Pharmacist-Led Deprescribing for the Elderly

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DISCLOSURE

- No potential conflicts of interest

LEARNING OBJECTIVES

1. Define polypharmacy and understand the supporting epidemiology
2. Interpret Beers Criteria for potentially inappropriate medication (PIM) use in the elderly
3. Define deprescribing and identify the key barriers to deprescribing
4. Practice using the ARMOR tool and various other deprescribing methods to evaluate case-based polypharmacy regimens
5. Review the literature pertaining to the safety of deprescribing

PRE-ASSESSMENT

LACK OF REPRESENTATIVE RESEARCH AND/OR CLINICAL TRIALS FOR THE ELDERLY IS ATTRIBUTED TO:

A. The elderly are reluctant to enrolling in clinical trials
B. Clinical trials often impose maximum age limit for study subjects
C. Younger study subjects make better candidates when study outcomes and relevant data must be collected over a long period of time
D. Clinical trials sometimes exclude comorbidities or concurrent treatments to eliminate confounding factors
E. B and D

Through the Years: Defining Polypharmacy

- 1985 American Journal of Medicine:
  - "Concurrent use of multiple medications"
- 2010 Drugs & Aging:
  - "The use of two or more medications…"
- 2017 Current Gerontology and Geriatrics Research:
  - "Concurrent use of five or more medications"

DEFINING POLYPHARMACY IN ELDERLY

- Multiple medications for adults ≥ 65 years old
  - 40% take 5 to 9 medications
  - 18% take 10+

- Adverse Drug Events (ADE) occur because of:
  - Age-related physiological changes
  - Greater degree of frailty
  - Multiple co-morbidities
  - Polypharmacy

1. Budnitz DS et al. *N Engl J Med.* 2011.

POLYPHARMACY - EPIDEMIOLOGY

- Multiple co-morbidities - very common in the elderly
  - Estimated up to 98% of older people live with ≥ 2 chronic conditions[2,3]

- The geriatric population wants longer and healthier lives
  - Intervention aims to delay disease progression and symptom onset
  - Reduce duration of ill health, compressing morbidity
  - Leads to an increase in medication use among older people[3,4]

- More recent literature in older persons estimates polypharmacy affects:
  - Up to 3 out of 4 older people take ≥ 5 medications daily[4,5,40]

2. Fortin M, et al. *Ann Fam Med*. 2005.
3. Page AT, et al. *Maturitas.* 2016.
4. Fries JF, et al. *J Aging Res.* 2011.
5.Hubbard RE, et al. *Med J Aust.* 2015.
40. Kim & Parish, 2017

POLYPHARMACY - EPIDEMIOLOGY

- Clinical trials exclude very old people (> 80 years) [3,6,7]
  - Max age limits
  - Exclude comorbidities and/or concurrent treatments

- Lack of representative research contributes to:
  - ***Uncertainty regarding actual benefits and harms of pharmacotherapeutic interventions for older people***

3. Page AT, et al. *Maturitas.* 2016.
6. Kennedy-Martin T, et al. *Trials.* 2015.
7. Van Spall HG, et al. *JAMA.* 2007.

POLYPHARMACY – EPIDEMIOLOGY – CONTINUED

- Absolute risk of ADRs often highest in frail older people
  - Some benefits but also greater risk of med-related harm

- Lack of research
  - Information deficit to quantifiable treatment effect in the elderly [3,8]

- Bottom Line: May lead to lack of self-efficacy and clinical inertia among prescribers rather than optimal med regimens[3,8]

3. Page AT, et al. *Maturitas.* 2016.

8. Scott IA, et al. *Intern Med J.* 2015.

PRE-ASSESSMENT

LIMITATIONS OF THE BEERS CRITERIA:

A. Not all information is evidence or outcomes-based
B. Criteria do not identify all cases of inappropriate prescribing
C. May sometimes identify appropriate prescribing as inappropriate
D. Outdated literature
E. All of the above

BEERS CRITERIA – HISTORICAL PERSPECTIVE

- Dr. Mark Howard Beers with a team from Harvard, looked at prescriptions and case files for 850 residents of SNF around Boston
- Found that sedatives, antidepressants, and antipsychotic drugs often caused confusion and physical tremors the elderly
  - Findings published in The Journal of the American Medical Association in 1988

- **In 1991, the 1st Beers Criteria was published**
  - **A list of drugs with known side effects on elderly**
  - **Consisted of Potentially Inappropriate Medications (PIM) for use in older adults**

- Updates have occurred every 3-5 years done with an interdisciplinary team of geriatric experts

PHARMACY-RELATED CMS FEDERAL GUIDELINES AND REGULATIONS IN SNF

F-Tag	Description
441	Infection Control – organism with correct antibiotics or UA shows no organisms but has antibiotic
252	Environmental-Med – CII locked Carts; topicals separated from orals/injectable; refrigerator temp 36-46ºF
309	Pain Management (QOC) – pain assessments, frequency of use PRN, oral pain meds vs SQ/IM, APAP < 4gm
325	Med Impacting Nutrition – meds that cause weight loss or gain assessed
425	Pharmacy Services – is dispensing pharmacy delivering on time; emergency meds in date
428	Medication Regimen Review – clinical review of drug regimen
329	**Unnecessary Drugs – excess dose, excess duration, no indication for use**
332-333	Medication Errors – med given not signed, wrong dose or time
431	Storage Controlled Substances and Labeling – Lorazepam soln in refrigerator, good for 90 days

https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_pp_guidelines_ltcf.pdf

BEERS CRITERIA DISEASE STATE INTERACTIONS

Disease State	Medication	Justification
Hypertension	Amphetamines	↑ BP
COPD	Sedatives/Hypnotics	Slow respirations
Ulcers	Non-Steroidal Anti-Inflammatory Drugs	Exacerbate GI disease
Seizures	Thorazine, Thioridazine, Conventional Antipsychotics	↓ Seizure threshold
Benign Prostatic Hypertrophy	Antihistamines, Muscle Relaxants, GI Antispasmodics	Anticholinergics impair micturition
Constipation	Anticholinergics, Narcotics	Worsen constipation
Arrhythmias	Tricyclic Antidepressants	Induce arrhythmias
Syncope/Falls	Long-Acting Benzodiazepines, Beta-Blockers	Contribute to falls, syncope

41. https://www.guidelinecentral.com/summaries/american-geriatrics-society-2015-updated-beers-criteria-for-potentially-inappropriate-medication-use-in-older-adults/#section-420

2019 AGS Beers Criteria Update

- **Removed H2RAs** from "**avoid**" list in **patients with <u>dementia</u>** (weak evidence)
  - Existing recommendation to discourage PPI usage overly restricted acid blockers for patients who were truly indicated for them
  - HOWEVER, H2RAs are still listed as to be "AVOIDED" in those with delirium

- Clarified wording to affirm that **"Z drugs (Zolpidem, Zaleplon)"** should be **avoided** in those with **<u>delirium</u>**
- The age for caution regarding aspirin use for primary CV prevention was lowered from 80 years to 70 years of age
- **Added Pyrilamine and Methscopolamine** to list of **anticholinergics to avoid**

9. By the 2019 American Geriatrics Society Beers Criteria® Update Expert Panel. *J Am Geriatr Soc.* 2019.

2019 AGS Beers Criteria Update

- Updated rationale/clarified: **Avoid Digoxin as first line therapy for AF and HF**
- Added **SNRIs** to be "**avoided**" with **history of falls or fractures**
- Quetiapine, Clozapine and Pimavanserin = exceptions
  - **Have been integrated into CMS Guidelines-F-Tag 329**

 9. By the 2019 American Geriatrics Society Beers Criteria® Update Expert Panel. *J Am Geriatr Soc.* 2019.

CRITICISM AND LIMITATIONS OF THE BEERS CRITERIA

- Methodology
  - Not all information is evidence or outcomes-based
  - Opinion of an expert panel
- Criteria do not identify all cases of inappropriate prescribing
- May sometimes identify appropriate prescribing as inappropriate
- Prescribing is not a “black and white” issue
- Outdated literature
- Drug Interactions were not included

42. O’Mahony & Gallangher, (2008)

UNNECESSARY DRUGS: FEDERAL REGULATION CMS SNF GUIDELINES : 42 CFR § 483.25(1) OR F-TAG – 329

UNNECESSARY DRUGS

- Each resident's drug regimen must be free of unnecessary drugs.
- An unnecessary drug is any drug when used:
  - In excessive ***dose*** INCLUDING duplicative therapy; or
  - For excessive ***duration***; or
  - Without adequate ***monitoring***; or
  - Without adequate ***indication*** for its use; or
  - In the presence of ***adverse consequences***

https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_pp_guidelines_ltcf.pdf

42 CFR § 483.25(1) OR F-TAG – 329

- **Antipsychotics**: Based on a comprehensive assessment of a resident, the facility must ensure
  - Residents who have not used antipsychotics are **not given these drugs unless** antipsychotic drug therapy is **necessary** to treat a specific condition diagnosed and **documented** in the clinical record **AND**
  - Residents who use antipsychotics receive **gradual dose reductions (GDRs)**, and behavioral interventions, **unless clinically contraindicated**, in an effort to discontinue these drugs.

