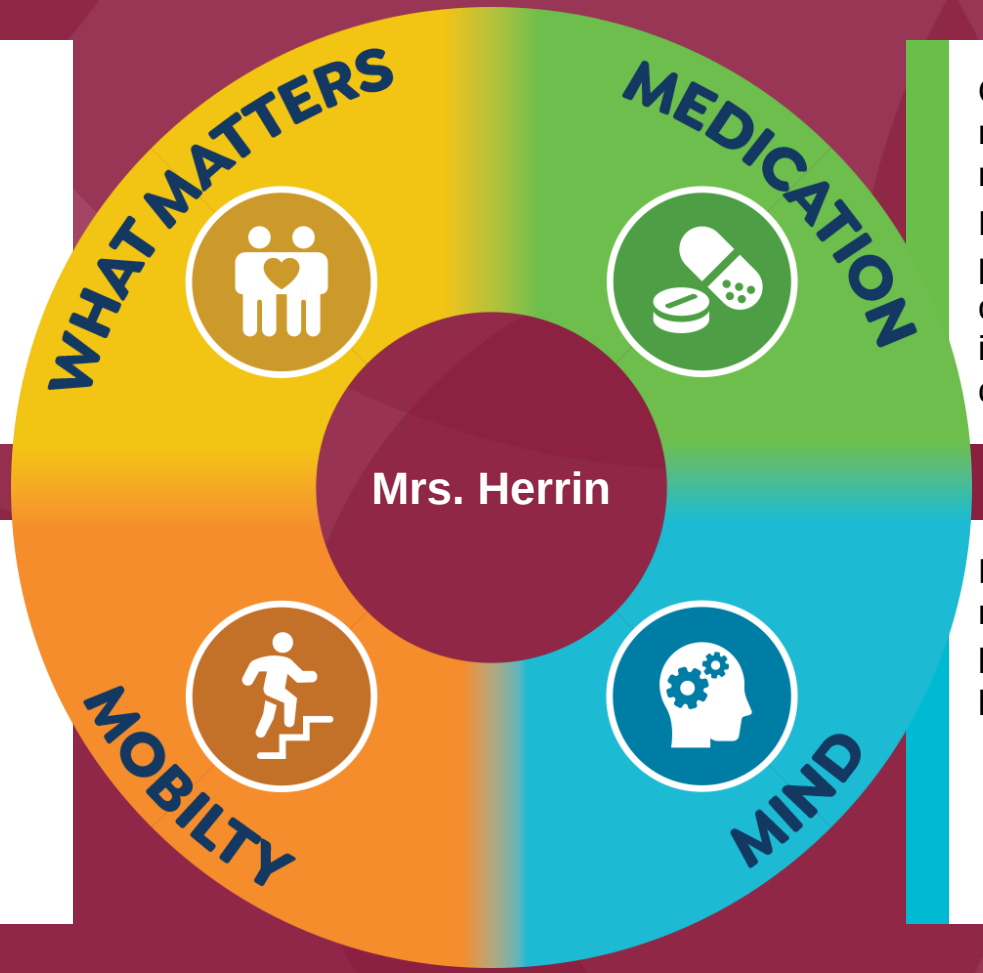
- senior multivitamin once daily
- acetaminophen 325 mg for pain
- calcium citrate 400 mg/vitamin D_3 500 IU (Citracal) twice daily with food
- supplies to check BG twice daily (Accu-Check Aviva Plus Test Strips)

Un-Age-Friendly Care (4Ms)

Avoid gathering patient input on desired living situation.

Avoid consideration of level of independence desired by patient.

Prescribing medications that could negatively impact mobility and are potentially inappropriate based on patient-specific conditions.



Omitted comprehensive review of medications to include prescription medications and self-care therapies.

Did not address evidence of the prescribing cascade or the prescribing of medications that are potentially inappropriate based on patient-specific conditions.

Prescribing medications that could negatively impact mentation and are potentially inappropriate based on patient-specific conditions.

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Age-Friendly Care (4Ms)

LISTEN & VALIDATE

Consider patient autonomy and desire to live an independent lifestyle.

Develop and implement a therapeutic plan to best mitigate conditions.