During the 1st year of antipsychotic drug use, at least 2 GDRs *must* be attempted in 2 different quarters separated by at least 1 month.

https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_pp_guidelines_ltcf.pdf

F329 Gradual Dose Reductions (GDRs)

- **Clinically contraindicated** is:
- (A) For treatment of behavioral symptoms related to dementia, the GDR may be considered clinically contraindicated if:
  - The resident's **target symptoms returned** or **worsened after** the **most recent** attempt at a **GDR** within the facility; **AND**
  - The **physician** has **documented** the clinical rationale for **why** any additional attempted **dose reduction** at that time would likely **impair** the resident's **function or increase distressed behavior**.
- **2019 CMS F-Tags Addition**: **PRN antipsychotropic medications (hypnotics and antipsychotics) limited to 14 days** (Transitions of Care SNF)
  - Discontinue if not using

https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_pp_guidelines_ltcf.pdf

INTERPRETIVE GUIDELINES

- ***Regulations do NOT mean certain drugs cannot be used***
- ***Need <u>DOCUMENTATION</u> proving why the specific drug is necessary – benefits outweigh risks***
- ***EXCEPTION: Clinically contraindicated***

- <u>Benefits vs. Risk Examples</u>
  - Poor renal function (CrCl < 30ml/min) on HCTZ
  - Recent history of internal bleed on ASA, warfarin, heparin, NSAID

9. By the 2019 American Geriatrics Society Beers Criteria® Update Expert Panel. *J Am Geriatr Soc.* 2019.

Risk Factors: Polypharmacy → Drug-Drug Interactions (DDI)

- Typically, DDI risk increases with an increased number of drugs:
  - 5 drugs have 10 possible 1 to 1 interactions
  - 10 drugs have 45 possible 1 to 1 interactions
  - 15 drugs have 105 possible 1 to 1 interactions
- **DDI Statistics:**
  - 13% risk of an DDI → 2 meds
  - 82% risk → ≥ 6 meds
  - ~ 100% risk → ≥ 8 meds

10. Goldberg RM, et al. *Am J Emerg Med.* 1996.

ADVERSE DRUG EVENTS → HOSPITALIZATION

- Most Commonly Implicated Medications → Hospitalization (2011)[1]:
  - Warfarin (33.3%)
  - Insulins (14%)
  - Oral Antiplatelet Agents (13%)
  - Oral Hypoglycemics (11%)
  - Opioid analgesics (4.8%)
  - Antibiotics (4.2%)
  - Digoxin (3.5%)
  - Antineoplastic agents (3.3%)

1. Budnitz DS et al. *N Engl J Med.* 2011.

MEDICATION-RELATED HOSPITALIZATIONS

- 1 in 4 older people hospitalized for med-related problems
- Accounts for 10% of all hospital admissions in the elderly population
- 30-55% of these hospitalizations are preventable

- If on 5+ drugs, 1 in 3 suffer an ADR every 12 months
  - 1 in 4 of those who suffer an ADR are considered preventable
- Up to 18% of inpatient deaths were due, in part, to ADRs
- 44% inpatients at discharge have at least 1 unnecessary drug

11. Scott IA, et al. *Evid Based Med.* 2013.

DEPRESCRIBING – CASE STUDY

Subjective:

- AB is a **72 F verbalizing** to staff members where she lived that **somebody wants to attack and rape her**
- Became **extremely unmanageable** and **not redirectable**. **Suspicious, paranoid, impulsive, aggressive,** and **resistive to care**
- Constantly **confused** with her **location** and would believe that she is in Pennsylvania where her husband currently lives
- **No history** of **suicide** attempts or **mania**. **No history** of emotional, physical or sexual **abuse**
- Not able to make any safe plans for care and therefore, placed on a 72-hour hold and admitted to the acute psychiatric unit for further safety and stabilization

DEPRESCRIBING – CASE STUDY CONTINUED

Subjective

- On 5/26/20, patient currently comfortable, and not in any apparent distress
- Alert & orientated to self, place, and partially to current time
- Has been sleeping well (~7.5 hours). However, patient woke up middle of the night and was looking for her husband and sister but then was able to go back to sleep
- No major agitation or aggressive behaviors reported
- Appetite is somewhat fair
- Patient denies suicidal/homicidal ideation. Tolerates medications well
- Moreover, her memory is somewhat limited; insight and judgment have improved but still remain limited

DEPRESCRIBING – CASE STUDY CONTINUED

PMH

- Insomnia, Major Depressive Disorder (MDD), and Parkinson's disease
- History of falls, hypothyroidism, and BLE lymphedema

Objective

- Ht: 4' 10"
- Wt: 119 lb
- Scr 0.91
- Estimated CrCl 28.5 ml/min
- All other labs WNL

DEPRESCRIBING – CASE STUDY CONTINUED

Medications

- Quetiapine 25mg BID + 100mg qHS
- Mirtazapine 15mg qHS
- Divalproex 250mg TID (8am + 1pm + 375mg 8pm)
- Melatonin 3mg qHS
- Zolpidem 5mg qHS PRN insomnia
- Trihexyphenidyl 2mg BID
- Pramipexole 1.5mg q HS
- Carbidopa/Levodopa 25/100mg 5 times a day- neurologist reduced 2pm dose to 10/100 wanted to exchange Quetiapine for Nuplazid
- Levothyroxine 75mcg qAM

PRE-ASSESSMENT

DEPRESCRIBING IS A SYSTEMATIC PROCESS OF IDENTIFYING POTENTIAL UNNECESSARY DRUGS AND DISCONTINUING WHEN:

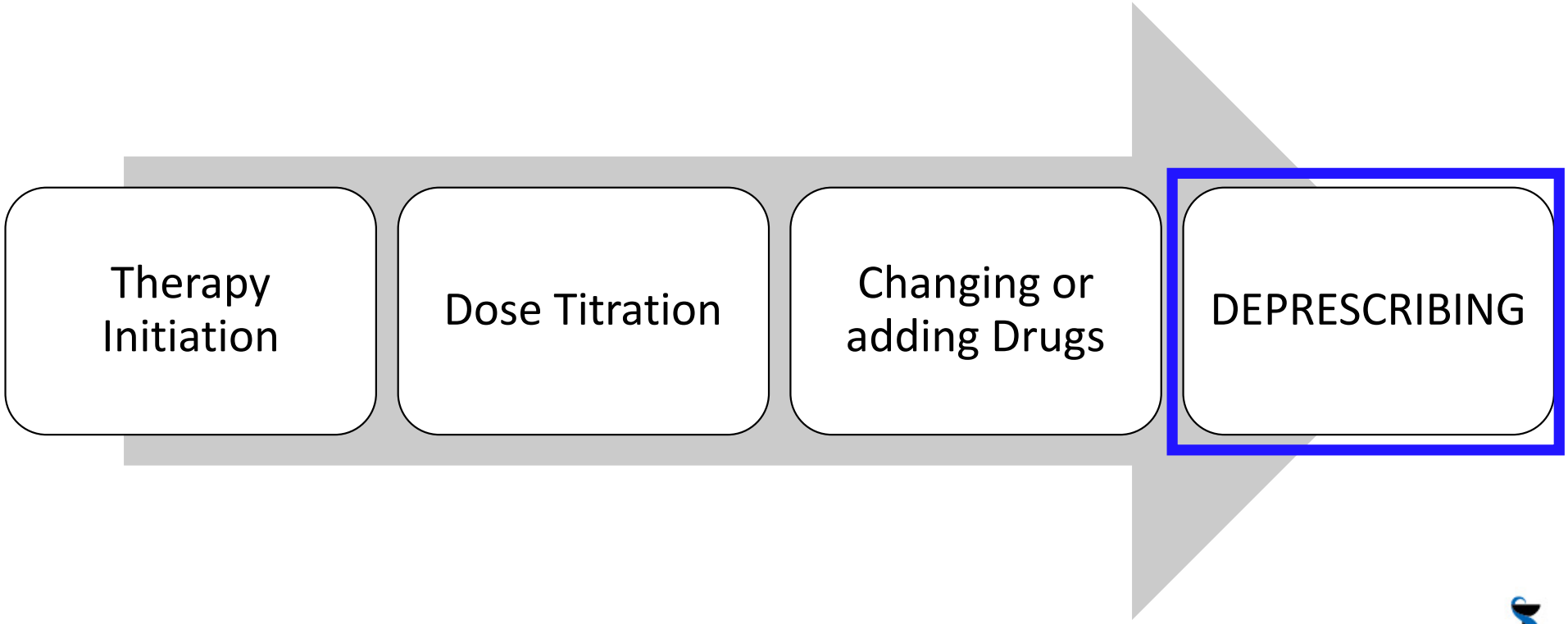
A. Cheaper alternatives exist but are not bioequivalent
B. A new prescriber is assigned
C. Existing or potential harms outweigh existing or potential benefits
D. Those drugs are on backorder and/or out-of-stock
E. The patient refuses to take them

PRE-ASSESSMENT

THE FOLLOWING ARE BARRIERS TO DEPRESCRIBING (SELECT ALL THAT APPLY):

A. Prescriber's resistance to change
B. Patient's resistance to change
C. Prescriber's fear of liability
D. Patient's medication dependence
E. Prescriber's fear of abandonment

THE PRESCRIBING CONTINUUM



12. Scott IA, et al. *JAMA Intern Med.* 2015.

DEPRESCRIBING – DEFINITION

"The planned and supervised process of

DOSE REDUCTION or **STOPPING**

of/a **medication** that may be

CAUSING HARM

or

NO LONGER PROVIDING BENEFIT"

Reducing medication safely to meet life's changes

13. Farrell B & Tannenbaum C. *Deprescribing website.*

DEPRESCRIBING – ALTERNATIVE DEFINITION

- A systematic process of identifying and discontinuing drugs when existing OR potential harms outweigh existing or potential benefits based on the patient's:
  - Goals of Care
  - Current Level of Functioning
  - Life Expectancy
  - Values
  - Preferences

12. Scott IA, et al. *JAMA Intern Med.* 2015.

DEPRESCRIBING – CONTINUED

"Deprescribing is not about denying effective treatment to eligible patients. It is a positive, patient-centered intervention, with inherent uncertainties, and requires shared decision making, informed patient consent, and close monitoring of effects"

12. Scott IA, et al. *JAMA Intern Med.* 2015.

DEPRESCRIBING - CONTINUED

- ***The Process of Deprescribing involves:***
  - Diagnosing a problem (use of a potentially inappropriate med)
  - Making a therapeutic decision (withdrawing med with close follow-up)
  - Altering the natural tendencies of providers to order more meds to reduce the incidence of drug-related adverse events such as:
    - Falls
    - Relieving adverse effects
    - Improving function
    - Preventing premature death

12. Scott IA, et al. *JAMA Intern Med.* 2015.

THE 5 STEPS OF DEPRESCRIBING

1. Reconcile all medications and the reason for each medication
   - Prescription
   - OTC
   - Supplements

2. Determine the overall harm the medication list poses to the patient
   - Number of Pills
   - Patient Age
   - Life Expectancy/Comorbidities
   - Adherence/Cognitive Function

12. Scott IA, et al. *JAMA Intern Med.* 2015.

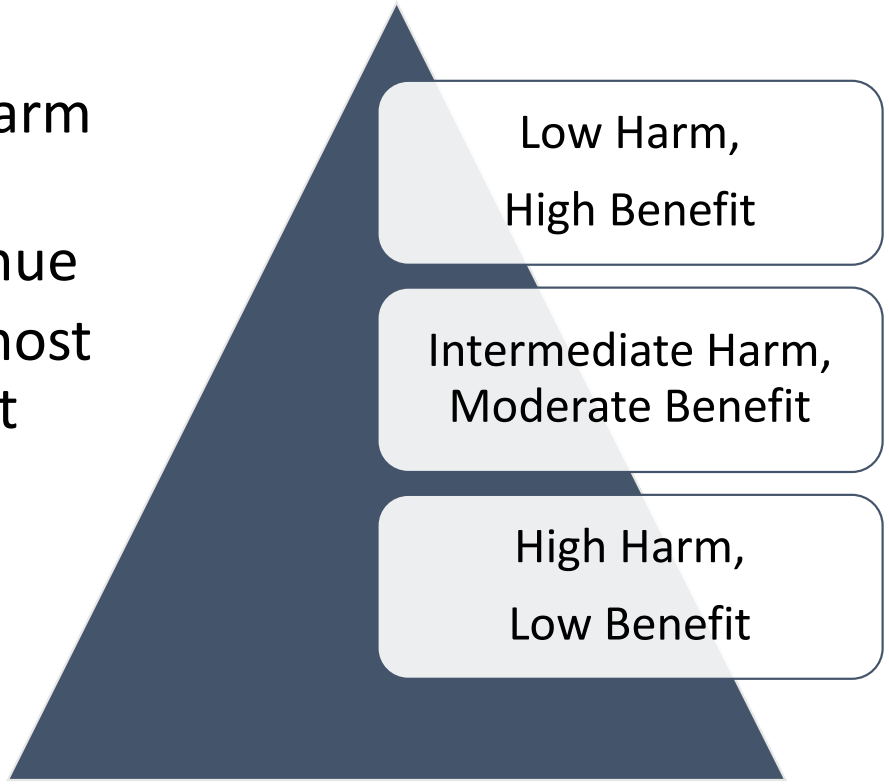
THE 5 STEPS OF DEPRESCRIBING - CONTINUED

3. Assess each drug for its ability to be deprescribed
   - No VALID indication
   - Part of a deprescribing cascade / taper
   - ADE > potential benefit - “Side-effect effect”
   - Further need / effectiveness
   - Preventive effect unlikely to confer any patient-oriented benefit based on life expectancy
   - Goals of care / patient preference
   - Drugs are imposing unacceptable treatment burden

12. Scott IA, et al. *JAMA Intern Med.* 2015.

THE 5 STEPS OF DEPRESCRIBING - CONTINUED

4. Prioritize the deprescribing
   - Drugs with greatest harm and least benefit
   - Drugs easiest to discontinue
   - Pills the patient is most willing to discontinue first



12. Scott IA, et al. *JAMA Intern Med.* 2015.

THE 5 STEPS OF DEPRESCRIBING - CONTINUED

5. Implement and monitor deprescribing regimen
   - Develop a management regimen between prescriber and patient
   - Stop 1 mediation at a time
   - Ween medications likely to cause withdrawal effects
   - Document the reasons for and outcomes of deprescribing

12. Scott IA, et al. *JAMA Intern Med.* 2015.

DRUGS WITH DISCONTINUATION PROBLEMS

TAPER SLOWLY!

Table 4. Common Medications Associated With Discontinuation Syndromes

Drug Class	Potential Adverse Effects During Withdrawal
Alpha blockers	Rebound hypertension, agitation with sudden cessation, headache[8,12]
Antimuscarinic agents	Rebound symptoms (urinary frequency)
ACE inhibitors	Heart failure and hypertension[8]
Benzodiazepines	Anxiety, agitation, confusion, delirium, insomnia, nausea, seizures[8,12]
Diuretics	Re-emergence of heart failure[8,12]
Beta blockers	Rebound tachycardia[8,12]
Proton pump inhibitors	Rebound hyperacidity[8]
Antidepressants	Dysphoric mood, agitation, headache[8,12]
Antipsychotics	Agitation, insomnia, rebound psychosis, dyskinesia[8]

45. Liu, L. & Campbell, I. Tips for Deprescribingin the Nursing Home. *Ann. Long-Term Care***24,**26–32 (2016).

EXAMPLES OF DRUGS TO BE DEPRESCRIBED

PRESCRIBER EASE OF REMOVAL

- Multi-vitamins
- Iron Supplements
- Vitamins
- Supplements
- Proton Pump Inhibitors
- Oral hypoglycemics
- Acetylcholinesterase Inhibitors
- Antihypertensive
- Opioids
- Benzodiazepines
- Antipsychotics

PATIENT RESISTANCE OF REMOVAL

- Opioids
- Benzodiazepines
- Acetylcholinesterase Inhibitors
- Vitamins
- Supplements
- Antipsychotics
- Oral hypoglycemics
- Antihypertensive
- PPI
- Iron Supplements

46. Allison, R. "When less is More: Deprescribing Medication" 3/2/2019
LECOM Summer 2018 Primary Care CME conference

DEPRESCRIBING – MYTHS

PROVIDER CENTERED

- *Myth: It can come off looking like you no longer care about the patient, you know, "You're old enough to die now so it doesn't really matter"*

- We need more research, more collaborations "Education would be very helpful for us, in sort of just giving us more confidence."
- "The reason you don't stop things is you think they [specialists] know better than you."

14. Wallis KA, et al. *Ann Fam Med*. 2017.

DEPRESCRIBING – MYTHS

PATIENT CENTERED

- *Myth: Some patients see meds as barriers between themselves and the grave*

- You need some funded time with the patient so that you can bring the patient in and say:
  - "This is a special appointment that's not to talk about your current medical problems, it's specifically about managing your medicines better."
- ***"A pill for every ill"***

14. Wallis KA, et al. *Ann Fam Med*. 2017.

DEPRESCRIBING - PITFALLS

- Medication management/Prescribing is crucial in practice
- Deprescribing is not commonly taught
  - Requires a lot of time to assess, communicate and plan for deprescribing
  - Can come with inherent risks for providers and patients
- Prescribers want to maintain relationships with both patients and colleagues

- However! Important to note: in some cases, polypharmacy is NOT synonymous with inappropriate treatment
  - In several cases, a multi-drug regimen is necessary and appropriate

22. Bain et al*J Am Geriatr Soc.* 2008
46. Allison, R. "When less is More: Deprescribing Medication" 3/2/2019 LECOM Summer 2018 Primary Care CME conference

POTENTIAL BENEFITS OF DEPRESCRIBING IN THE ELDERLY

- Mobility – potential for improvement
- Cognition
  - Potential for improvement
  - Less risk of delirium
- Falls – decreased fall risk
- Quality of Life – improvement

If deprescribing is done with care/mindfulness, there is little to no risk involved.

46. Allison, R. "When less is More: Deprescribing Medication" 3/2/2019 LECOM Summer 2018 Primary Care CME conference

DEPRESCRIBING BENEFITS – PSYCHOACTIVE MEDS

- Polypharmacy, especially CNS drugs, increase fall risk by 50%
- Withdrawal of psychoactive meds DECREASE fall risk by 66%
- Avoiding Benzos in the elderly may reduce fall risk by 10%[10]
- In a geriatric study to reduce polypharmacy – Global Assessment Scale IMPROVED by 88%[15]

10. Goldberg RM, et al. *Am J Emerg Med.* 1996. 15. Garfinkel D & Mangin D. *Arch Intern Med.* 2010.

DEPRESCRIBING BENEFITS STUDY

- Mean age = 82.8 years
- 61% > 3 co-morbidities
- Mean # drugs withdrawn = 4.9
- 2% restarted withdrawn drugs
- Successful withdrawal in 81%
- 14% died, mean age 89
- No attributable deaths/ events
- ***88% reported global improvement in health***
- Drugs deprescribed included: antihypertensives, nitrates, diuretics, statins, oral hypoglycemics, PPIs…

15. Garfinkel D & Mangin D. *Arch Intern Med.* 2010.

EXAMPLE ARMOR – PATIENT CASE

- RH is a 68-year-old Hispanic male on the inpatient psych unit
- Complains that he is tired of taking all these pills that make him feel "more sick"
- States that when hhe goes home in a few days there is no way he will remember to take all his medications
- You are very concerned and feel like you should do something about this
- At the moment, you remember Dr. Hoffman's presented a case of what to do in case you have a "polypharmacy situation"

USE THE ARMOR TOOL

A tool used to emphasize quality of life as a key factor for making decisions on changing or discontinuing medication

- **A**ssess
- **R**eview
- **M**inimize
- **O**ptimize
- **R**eassess

16. Haque R. *Ann Long-Term Care.* 2009.

ARMOR TOOL

Table 4
The ARMOR tool

A	Assess	▫ Beers criteria ▫ *b*-blockers ▫ Pain medications ▫ Antidepressants ▫ Antipsychotics ▫ Other psychotropics ▫ Vitamins and supplements
R	Review	▫ Drug–disease interactions ▫ Drug–drug interactions ▫ Adverse drug reactions
M	Minimize	▫ Number of medications according to functional status rather than evidence-based medicine
O	Optimize	▫ For renal/hepatic clearance, PT/PTT, *b*-blockers, pacemaker function, anticonvulsants, pain medications, and hypoglycemics; gradual dose reduction for antidepressants
R	Reassess	▫ Functional/cognitive status in 1 week and as needed ▫ Clinical status and medication compliance

From Haque R. ARMOR: a tool to evaluate polypharmacy in elderly persons. Annals of Long-Term Care 2009;17(6):26–30; with permission. Available at: http://www.annalsoflongtermcare.com/content/armor-a-tool-evaluate-polypharmacy-elderly-persons. Accessed January 28, 2012.

USE THE ARMOR TOOL

- **A**ssess the disease states
- **R**eview the current medication profile
- **M**inimize the amount of medications- (cut out the unnecessary meds)
- **O**ptimize the medication regimen
- **R**eassess your recommendations

16. Haque R. *Ann Long-Term Care.* 2009.

PATIENT CASE : MEDICATION PROFILE

RH is a 68-year-old Hispanic male on the inpatient psychiatric unit s/p suicide attempt.

PMH: Hypothyroidism, HTN, Asthma, Diabetes, COPD, GERD, MDD, GAD

BG & HTN are currently not well controlled

Current Meds order

- Hypertension → Amlodipine, Lisinopril, Hydralazine, Clonidine
- Diabetes → Metformin, Glipizide, NPH Insulin, Insulin Aspart
- Asthma/COPD → Spiriva, Dulera, Proventil HHN, Proventil HFA, Atrovent, Fluticasone, Prednisone, Theophylline ER
- Psych→ Cymbalta, Provigil, Bupropion, Trazodone
- Thyroid → Levothyroxine
- GERD → Metoclopramide, Omeprazole, Ondansetron PRN
- LIPID → Atorvastatin

What would you recommend for RH?