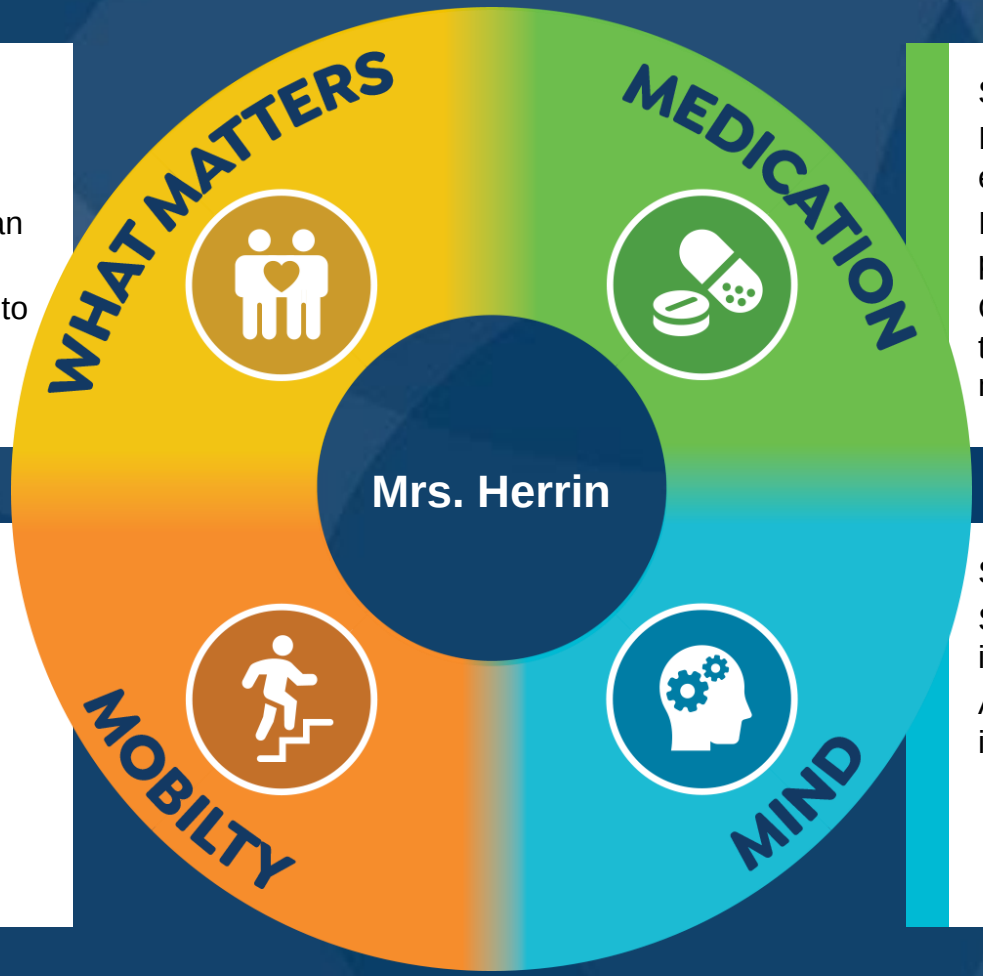
Agree to develop a medication schedule to assure adherence.

SCREEN & REFER

Identify and address drug-related adverse effects.

Identify and address risk factors for polypharmacy.

Conduct MTM to determine patient-specific therapeutic plan that includes appropriate medications that are affordable.



SCREEN & REFER

Screen for mobility issues.

Avoid medications that may negatively impact mobility.

Refer as appropriate for patient specific exercise and therapy if indicated.

SCREEN & REFER

Screen for cognitive and mental health issues.

Avoid medications that may negatively impact aspects of mental health.

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Clinical Pearls

Evaluating Polypharmacy

- A thorough review of the complete medication list should be completed at every patient encounter to screen for duplicate and potentially inappropriate medications.
- Regardless of standards of care and practice guidelines, shared decision-making among physicians, patients, and families about goals of care is important when deciding whether to start, stop, or continue a medicine for a patient.
- Practitioners should aim for the most streamlined medication list as possible to address the individual needs of the patient.

Managing Polypharmacy

- When available, consider mediations with less frequent dosing, those with better safety profiles, those that provide coverage for more than one condition, and combine self-care therapies when possible.
- When practicing deprescribing to optimize a patient's medications, make as few changes to the medication list at one time as possible so as to properly associate any adverse drug events with specific medications.

About Engage

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ENGAGING FOR BETTER HEALTH

Engage is part of Georgia Gear, a multi-institute partnership whose goal is to improve clinical care and quality of life for older adults and their families.

Contact us at engage@mercer.edu

Work of the Georgia GWEP is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) as part of Award Number U1QHP33070 totaling $3.75M with 0% percentage financed with nongovernmental sources. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement, by HRSA, HHS, or the U.S. Government.

Presentation design by Reckon Branding.

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