ASSESS – DISEASE STATES & MEDICATIONS

START BY LOOKING AT EACH DISEASE STATE AND COUNT NUMBER OF MEDS/CLASS:

- Hypertension → Amlodipine, Lisinopril, Hydralazine, Clonidine ***4**
- Diabetes → Metformin, Glipizide, NPH Insulin, Insulin Aspart ***4**
- Asthma/COPD → Spiriva, Dulera, Proventil HHN, Proventil HFA, Atrovent, Fluticasone, prednisone, Theophylline ER ***8**
- Psych → Cymbalta, Provigil, Bupropion, Trazodone ***4**
- Thyroid → Levothyroxine ***1**
- GERD → Metoclopramide, Omeprazole, Ondansetron PRN ***3**
- LIPID → Atorvastatin ***1**
- **25 CURRENT (Inpatient Psych) Medication Orders!**

REVIEW – MEDICATIONS: ARE THERE MORE THAN 3 MEDICATIONS IN ONE CLASS?

- COPD – 8 Orders
  - Fluticasone
  - Mometasone/Formoterol
  - Albuterol HFA
  - Albuterol HHN
  - Prednisone
  - Tiotropium
  - Ipratropium HHN
  - Theophylline
- There are duplications of
  1. Beta agonists (Albuterol + Formoterol)
  2. Anticholinergics (Tiotropium + Ipratropium)
  3. Steroids (Prednisone + Mometasone + Fluticasone)
  4. Theophylline + Albuterol : can increase BP

MINIMIZE – THE AMOUNT/NUMBER OF HIS MEDICATIONS

- Recommendations: Discontinue meds not using (i.e. Zofran PRN)
- Consider simplifying the regimen – Discontinuing Albuterol, Fluticasone, and Prednisone – consider Xopenex due to cardiac

OPTIMIZE – HIS MEDICATION REGIMEN

- ***Blood Pressure is not well controlled on 4 agents***
  - Albuterol, Theophylline and Provigil may increase BP
  - Consider **d/c of PRN Clonidine (not using)**
  - Consider **increased dose of Lisinopril** for better BP control
  - Dietician referral
- ***Psych meds***
  - Duloxetine + Provigil + Bupropion + Trazodone: increase risk of serotonergic syndrome
  - **Consider discontinuing one agent (Bupropion due to sleep issue)**
- ***Cholesterol***
  - Consider therapeutic **interchange from Atorvastatin to**
    - **Pravastatin** or **Rosuvastatin** (depending on Lipid panel) due to drug interactions – intensity statin would be selected based on labs, PMH,FH
  - Refer to dietician → Nutritional issues with diabetes, Lipids and BP

OPTIMIZE – HIS MEDICATION REGIMEN CONTINUED

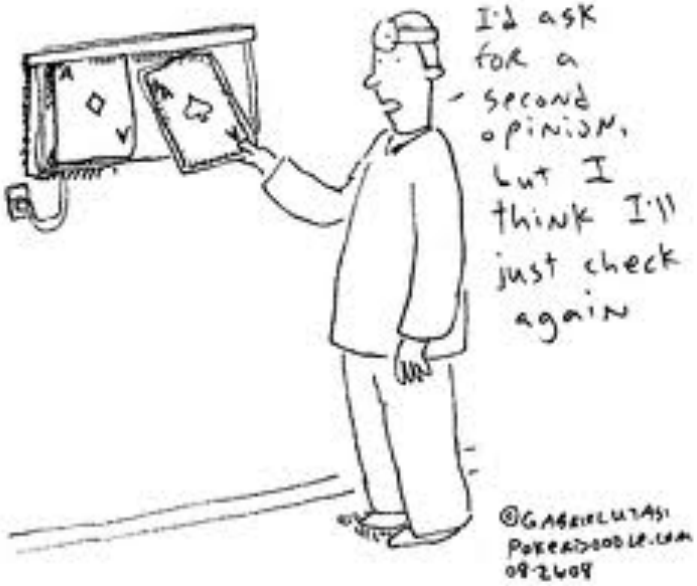
- ***Blood glucose** is also **not well controlled** –* **4 orders**
  - RH is on 2 oral agents (Metformin + Glipizide) & 2 Insulins (NPH + Novolog)
    - **Consider tapering and d/c oral agents while increasing units of Insulin to compensate** (could keep metformin but there is pill burden)
    - Improve control on Insulin alone with NPH BID + Novolog AC meals routine – **NO sliding scale !!!**
- ***COPD* – 8 orders**
  - There are duplications of:
    - **Beta agonists** (Albuterol x 2 orders inhaler + nebulizer + Formoterol)
      - **D/C x1 Albuterol order** → may change to Xopenex for emergency PRN
    - **Anticholinergics** (Tiotropium + Ipratropium)
      - Consider **d/c of Ipratropium or change to PRN with Xopenex**
    - **Steroids** (Prednisone +Mometasone +Fluticasone)
      - Taper to lowest dose or d/c Prednisone if possible
      - **D/C Fluticasone Nasal**

OPTIMIZE HIS MEDICATION REGIMEN - CONTINUED

- ***GERD*** – 3 Orders
  - Zofran – Many drug interactions and **not using → D/C**
  - Lower metoclopramide and omeprazole to lowest possible maintenance doses for this patient → **D/C as soon as possible**
  - **Note: Metoclopramide may cause EPS → D/C**

REASSESS – YOUR RECOMMENDATIONS

- Reassess that you have covered all of his medications & disease states
- Make sure what you recommended makes sense and is accurate



CASE SUMMARY FOR RH ON DISCHARGE (19 → 10)

- **COPD:** Mometasone/Formoterol + Tiotropium (from 8 to 2 inhalers) tapered to d/c Prednisone, d/c Theophylline, Albuterol change to Xopenex HHN PRN rescue

- **Diabetes:** NPH 30 units BID + 5 units TID AC – no sliding scale (from 4 to 2 orders) FSBS < 120 upon discharge

- **Lipids:** Changed Atorvastatin to Pravastatin 20 mg q dinner– total cholesterol 195 (68 yo)

CASE SUMMARY FOR RH ON DISCHARGE (19 → 10)

- **BP:** Increased Lisinopril from 10 mg to 20 mg qAM + Hydralazine 25 mg TID – BP on d/c 135/70 (d/c Amlodipine → edema; d/c Clonidine PRN)

- **Depression:** Duloxetine 90 mg qHS (tapered to d/c Bupropion over 3 days, did not use Trazodone once Bupropion was d/c x 2 days slept x 8 hours)

- **GERD:** Change to Famotidine 20 mg qHS x 8 weeks (d/c Omeprazole, Metoclopramide, Ondansetron) there was no reflux x 4 days prior to d/c

- **Thyroid:** Increased Levothyroxine to 75mcg qAM (from 50mcg) TSH was 6.3 – retest in 3 months - contributing factor to depression

PROBLEMS WITH CLINICAL PRACTICE GUIDELINES (CPG)

- CPGs typically focus on a SINGLE DISEASE
- Most elderly have multiple co-morbid conditions
  - 1 in 4 seniors have > 3 conditions
  - Seniors with 1-2 conditions take 3-4 meds
  - Seniors with 3+ conditions take 6+ meds
- The evidence supporting guidelines may NOT have been OBTAINED FROM OLDER PATIENT populations with their multiple co-morbidities
- Only 9% of cancer drug trial patients > 75 years
- But 43% of cancer patients are > 75 years[17]
- 40% of CHF clinical trials limited inclusion of seniors[18]

17. Lang KJ & Lidder S. *Br J Hosp Med (Lond).* 2010.
18. Cherubini A, et al. *Arch Intern Med.* 2011.

PROBLEMS WITH CPGS – CONTINUED

- ADVERSE EVENTS vs. BENEFITS Adverse events are evaluated with less rigor and precision than are benefits in most RCTs

- OUTCOMES vs. QUALITY OF LIFE (QOL) - CPGs focus- biomedical outcomes

- Maintaining a good QOL and independence was indicated as the most important health outcome by nearly 80% of 357 seniors[19]

19. Fried TR, et al. *Arch Intern Med*. 2011.

CPG AND LIFE EXPECTANCY

- Life expectancy may not be considered
  - Patients may have a life expectancy that is shorter than the time to benefit from therapy[20]
- Limitations of prognostic tools & measures
- Time until benefit vs. time until harm
- Goal Setting Short term (<1 yr)
- Medium term (1-5 yr)
- Long term (>5 yr)
- Consider the “Goals of Care” vs. “Standard of Practice”

20. Holmes HM, et al. *Arch Intern Med.* 2006.

REVIEW: DEPRESCRIBING – CASE STUDY

Subjective:

- AB is a **72 F verbalizing** to staff members where she lived that **somebody wants to attack and rape her**
- Became **extremely unmanageable** and **not redirectable**. **Suspicious, paranoid, impulsive, aggressive,** and **resistive to care**
- Constantly **confused** with her **location** and would believe that she is in Pennsylvania where her husband currently lives
- **No history** of **suicide** attempts or **mania**. **No history** of emotional, physical or sexual **abuse**
- Not able to make any safe plans for care and therefore, placed on a 72-hour hold and admitted to the acute psychiatric unit for further safety and stabilization

DEPRESCRIBING – CASE STUDY CONTINUED

Subjective

- On 5/26/20, patient currently comfortable, and not in any apparent distress
- Alert & orientated to self, place, and partially to current time
- Has been sleeping well (~7.5 hours). However, patient woke up middle of the night and was looking for her husband and sister but then was able to go back to sleep
- No major agitation or aggressive behaviors reported
- Appetite is somewhat fair
- Patient denies suicidal/homicidal ideation. Tolerates medications well
- Moreover, her memory is somewhat limited; insight and judgment have improved but still remain limited

DEPRESCRIBING – CASE STUDY CONTINUED

PMH

- Insomnia, Major Depressive Disorder (MDD), and Parkinson's disease
- History of falls, hypothyroidism, and BLE lymphedema

Objective

- Ht: 4' 10"
- Wt: 119 lb
- Scr 0.91
- Estimated CrCl 28.5 ml/min
- All other labs WNL

DEPRESCRIBING – CASE STUDY CONTINUED

Medications

- Quetiapine 25mg BID + 100mg qHS
- Mirtazapine 15mg qHS
- Divalproex 250mg TID (8am + 1pm + 375mg 8pm)
- Melatonin 3mg qHS
- Zolpidem 5mg qHS PRN insomnia
- Trihexyphenidyl 2mg BID
- Pramipexole 1.5mg q HS
- Carbidopa/Levodopa 25/100mg 5 times a day- neurologist reduced 2pm dose to 10/100 wanted to exchange Quetiapine for Nuplazid
- Levothyroxine 75mcg qAM

DEPRESCRIBING CASE STUDY: PHARMACIST ROLE

- Hallucinations/delusions were getting worse as medications were increased

- Clinical pharmacist was called for consult

- Pharmacist Recommendations:
  - Decrease Carbidopa/Levodopa to QID
  - Reduce Quetiapine to 100mg qHS,
  - Mirtazapine to 7.5mg qHS
  - Reduce/discontinue trihexyphenidyl and Pramipexole.

DEPRESCRIBING CASE STUDY – PROGRESSION

- Three days later patient had a mechanical fall
- The only medications changed by prescriber was Carbidopa/Levodopa
- At this point, Internist and psychiatrist PRESCRIBERS were involved in the Interdisciplinary Team (IDT) meeting to discuss medications
- **The pharmacist provided the table on the next slide…**

DEPRESCRIBING CASE STUDY: ADR TABLE

Drug	Orthostasis	Peripheral edema	Abnormal gait -Tremor/dyskinesia	Xerostomia
Quetiapine	2-7%	4%	Tremor 2-8%	9-44%
Mirtazapine	< 1% Vasodilation 1%	1-2%	Tremor 2%	25%
Sinemet 25/100	1-5%	Up to 8%	Dyskinesia 2-17%	1-7%
Pramipexole	3-53%		Tremor 3% Dyskinesias 17-47%	3-7%
Depakote	1-5%	1-8%	1-5% Tremor – 57%	1-5%
Trihexyphenidyl	** Positive		Positive	Positive
Levothyroxine	(incr BP)			
Zolpidem PRN	< 1%			

**Drug is too old to have percentage

 Lexicomp. Lexicomp Online Database.

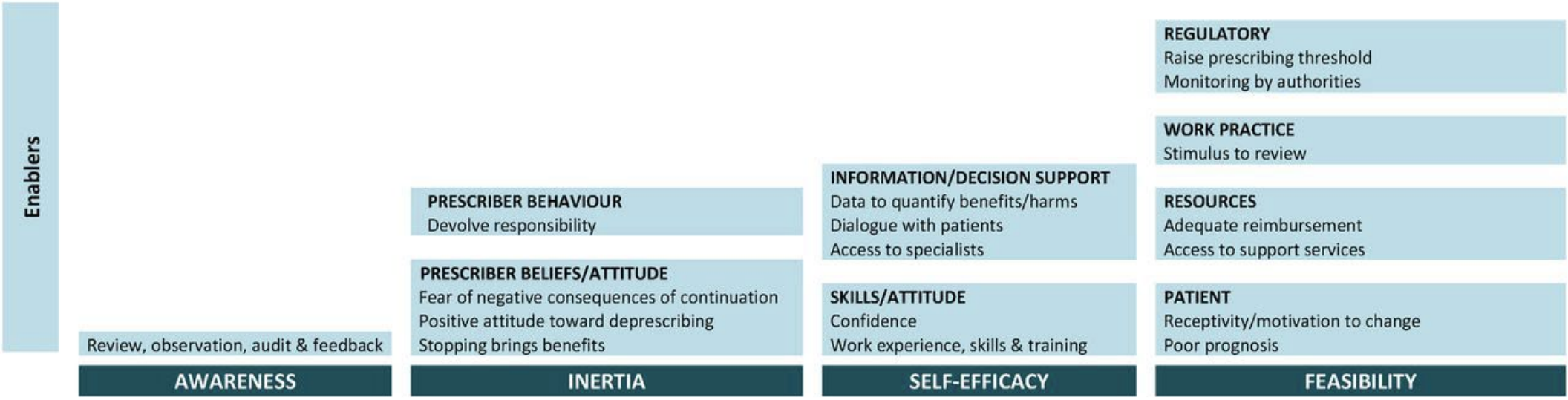
DEPRESCRIBING: CASE STUDY

- The pharmacist persuaded the following deprescribing actions:
  - Quetiapine reduction from 150 mg/day to 100 mg QHS
    - Throughout the next week, requested a further reduction to 75mg/day, however the psychiatrist refused further reductions
  - Mirtazapine requested to reduce from 15 mg QHS to 7.5 mg QHS to enhance appetite however prescriber refused to reduce.
  - Sinemet was reduced from 25/100 5x/day to 25/100 QID
  - Trihexyphenidyl was reduced from 2 mg BID to 2 mg QHS then 1 mg QHS x 3 days then discontinued
  - Pramipexole was discontinued

The patient became less confused, more stable gait and BP stabilized no ill consequences

SCHEMATIC: BARRIERS AND ENABLERS

- Awareness of polypharmacy
- Beliefs/attitudes
- Skills, experience, knowledge gaps
- Feasibility - time, effort, regulatory



21. Anderson K, et al. *BMJ Open.* 2014.

SCHEMATIC: BARRIERS AND ENABLERS

Barriers

AWARENESS	INERTIA	SELF-EFFICACY	FEASIBILITY
Poor insight Discrepant beliefs & practice	**PRESCRIBER BELIEFS/ATTITUDE** Fear unknown/negative consequences of change Drugs work, few side effects Prescribing is kind, meets needs Stopping is difficult, futile, has/will fail Stopping is a lower priority issue **PRESCRIBER BEHAVIOUR** Devolve responsibility	**SKILLS/KNOWLEDGE** Skill/knowledge gaps **INFORMATION/INFLUENCERS** Lack of evidence Incomplete clinical picture Guidelines/specialists Other Health Professionals (Aged care)	**PATIENT** Ambivalence/resistance to change Poor acceptance of alternatives Difficult & intractable adverse circumstance Discrepant goals to prescriber **RESOURCES** Time & Effort Insufficient reimbursement Limited availability of effective alternatives **WORK PRACTICE** Prescribe without review **MEDICAL CULTURE** Respect prescriber's right to autonomy & hierarchy **HEALTH BELIEFS AND CULTURE** Culture to prescribe more Prescribing validates illness **REGULATORY** Quality measure driven care

21. Anderson K, et al. *BMJ Open.* 2014.

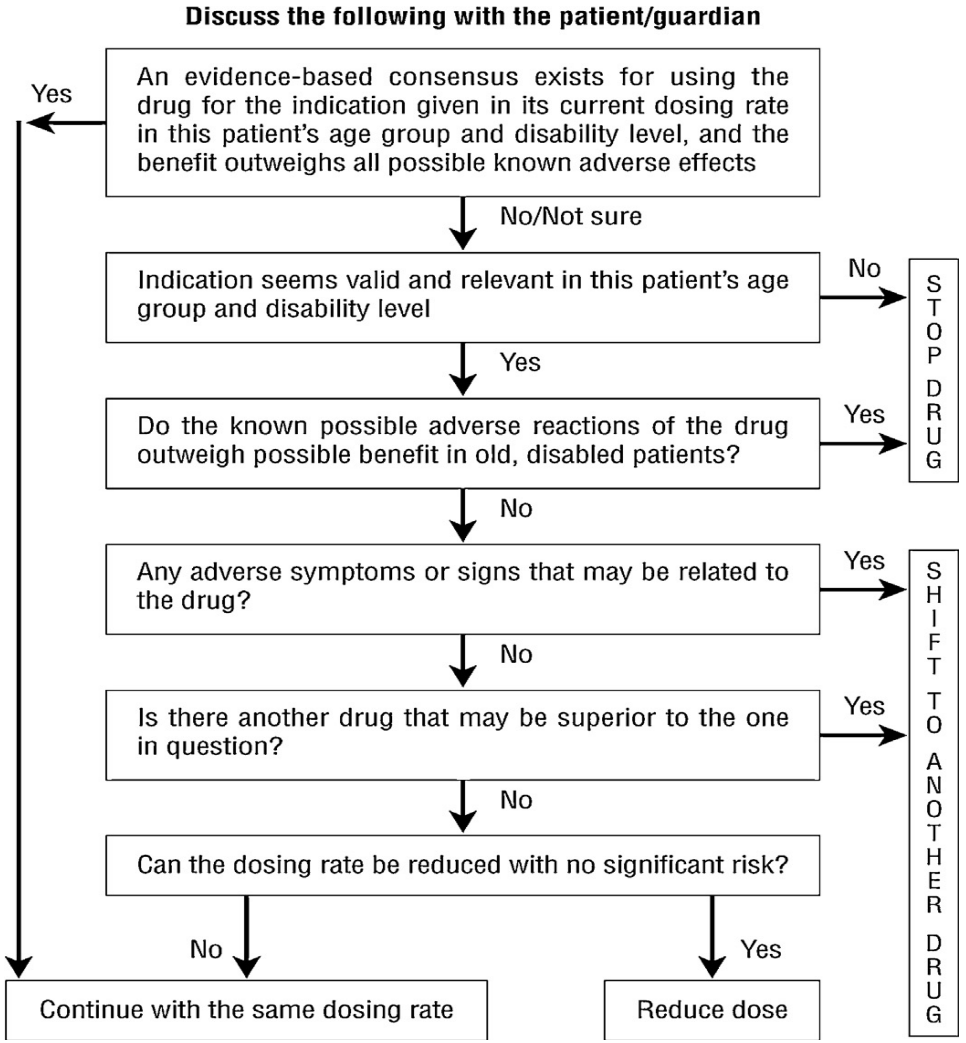
DEPRESCRIBING BARRIERS

- **Prescribers**
  - Ethical dilemma between standard of practice (colleagues, CPG, disease specific outcomes) and clinical situation
  - Lack of evidence-based approach/RCT for deprescribing
  - Resistance to change
  - Workload issue, lack of resources (time, effort)
  - Fear of liability
- **Patient/Family**
  - Fear of abandonment, reality check, situation as futile
  - Medication dependence
  - Resistance to change

22. Bain KT, et al. *J Am Geriatr Soc.* 2008.; 44. Lueras JAMDA 2017

GOOD PALLIATIVE-GERIATRIC PRACTICE (GPGP) ALGORITHM

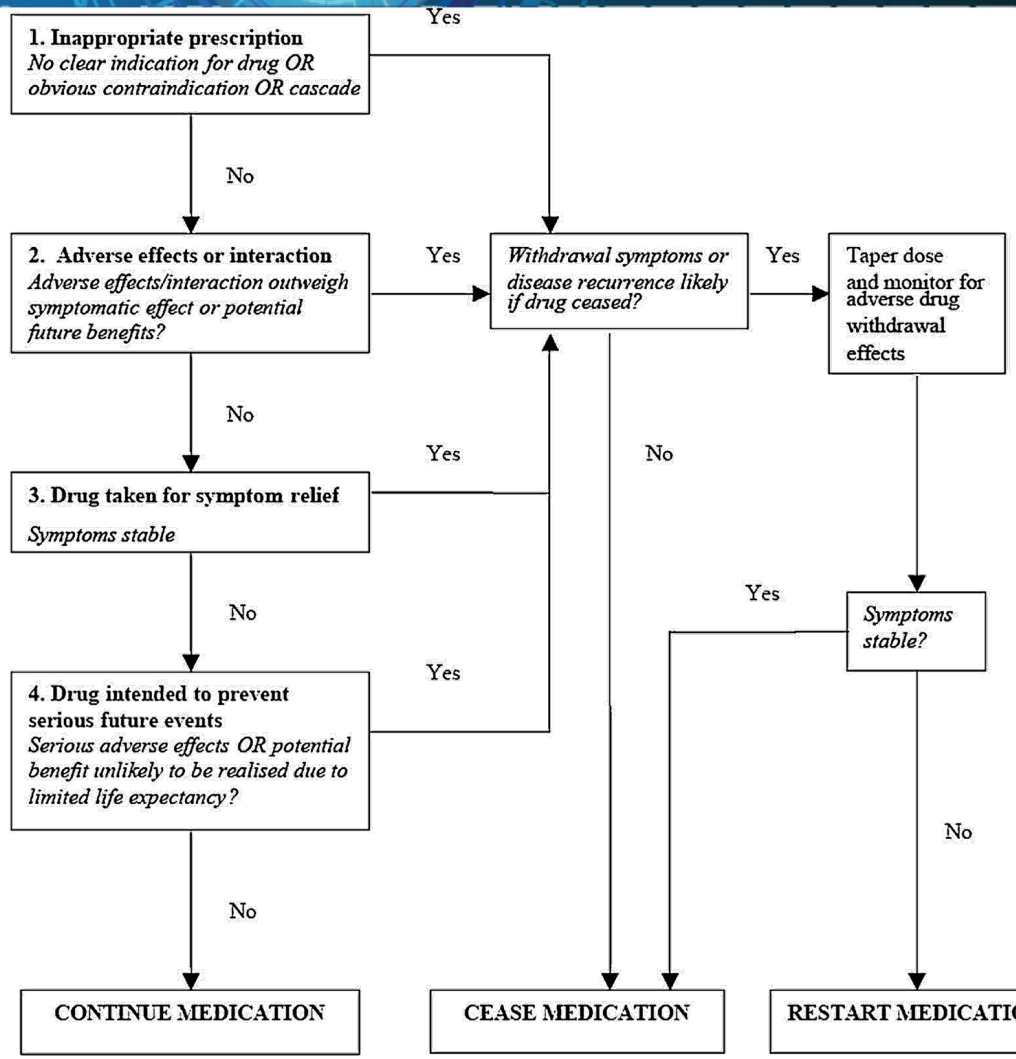
- Another algorithm to address deprescribing decision-making



23. Garfinkel D, et al. *Isr Med Assoc J.* 2007.

GPGP VARIATION

- Another variation of the previous algorithm



24. Potter K, et al. *PLoS One*. 2016.

STOPPFrail Criteria

- STOPPFrail comprises 27 criteria for PIM in frail older adults with limited life expectancy
- STOPPFrail may assist providers in deprescribing medications in a structured fashion
- STOPPFrail can be applied in frail older adults with limited life expectancy in any healthcare setting

Table 1. Final STOPPFrail criteria

STOPPFrail is a list of potentially inappropriate prescribing indicators designed to assist physicians with stopping such medications in older patients (≥65 years) who meet ALL of the criteria listed below:
(1) End-stage irreversible pathology
(2) Poor one year survival prognosis
(3) Severe functional impairment or severe cognitive impairment or both
(4) Symptom control is the priority rather than prevention of disease progression

The decision to prescribe/not prescribe medications to the patient, should also be influenced by the following issues:
(1) Risk of the medication outweighing the benefit
(2) Administration of the medication is challenging
(3) Monitoring of the medication effect is challenging
(4) Drug adherence/compliance is difficult

Section A: General

A1: Any drug that the patient persistently fails to take or tolerate despite adequate education and consideration of all appropriate formulations.
A2. Any drug without clear clinical indication.

Section B: Cardiovascular system

B1. Lipid lowering therapies (statins, ezetimibe, bile acid sequestrants, fibrates, nicotinic acid and acipimox)
These medications need to be prescribed for a long duration to be of benefit. For short-term use, the risk of ADEs outweighs the potential benefits [43–45]
B2. Alpha-blockers for hypertension
Stringent blood pressure control is not required in very frail older people. Alpha blockers in particular can cause marked vasodilatation, which can result in marked postural hypotension, falls and injuries [46]

Section C: Coagulation system

C1: Anti-platelets
Avoid anti-platelet agents for primary (as distinct from secondary) cardiovascular prevention (no evidence of benefit) [47]

Section D: Central Nervous System

D1. Neuroleptic antipsychotics
Aim to reduce dose and gradually discontinue these drugs in patients taking them for longer than 12 weeks if there are no current clinical features of behavioural and psychiatric symptoms of dementia (BPSD) [48–52]
D2: Memantine
Discontinue and monitor in patients with moderate to severe dementia, unless memantine has clearly improved BPSD (specifically in frail patients who meet the criteria above) [53–56]

Section E: Gastrointestinal system

E1. Proton Pump Inhibitors
Proton Pump Inhibitors at full therapeutic dose ≥8/52, unless persistent dyspeptic symptoms at lower maintenance dose [57]
E2: H2 receptor antagonist
H2 receptor antagonist at full therapeutic dose for ≥8/52, unless persistent dyspeptic symptoms at lower maintenance dose [57]
E3. Gastrointestinal antispasmodics
Regular daily prescription of gastrointestinal antispasmodics agents unless the patient has frequent relapse of colic symptoms because of high risk of anti-cholinergic side effects [57]

Section F: Respiratory system

F1. Theophylline.
This drug has a narrow therapeutic index, requires monitoring of serum levels and interacts with other commonly prescribed drugs putting patients at an increased risk of ADEs [58–60]
F2. Leukotriene antagonists (Montelukast, Zafirlukast)
These drugs have no proven role in COPD, they are indicated only in asthma [61]

Section G: Musculoskeletal system

G1: Calcium supplementation
Unlikely to be of any benefit in the short term
G2: Anti-resorptive/bone anabolic drugs *FOR OSTEOPOROSIS* **(bisphosphonates, strontium, teriparatide, denosumab)**
Unlikely to be of any benefit in the short term
G3. SORMs for osteoporosis
Benefits unlikely to be achieved within 1 year, increased short–intermediate term risk of associated ADEs particularly venous thromboembolism and stroke [57]
G4. Long-term oral NSAIDs
Increased risk of side effects (peptic ulcer disease, bleeding, worsening heart failure, etc.) when taken regularly for ≥2 months [62–64]
G5. Long-term oral steroids
Increased risk of side effects (peptic ulcer disease, etc.) when taken regularly for ≥2 months. Consider careful dose reduction and gradual discontinuation [65]

Section H: Urogenital system

H1. 5-Alpha reductase inhibitors
No benefit with long-term urinary bladder catheterisation [66, 67]
H2. Alpha blockers
No benefit with long-term urinary bladder catheterisation [66, 67]
H3. Muscarinic antagonists
No benefit with long-term urinary bladder catheterisation, unless clear history of painful detrusor hyperactivity [66, 67]

Section I: Endocrine system

I1. Diabetic oral agents
Aim for monotherapy. Target of HbA1c < 8%/64 mmol/mol. Stringent glycaemic control is unnecessary [68]
I2. ACE-inhibitors for diabetes
Stop where prescribed only for prevention and treatment of diabetic nephropathy. There is no clear benefit in older people with advanced frailty with poor survival prognosis [69]
I3. Angiotensin receptor blockers
Stop where prescribed only for prevention and treatment of diabetic nephropathy. There is no clear benefit in older people with advanced frailty with poor survival prognosis [69]
I4. Systemic oestrogens for menopausal symptoms
Increases risk of stroke and VTE disease. Discontinue and only consider recommencing if recurrence of symptoms [57]

Section J: Miscellaneous

J1. Multi-vitamin combination supplements
Discontinue when prescribed for prophylaxis rather than treatment
J2. Nutritional supplements (other than vitamins)
Discontinue when prescribed for prophylaxis rather than treatment [70]
J3: Prophylactic antibiotics
No firm evidence for prophylactic antibiotics to prevent recurrent cellulitis or UTIs [71–73]

Disclaimer (STOPPFrail)
Whilst every effort has been made to ensure that the potentially inappropriate prescribing criteria listed in STOPPFrail are accurate and evidence-based, it is emphasized that the final decision to avoid or initiate any drug referred to in these criteria rests entirely with the prescriber. It is also to be noted that the evidence base underlying certain criteria in STOPPFrail may change after the time of publication of these criteria. Therefore, it is advisable that prescribing decisions should take account of current published evidence in support of or against the use of drugs or drug classes described in STOPPFrail.

25. Lavan AH, et al. *Eur J Clin Pharmacol.* 2019.

EVIDENCE – DEPRESCRIBING IS NOT HARMFUL

The feasibility and effect of deprescribing in older adults on mortality and health: a systematic review and meta-analysis

- 132 papers (n= 34143 participants) – randomized and observational studies that involved deprescribing one or more medicines in older people
- Robust literature search and methodology
- Randomized studies that assessed impact on mortality (n=10, 3151 participants) showed no significant impact on mortality (OR 0.82, 95% CI: 0.61 to 1.11), however when restricted to interventions applied at the individual patient level (n=8, 1906 participants) it was associated with a reduction in mortality (OR 0.62, 95% CI: 0.43 to 0.88). Educational interventions has no impact (OR 1.21 (0.86 to 1.69)
- Non-randomized studies (n = 2,257 participants) showed a significant decrease in mortality (OR 0.32, 95% CI: 0.17 to 0.6)
- Subgroup analysis based on age, single medication/class withdrawal, cognitive status showed no significant differences in terms of impact on mortality

26. Johansson T, et al. *Br J Clin Pharmacol.* 2016.

EVIDENCE – DEPRESCRIBING IS NOT HARMFUL

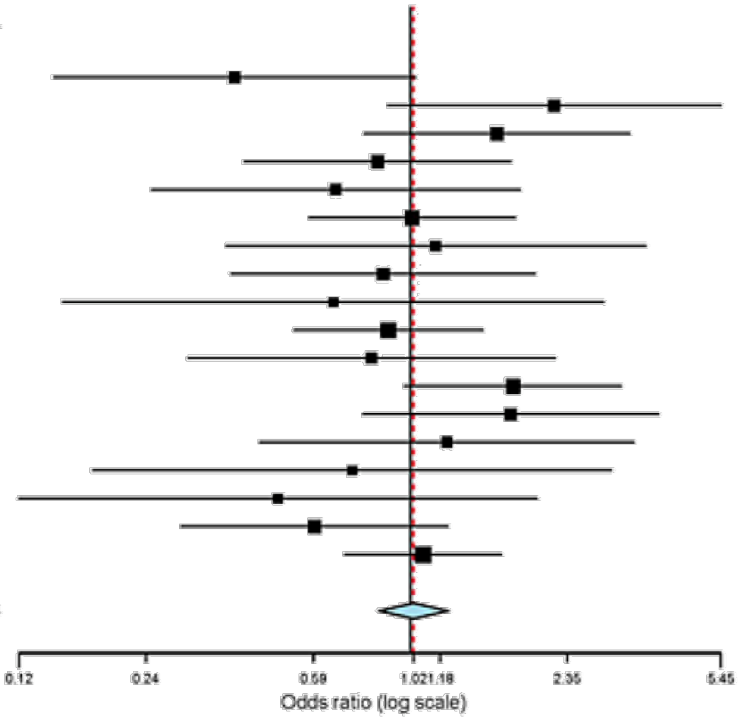
- Impact of strategies to reduce polypharmacy on clinically relevant endpoints: a systematic review and meta-analysis
  - Looked at twenty-five studies
  - 10,980 participants
  - Comprised 21 randomized controlled trials
  - Four nonrandomized controlled trials
- Concluded: No convincing evidence that the strategies assessed in the present review are effective in reducing polypharmacy or have an impact on clinically relevant endpoints

26. Johansson T, et al. *Br J Clin Pharmacol.* 2016.

EVIDENCE – DEPRESCRIBING IS NOT HARMFUL

Impact of strategies to reduce polypharmacy on clinically relevant endpoints: a systematic review and meta-analysis

Studies	Estimate (95% CI)	Ev/Trt	Ev/Ctrl
Allard,2001	0.382 (0.142, 1.028)	6/136	14/130
Bregnhøj *et al.*, 2009	2.194 (0.883, 5.450)	17/79	8/72
Crotty,2004	1.604 (0.777, 3.312)	18/50	27/104
Frankenthal *et al.*, 2014	0.835 (0.403, 1.728)	15/183	17/176
Hanlon *et al.*, 1996	0.664 (0.243, 1.818)	7/105	10/103
Lampela *et al.*, 2010	1.008 (0.574, 1.771)	27/404	25/377
Lenaghan *et al.*, 2007	1.148 (0.365, 3.612)	7/69	6/67
Milos *et al.*, 2013	0.861 (0.375, 1.975)	11/182	13/187
Naunton and Peterson, 2003	0.656 (0.150, 2.875)	3/57	5/64
Olsson, 2010	0.885 (0.529, 1.484)	34/135	46/167
Olsson *et al.*, 2012	0.808 (0.296, 2.203)	12/99	7/48
Pitkälä *et al.*, 2014	1.748 (0.966, 3.166)	39/118	24/109
Pope *et al.*, 2011	1.728 (0.770, 3.879)	17/110	11/115
Sellors, 2003	1.219 (0.438, 3.389)	8/431	7/458
Sturgess *et al.*, 2003	0.726 (0.176, 2.995)	4/110	4/81
Vinks *et al.*, 2009	0.484 (0.118, 1.994)	3/98	6/98
Weber *et al.*, 2007	0.592 (0.286, 1.226)	17/413	14/207
Zermansky *et al.*, 2006	1.070 (0.698, 1.641)	51/331	48/330
Overall (I^2 = 8%, *P* = 0.362)	1.017 (0.841, 1.229)	296/3110	292/2893



26. Johansson T, et al. *Br J Clin Pharmacol.* 2016.

Practical Recommendations For Deprescribing Unnecessary Medications During COVID-19 Pandemic[27]

- **Respiratory Medications:**
  - Short acting → long acting agents
  - Routine short acting agents PRN if on control medication
  - Continue inhaled (or oral) corticosteroids COPD
  - GOLD standards recommend maintaining nebulized formulations[28]
- Dietary Supplements:
  - Discontinue OTCs unless active diagnosis
- Gastrointestinal Medications:
  - PPI and H2 receptor antagonists: evaluate for an appropriate indication

27. ASCP COVID-19 Field Guide Development Team. *American Society of Consultant Pharmacists website.*
28. The Global Initiative for Chronic Obstructive Lung Disease (GOLD). *GOLD website.*

PRACTICAL RECOMMENDATIONS FOR DEPRESCRIBING UNNECESSARY MEDICATIONS DURING COVID-19 PANDEMIC[27] – CONTINUED

- **Cardiovascular Medications:**
  - Risk/benefit for statins and/or aspirin for primary prevention
  - Fibrates and fish oil for hypertriglyceridemia only
  - Consolidate antihypertensive polypharmacy
- **Analgesics:**
  - Continue NSAIDs for chronic diagnoses
- **Antibiotics:**
  - Discontinue prophylactic antibiotics
  - Use shortest duration indicated

27. ASCP COVID-19 Field Guide Development Team. *American Society of Consultant Pharmacists website.*

Practical Recommendations For Deprescribing Unnecessary Medications During COVID-19 Pandemic[27] – Continued

- **Diabetes Mellitus Medications:**[29]
  - D/C sliding scale insulin
  - A1C goals consistent with prognosis and age
  - Replace insulin with orals where possible
- **Anticholinergic Medications:**
  - Increased risk of pneumonia[30,31]
  - First-generation antihistamines, muscarinic receptor blockers for overactive bladder, paroxetine as SSRI, etc.
  - Consider D/C if possible
- **Topicals/Treatments:**
  - D/C treatments as much as possible
  - Routine eye drops for simplify & symptomatic PRN if using (Art tears PRN)

27. ASCP COVID-19 Field Guide Development Team. *American Society of Consultant Pharmacists website.*
29. Munshi MN, et al. *Diabetes Care*. 2016.
30. Szabo SM, et al. *BMJ Open.* 2019.
31. Chatterjee S, et al. *J Am Geriatr Soc.* 2016.

PRACTICAL RECOMMENDATIONS FOR DEPRESCRIBING UNNECESSARY MEDICATIONS DURING COVID-19 PANDEMIC[27] - CONTINUED

- **Allergy Medications:**
  - Evaluate continued need of nasal corticosteroids
- **Decreasing Routine Medication Monitoring and Laboratory Testing Frequency:**
  - Hold lab orders for routine monitoring
  - Move all labs to same day
  - Order drug levels only for toxicity
  - Decrease finger sticks for low-risk hypoglycemic regimens (daily, weekly)
  - Decrease vitals (daily from 4x/day)
  - D/C hold parameters if stable
- **Consolidating and Streamlining Nursing Med-Pass:**
  - Decrease number of med passes→ simplify regimens daily/BID
  - Short acting → long acting

27. ASCP COVID-19 Field Guide Development Team. American Society of Consultant Pharmacists website.

SUMMARY – CLINICAL PEARLS

- Polypharmacy can lead to the need for deprescribing due to DDI, ADRs and regulations
- In the elderly, Deprescribing does not appear to affect clinical outcomes
  - The benefits outweigh the risks when done systemically
- The ARMOR tool and the principles of deprescribing are systemic processes to follow in order to make deprescribing easier.
- Start deprescribing with "High Harm with Low Benefit" agents (e.g. opioids, benzos etc.) and other agents (e.g., vitamins, PRNs not using)
- Assess and reassess the patient's tolerability of the deprescribing
  - Start slow → continue to taper as necessary

POST-ASSESSMENT

LACK OF REPRESENTATIVE RESEARCH AND/OR CLINICAL TRIALS FOR THE ELDERLY IS ATTRIBUTED TO:

A. The elderly are reluctant to enrolling in clinical trials
B. Clinical trials often impose maximum age limit for study subjects
C. Younger study subjects make better candidates when study outcomes and relevant data must be collected over a long period of time
D. Clinical trials sometimes exclude comorbidities or concurrent treatments to eliminate confounding factors
E. B and D

POST-ASSESSMENT

LIMITATIONS OF THE BEERS CRITERIA:

A. Not all information is evidence or outcomes-based
B. Criteria do not identify all cases of inappropriate prescribing
C. May sometimes identify appropriate prescribing as inappropriate
D. Outdated literature
E. All of the above

POST-ASSESSMENT

DEPRESCRIBING IS A SYSTEMATIC PROCESS OF IDENTIFYING AND DISCONTINUING DRUGS WHEN:

A. Cheaper alternatives exist
B. A new prescriber is assigned
C. Existing OR potential harms outweigh existing or potential benefits
D. Those drugs are on backorder and/or out-of-stock
E. The patient refuses to take them

POST-ASSESSMENT

THE FOLLOWING ARE BARRIERS TO DEPRESCRIBING (SELECT ALL THAT APPLY):

A. Prescriber's resistance to change
B. Patient's resistance to change
C. Prescriber's fear of liability
D. Patient's medication dependence
E. Prescriber's fear of abandonment

REFERENCE LIST

1. Budnitz DS, Lovegrove MC, Shehab N, Richards CL. Emergency hospitalizations for adverse drug events in older Americans. *N Engl J Med.* 2011;365(21):2002-2012. doi:10.1056/NEJMsa1103053
2. Fortin M, Bravo G, Hudon C, Vanasse A, Lapointe L. Prevalence of multimorbidity among adults seen in family practice. *Ann Fam Med.* 2005;3(3):223-228. doi:10.1370/afm.272
3. Page AT, Potter K, Clifford R, Etherton-Beer C. Deprescribing in older people. *Maturitas.* 2016;91:115-134. doi:10.1016/j.maturitas.2016.06.006
4. Fries JF, Bruce B, Chakravarty E. Compression of morbidity 1980-2011: a focused review of paradigms and progress. *J Aging Res.* 2011;2011:261702. doi:10.4061/2011/261702
5. Hubbard RE, Peel NM, Scott IA, et al. Polypharmacy among inpatients aged 70 years or older in Australia. *Med J Aust.* 2015;202(7):373-377. doi:10.5694/mja13.00172
6. Kennedy-Martin T, Curtis S, Faries D, Robinson S, Johnston J. A literature review on the representativeness of randomized controlled trial samples and implications for the external validity of trial results. *Trials.* 2015;16:495. Published 2015 Nov 3. doi:10.1186/s13063-015-1023-4
7. Van Spall HG, Toren A, Kiss A, Fowler RA. Eligibility criteria of randomized controlled trials published in high-impact general medical journals: a systematic sampling review. *JAMA.* 2007;297(11):1233-1240. doi:10.1001/jama.297.11.1233
8. Scott IA, Le Couteur DG. Physicians need to take the lead in deprescribing. *Intern Med J.* 2015;45(3):352-356. doi:10.1111/imj.12693
9. By the 2019 American Geriatrics Society Beers Criteria® Update Expert Panel. American Geriatrics Society 2019 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults. *J Am Geriatr Soc.* 2019;67(4):674-694. doi:10.1111/jgs.15767

REFERENCE LIST

10. Goldberg RM, Mabee J, Chan L, Wong S. Drug-drug and drug-disease interactions in the ED: analysis of a high-risk population. *Am J Emerg Med.* 1996;14(5):447-450. doi:10.1016/S0735-6757(96)90147-3
11. Scott IA, Gray LC, Martin JH, Pillans PI, Mitchell CA. Deciding when to stop: towards evidence-based deprescribing of drugs in older populations. *Evid Based Med.* 2013;18(4):121-124. doi:10.1136/eb-2012-100930
12. Scott IA, Hilmer SN, Reeve E, et al. Reducing inappropriate polypharmacy: the process of deprescribing. *JAMA Intern Med.* 2015;175(5):827-834. doi:10.1001/jamainternmed.2015.0324
13. Farrell B & Tannenbaum C. What is Deprescribing? *Deprescribing website*. Accessed August 8,2020. https://deprescribing.org/what-is-deprescribing/
14. Wallis KA, Andrews A, Henderson M. Swimming Against the Tide: Primary Care Physicians' Views on Deprescribing in Everyday Practice. *Ann Fam Med.* 2017;15(4):341-346. doi:10.1370/afm.2094
15. Garfinkel D, Mangin D. Feasibility study of a systematic approach for discontinuation of multiple medications in older adults: addressing polypharmacy. *Arch Intern Med.* 2010;170(18):1648-1654. doi:10.1001/archinternmed.2010.355
16. Haque R. ARMOR: a tool to evaluate polypharmacy in elderly persons. *Ann Long-Term Care.* 2009;17(6):26–30.
17. Lang KJ, Lidder S. Under-representation of the elderly in cancer clinical trials. *Br J Hosp Med (Lond).* 2010;71(12):678-681. doi:10.12968/hmed.2010.71.12.678
18. Cherubini A, Oristrell J, Pla X, et al. The persistent exclusion of older patients from ongoing clinical trials regarding heart failure. *Arch Intern Med.* 2011;171(6):550-556. doi:10.1001/archinternmed.2011.31
19. Fried TR, Tinetti ME, Iannone L, O'Leary JR, Towle V, Van Ness PH. Health outcome prioritization as a tool for decision making among older persons with multiple chronic conditions. *Arch Intern Med.* 2011;171(20):1854-1856. doi:10.1001/archinternmed.2011.424

REFERENCE LIST

20. Holmes HM, Hayley DC, Alexander GC, Sachs GA. Reconsidering medication appropriateness for patients late in life. *Arch Intern Med.* 2006;166(6):605-609. doi:10.1001/archinte.166.6.605
21. Anderson K, Stowasser D, Freeman C, Scott I. Prescriber barriers and enablers to minimising potentially inappropriate medications in adults: a systematic review and thematic synthesis. *BMJ Open*. 2014;4(12):e006544. Published 2014 Dec 8. doi:10.1136/bmjopen-2014-006544
22. Bain KT, Holmes HM, Beers MH, Maio V, Handler SM, Pauker SG. Discontinuing medications: a novel approach for revising the prescribing stage of the medication-use process. *J Am Geriatr Soc.* 2008;56(10):1946-1952. doi:10.1111/j.1532-5415.2008.01916.x
23. Garfinkel D, Zur-Gil S, Ben-Israel J. The war against polypharmacy: a new cost-effective geriatric-palliative approach for improving drug therapy in disabled elderly people. *Isr Med Assoc J.* 2007;9(6):430-434.
24. Potter K, Flicker L, Page A, Etherton-Beer C. Deprescribing in Frail Older People: A Randomised Controlled Trial. *PLoS One.* 2016;11(3):e0149984. Published 2016 Mar 4. doi:10.1371/journal.pone.0149984
25. Lavan AH, O'Mahony D, Gallagher P. STOPPFrail (Screening Tool of Older Persons' Prescriptions in Frail adults with a limited life expectancy) criteria: application to a representative population awaiting long-term nursing care. *Eur J Clin Pharmacol.* 2019;75(5):723-731. doi:10.1007/s00228-019-02630-3
26. Johansson T, Abuzahra ME, Keller S, et al. Impact of strategies to reduce polypharmacy on clinically relevant endpoints: a systematic review and meta-analysis. *Br J Clin Pharmacol*. 2016;82(2):532-548. doi:10.1111/bcp.12959
27. ASCP COVID-19 Field Guide Development Team. *American Society of Consultant Pharmacists website.* Accessed August 8, 2020. https://cdn.ymaws.com/www.ascp.com/resource/resmgr/docs/disaster/field_guide_to_reduce_medica.pdf

REFERENCE LIST

28. The Global Initiative for Chronic Obstructive Lung Disease (GOLD). GOLD COVID-19 Guidance. *GOLD website*. Accessed August 8, 2020. https://goldcopd.org/gold-covid-19-guidance/
29. Munshi MN, Florez H, Huang ES, et al. Management of Diabetes in Long-term Care and Skilled Nursing Facilities: A Position Statement of the American Diabetes Association. *Diabetes Care.* 2016;39(2):308-318. doi:10.2337/dc15-2512
30. Szabo SM, Gooch K, Schermer C, et al. Association between cumulative anticholinergic burden and falls and fractures in patients with overactive bladder: US-based retrospective cohort study. *BMJ Open.* 2019;9(5):e026391. Published 2019 May 5. doi:10.1136/bmjopen-2018-026391
31. Chatterjee S, Carnahan RM, Chen H, Holmes HM, Johnson ML, Aparasu RR. Anticholinergic Medication Use and Risk of Pneumonia in Elderly Adults: A Nested Case-Control Study. *J Am Geriatr Soc.* 2016;64(2):394-400. doi:10.1111/jgs.13932
32. Elbeddini A, Tayefehchamani Y. Amid COVID-19 pandemic: Challenges with access to care for COPD patients [published online ahead of print, 2020 Jun 2]. *Res Social Adm Pharm.* 2020;S1551-7411(20)30677-X. doi:10.1016/j.sapharm.2020.06.002
33. Krebs EE, Gravely A, Nugent S, et al. Effect of Opioid vs Nonopioid Medications on Pain-Related Function in Patients With Chronic Back Pain or Hip or Knee Osteoarthritis Pain: The SPACE Randomized Clinical Trial. *JAMA.* 2018;319(9):872-882. doi:10.1001/jama.2018.0899
34. LeFevre ML, LeFevre NM. Vitamin D Screening and Supplementation in Community-Dwelling Adults: Common Questions and Answers. *Am Fam Physician*. 2018;97(4):254-260.
35. Manson JE, Bassuk SS. Vitamin and Mineral Supplements: What Clinicians Need to Know. *JAMA*. 2018;319(9):859-860. doi:10.1001/jama.2017.21012

REFERENCE LIST

36. O'Mahony D, O'Sullivan D, Byrne S, O'Connor MN, Ryan C, Gallagher P. STOPP/START criteria for potentially inappropriate prescribing in older people: version 2 [published correction appears in Age Ageing. 2018 May 1;47(3):489]. *Age Ageing*. 2015;44(2):213-218. doi:10.1093/ageing/afu145
37. Moyer VA; U.S. Preventive Services Task Force. Vitamin, mineral, and multivitamin supplements for the primary prevention of cardiovascular disease and cancer: U.S. Preventive services Task Force recommendation statement. *Ann Intern Med*. 2014;160(8):558-564. doi:10.7326/M14-0198
38. Vrettos I, Voukelatou P, Katsoras A, Theotoka D, Kalliakmanis A. Diseases Linked to Polypharmacy in Elderly Patients. *Curr Gerontol Geriatr Res*. 2017;2017:4276047. doi:10.1155/2017/4276047
39. World Health Organization (WHO). Coronavirus disease (COVID-19) technical guidance: Patient management. *WHO website.* Accessed August 8, 2020. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/patient-management
40. Kim, J., & Parish, A.L. (2017). Polypharmacy and medication management in older adults. Nursing Clinics, 52, 457-468. doi:10.1016/j.cnur.2017.04.007
41. https://www.guidelinecentral.com/summaries/american-geriatrics-society-2015-updated-beers-criteria-for-potentially-inappropriate-medication-use-in-older-adults/#section-420 Accessed August 8, 2020.
42. O'Mahony D, Gallagher PF. Inappropriate prescribing in the older population: need for new criteria. Age Ageing. 2008 Mar;37(2):138-41. doi: 10.1093/ageing/afm189. PMID: 18349010.
43. https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_pp_guidelines_ltcf.pdfAccessed August 8, 2020.
44. Lueras, P. Deprescribing in the Nursing Home: Phase 1 –PRN Medications. Quality Improvement/ JAMDA 18 (2017) B11-B12
45. Liu, L. & Campbell, I. Tips for Deprescribingin the Nursing Home. *Ann. Long-Term Care***24,**26–32 (2016).

REFERENCE LIST

46. . Allison, R. “When less is More: Deprescribing Medication” 3/2/2019 LECOM Summer 2018 Primary Care CME conference speaker slides. https://lecom.edu/cme/pc2019presentations/ accessed August 8, 2020.

SESSION CODE: