Objectives

1. Apply an evidence based approach to deprescribing medications
2. List high risk medications that are potentially harmful to elder adults
3. Recognize a process for determining hospice relatedness

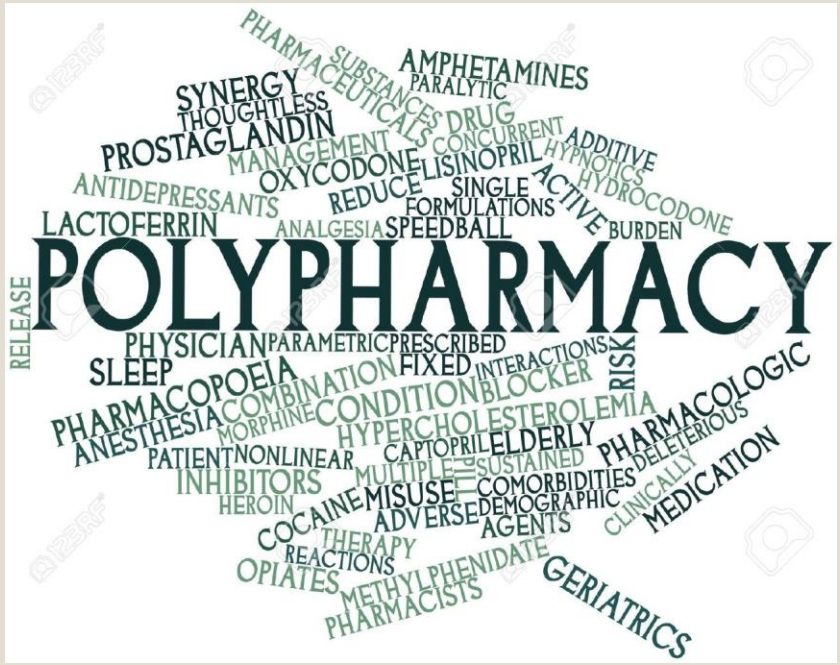
Introduction

- Polypharmacy is **common** in older adults
- **Highest** number of drugs taken by patients in nursing homes
- Strong relationship with **negative** clinical consequences
- 50% take >1 med(s) **not** medically necessary

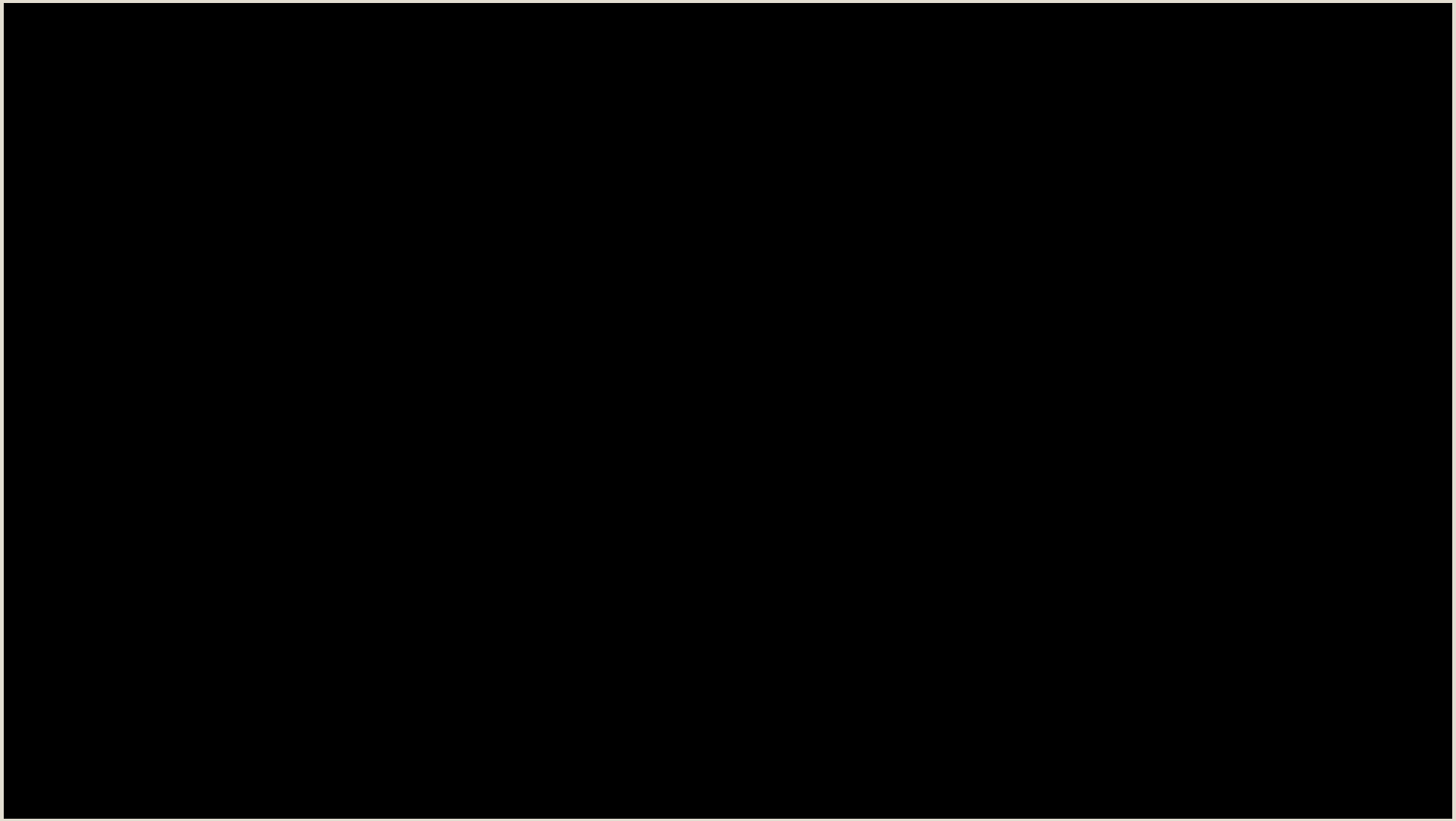
Expert Opin Drug Saf. 2014 January ; 13(1): . doi:10.1517/14740338.2013.827660

Definition Polypharmacy

- Differing opinion over cut point number
- Alternative is “the use of more medications than necessary”
- Ambulatory
  - >5 medication
  - CAD with PTCA=5 medications
- Inpatient
  - 41% at dismissal 5-8 meds, 37% >9
  - 58% with >1 unnecessary med
- Nursing home
  - QI measure >9 meds (CMS)



Hajjar E, Hanlon JT, Sloane RJ, et al. Unnecessary drug use in frail older people at hospital discharge. J Am Geriatr Soc. 2005; 53:1518–1523. [PubMed: 16137281]



MEDICATION PROBLEMS

Medication Problems in Patients with Multiple Chronic Conditions

- Not Feasible
  - Non-adherence
  - Fail to refill
  - Cost
  - Complexity of medication regimen
- Lacking Benefit
  - No indication
- More than minimal risk of harm
  - Inappropriate medications
  - Polypharmacy
  - Excessively tight disease control
- Not consistent with goals of care
  - Side effects, serious adverse effect
  - Desired outcome not achieved
  - Preventive meds without large enough benefits

Observational Studies Polypharmacy

Summary of Observational Studies of Polypharmacy in Older Adults

Author/Year	Setting/Country/Sample	Polypharmacy Results	Most Common Types of Medication Class/Individual Medications
Qato 2008	Ambulatory/USA/N=2976	37.1% men and 36% women aged 75+ used at least 5 RX medications; 46% took an OTC medication and 52% dietary supplements	hydrochlorthiazide, atorvastatin, levothyroxine, lisinopril, metoprolol, simvastatin, atenolol, amlodipine, metformin, furosemide
Rossi, 2007	Ambulatory/USA/ N=128	58.6% took 1+ unnecessary drugs	central nervous system, gastrointestinal, vitamins
Hajjar 2005	Hospital/USA/n=384	37.2% ≥ 9 drugs 41.4% 5-8 drugs 21.4% 1-4 drugs; 58.6% took 1+ unnecessary drugs	gastrointestinal, central nervous system, and therapeutic nutrients/minerals H_2 blockers, laxatives, genitourinary antispasmodics, tricyclic antidepressants
Nobili , 2011	Hospital/Italy/n=1332	Admission-51.9% on 5+; Discharge-67% on 5+	antithrombotics, gastrointestinal diuretics, acei, beta-blockers, lipid and non-insulin glucose lowering rxs, digoxin
Dwyer , 2009	Nursing Home/USA/N= 13,507	39.7% on 9+ meds	laxatives, acid/peptic disorders, antidepressants, antipsychotics/antimanics, non-narcotic pain relievers, antipyretics, antiarthritics
Bronskill, 2012	Nursing Home/Canada/n=64,395	15.5% on 9+ medications	diuretics, ppi, aceI, beta-blockers, benzodiazepines, ssris, ccb, antipsychotics, statins, opioids

Abbreviations- acei(ACE Inhibitors), ccb(Calcium Channel Blockers), otc(Over-the-Counter Products), ppi(Proton Pump Inhibitors), rx(prescriptions), ssri(Selective Serotonin Reuptake Inhibitors)

- CVD meds
- Diabetes meds
- GI meds
- CNS meds

Expert Opin Drug Saf. 2014 January ; 13(1): . doi:10.1517/14740338.2013.827660

Consequences Polypharmacy

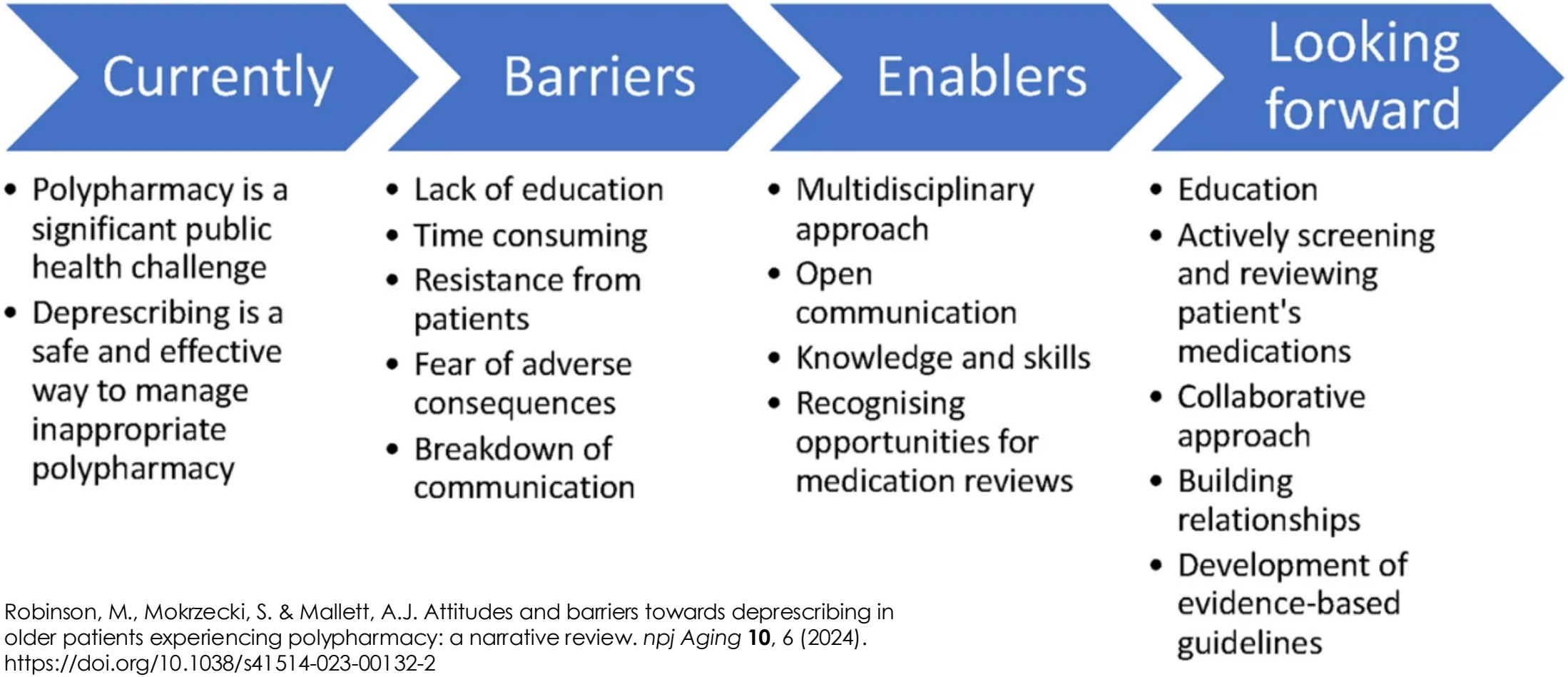
- Greater healthcare costs
  - Increased risk outpatient and ER visits 30% >cost
- Increased risk adverse drug events, drug interactions
  - 35% outpatients, 40% inpatients ADE
  - 5-9 meds 50%, >20 meds 100% probability for interactions
- Increased risk medication non-adherence
  - Rates 43-100% community elders
- Reduced functional capacity
  - Decreased ability for IADL >5 meds
  - Decreased functional ability, difficulty ADL >10 meds
- Geriatric syndromes
  - Cognitive impairment
  - Falls >4 meds
  - Urinary incontinence
  - Malnutrition

Expert Opin Drug Saf. 2014 January ; 13(1): . doi:10.1517/14740338.2013.827660

BARRIERS TO DEPRESCRIBING

Fig. 1

From: Attitudes and barriers towards deprescribing in older patients experiencing polypharmacy: a narrative review

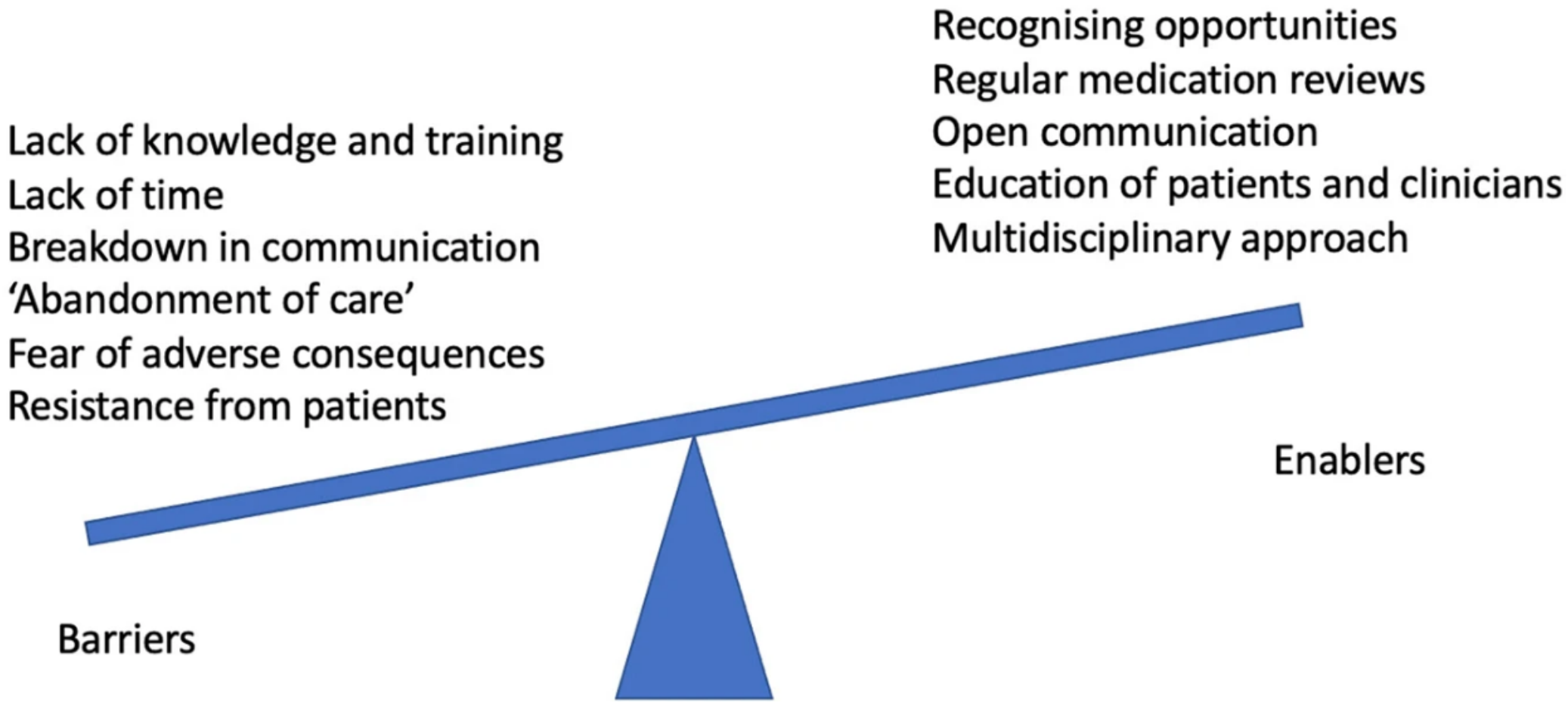


Robinson, M., Mokrzecki, S. & Mallett, A.J. Attitudes and barriers towards deprescribing in older patients experiencing polypharmacy: a narrative review. *npj Aging* **10**, 6 (2024). https://doi.org/10.1038/s41514-023-00132-2

Overview of Deprescribing.

Fig. 2

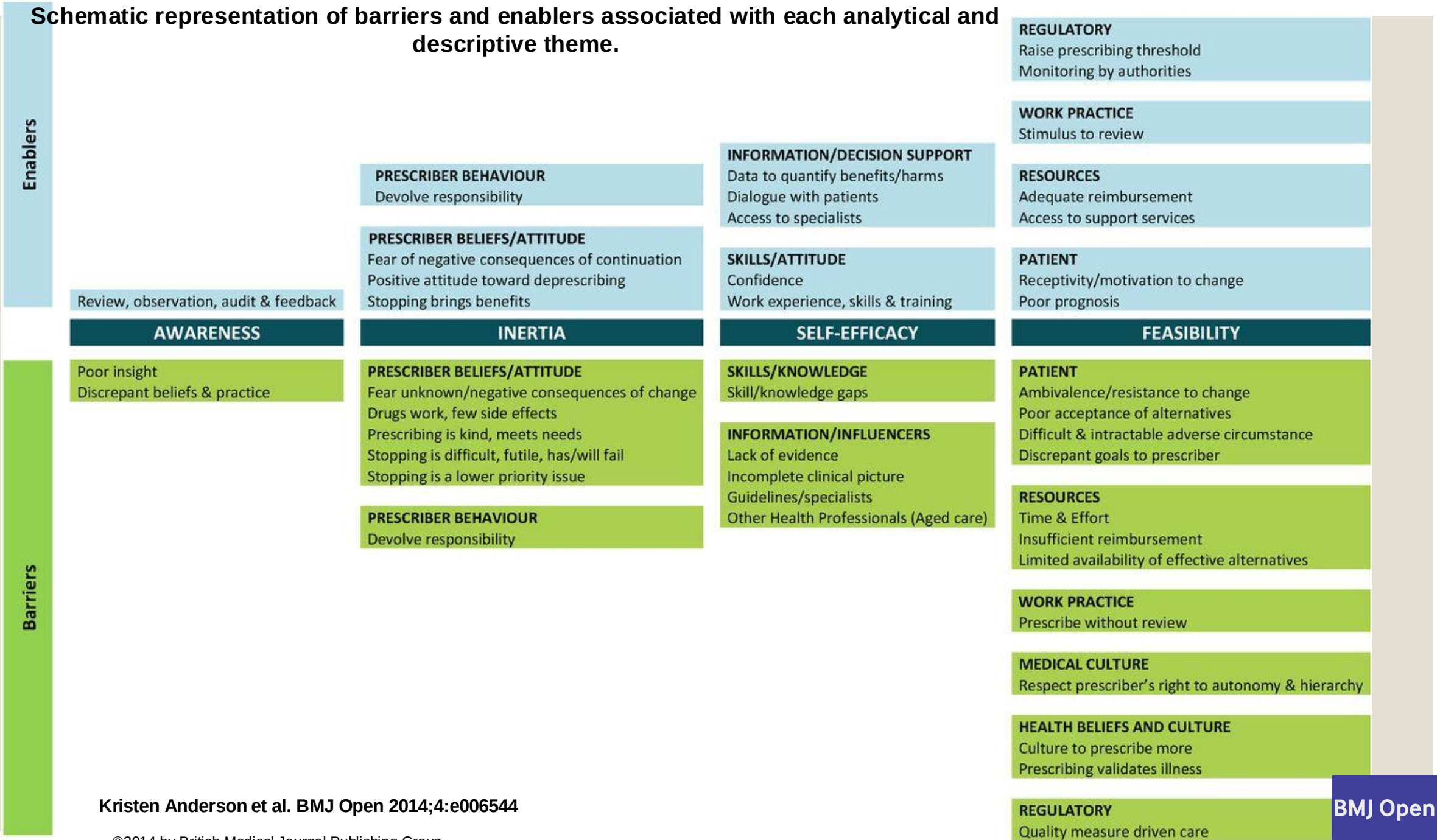
From: Attitudes and barriers towards deprescribing in older patients experiencing polypharmacy: a narrative review



Balance of Barriers and Enablers to Deprescribing.

Robinson, M., Mokrzecki, S. & Mallett, A.J. Attitudes and barriers towards deprescribing in older patients experiencing polypharmacy: a narrative review. *npj Aging* **10**, 6 (2024). https://doi.org/10.1038/s41514-023-00132-2

Schematic representation of barriers and enablers associated with each analytical and descriptive theme.



Kristen Anderson et al. BMJ Open 2014;4:e006544

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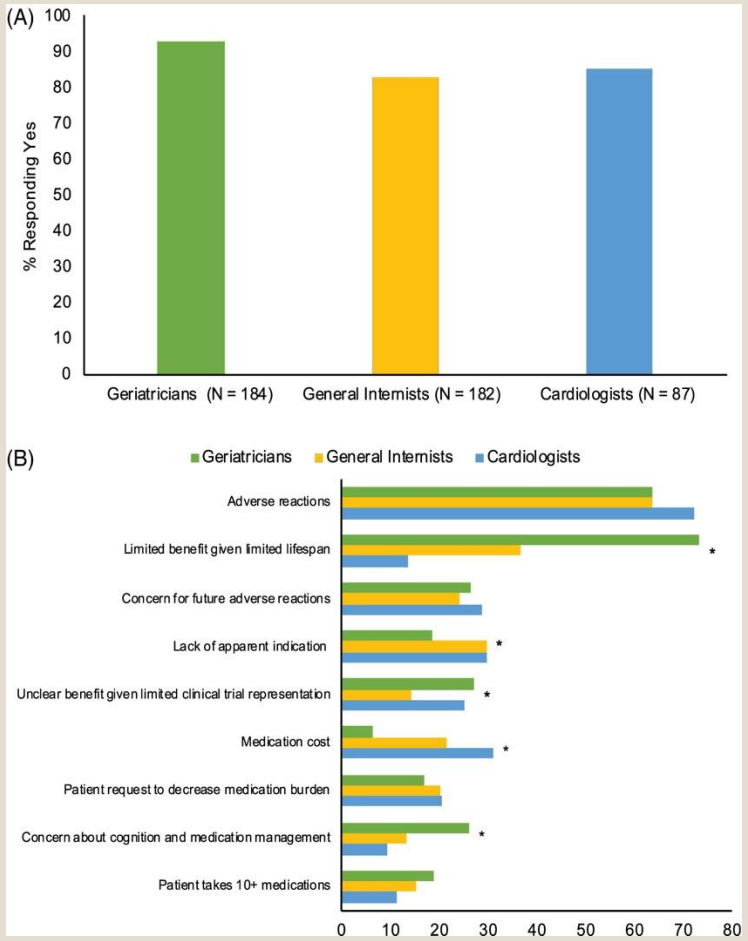
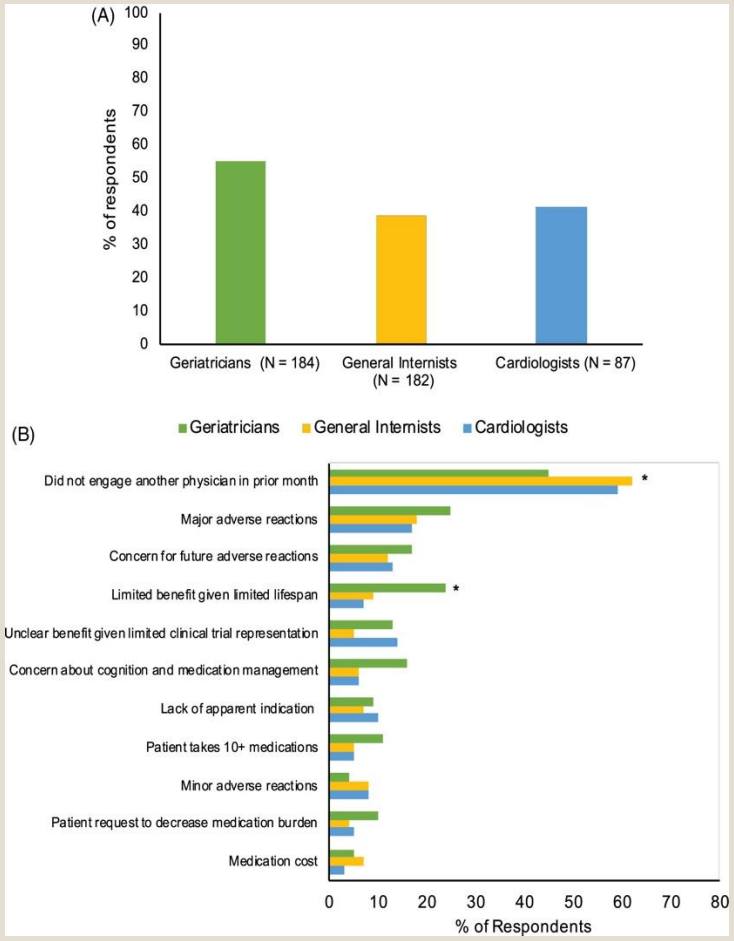
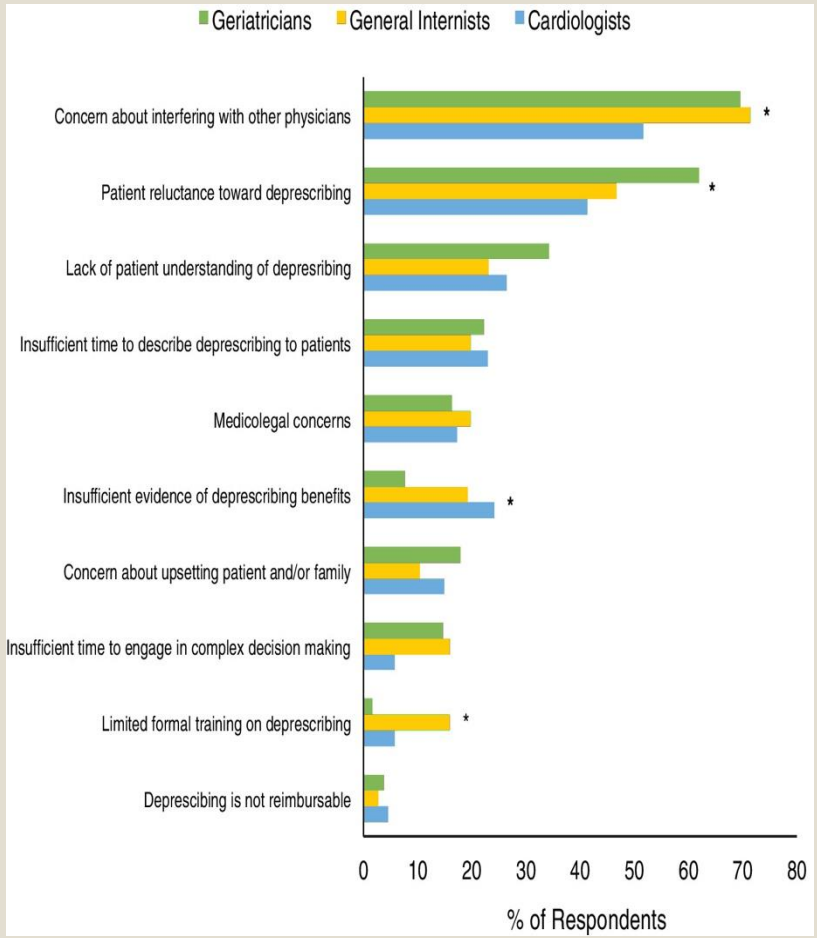
BMJ Open

Physician Perspectives on Deprescribing Cardiovascular Medications for Older Adults







J American Geriatrics Society, Volume: 68, Issue: 1, Pages: 78-86, First published: 11 September 2019, DOI: (10.1111/jgs.16157)

Patient Barriers

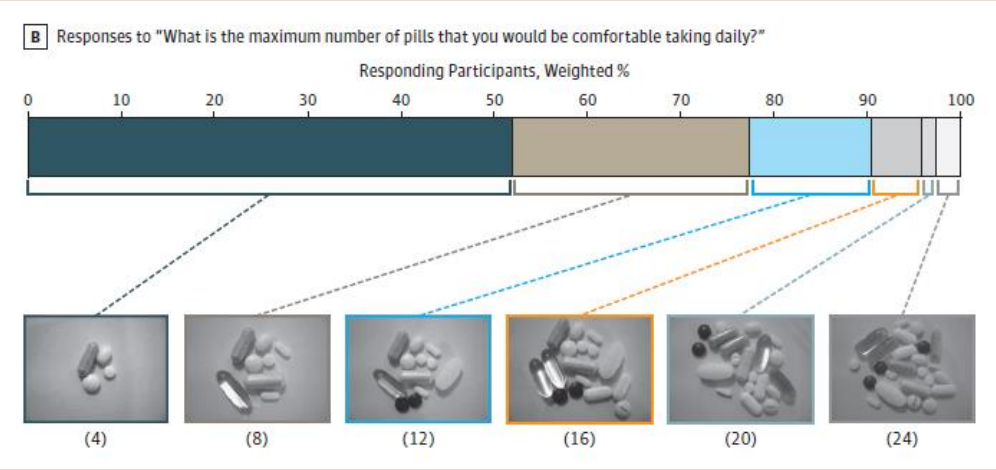
The Psychological Connection to Medications

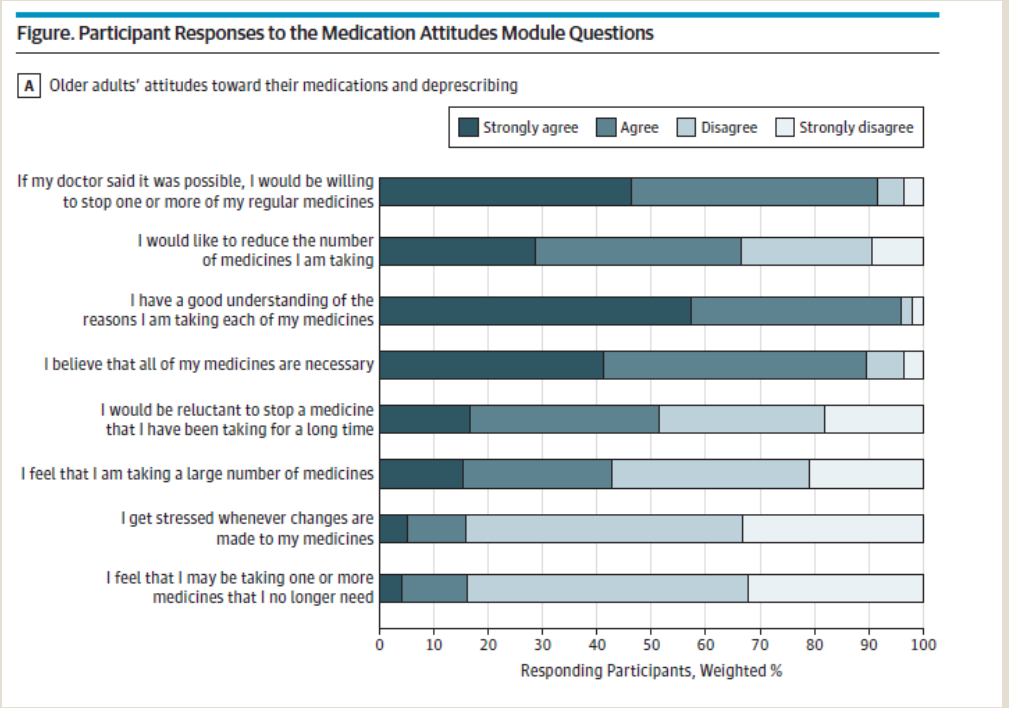
Patients' Perception
Inconsistent advice leading to difficulties with trust
"But my other doctor told me I should never stop this drug. Are you saying (s)he was wrong? Do you know what you are doing?"
Further confrontation with mortality
"I was told to take this until I die. Are you saying I'm about to die?"
Feelings of abandonment by the medical world
"So it's not worthwhile treating me anymore."
Exposure to the complication of the medical condition
"But won't I get sick without the tablet?"
A sense of futility of previous efforts with compliance
"So why did I bother with jabbing my finger and eating rabbit food for the last twenty years?"

BMJ. 2004 Oct 16;329(7471):909-12.

Patient Attitudes Toward Medications

- Older patients are willing to have medication deprescribed
- Not stressed with medication changes
- Traditional deference to physician recommendation
- Culture of prescribing and starting medication
- Over 90% willing to have a medicine D prescribed
- Over half reported 4 pills is the maximum they are comfortable taking
- 13% comfortable taking less medication than currently prescribed

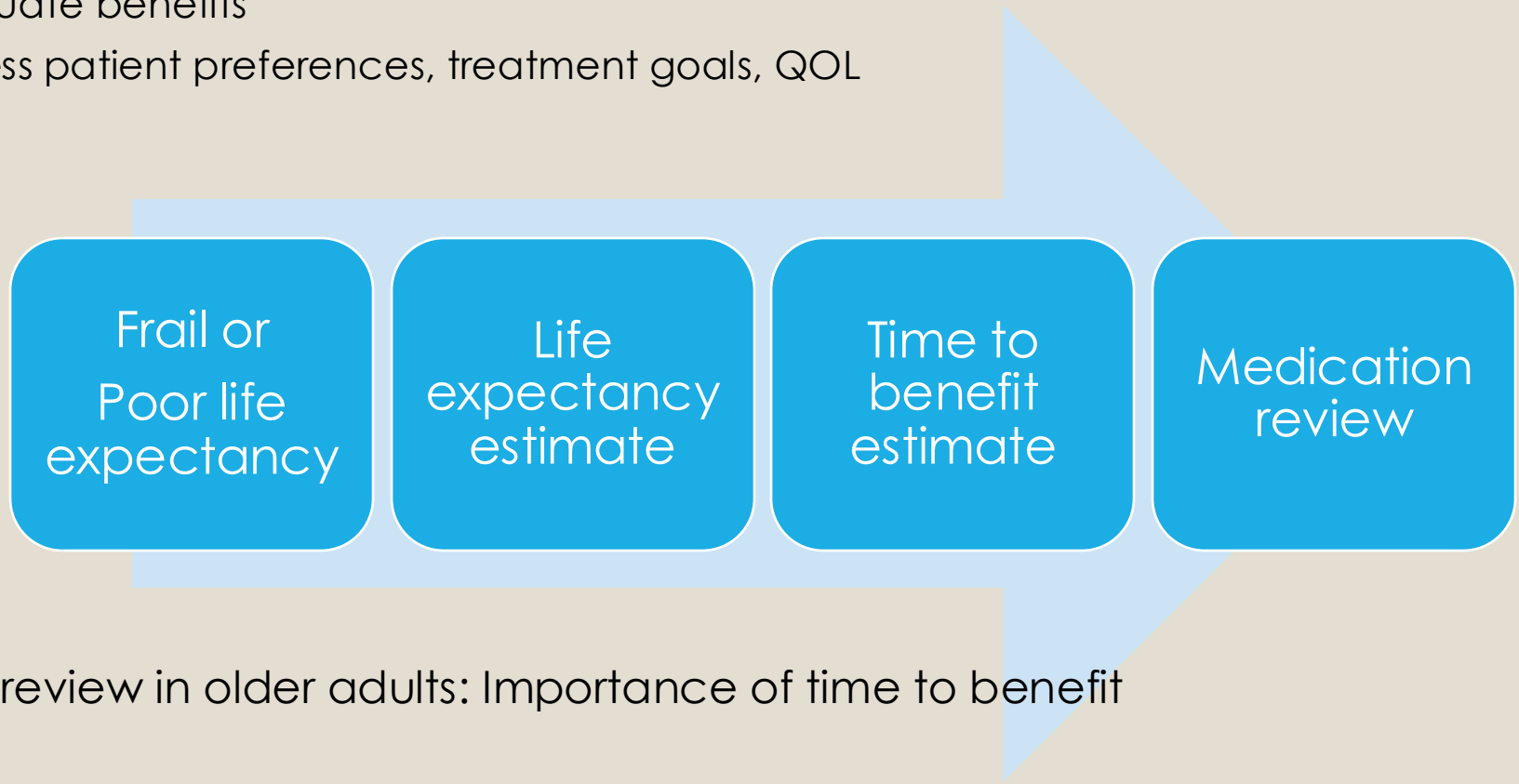




PROCESS DEPRESCRIBING

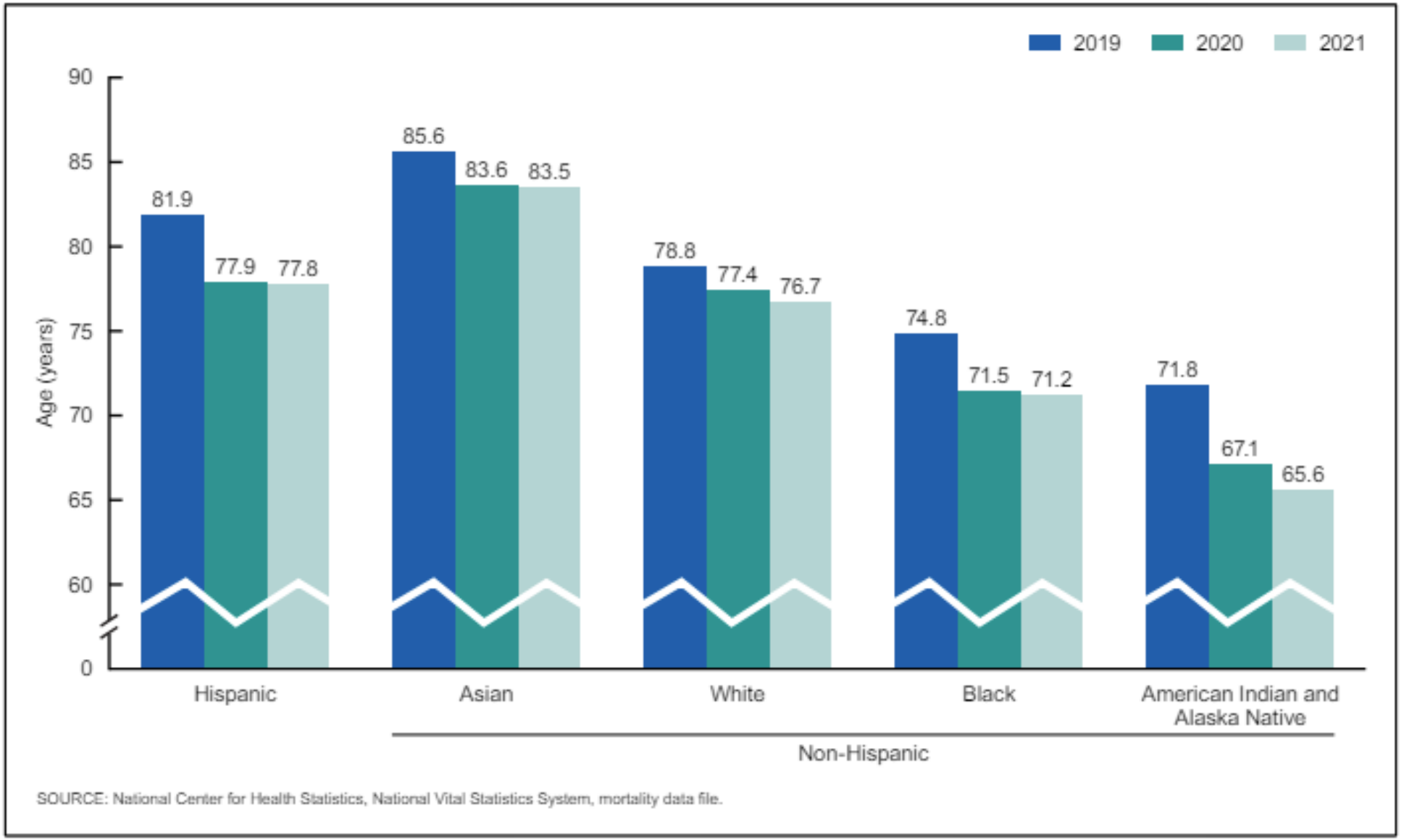
Medication Review

- Holistic Approach
  - Evaluate benefits
  - Assess patient preferences, treatment goals, QOL



Medication review in older adults: Importance of time to benefit

Figure 2. Life expectancy at birth, by Hispanic origin and race: United States, 2019–2021



SOURCE: National Center for Health Statistics, National Vital Statistics System, mortality data file.

Table 1

Time to Benefit for Medications Used in Older Adults for Prophylaxis

Drug	Time to Benefit
Primary prevention with statins	2-5 months
Bisphosphonates	8-19 months
Aspirin for primary cardiovascular prevention	10 months
Antihypertensive for primary prevention of CVD	1-2 months

CVD: cardiovascular disease. Source: Reference 11.

Addressing Medication Overload
Donna M. Lisi, PharmD, BCPS, BCGP, BCPP, BCACP
US Pharm. 2021;46(7):23-28.
***pending "Shared with permission"

Time to Benefit

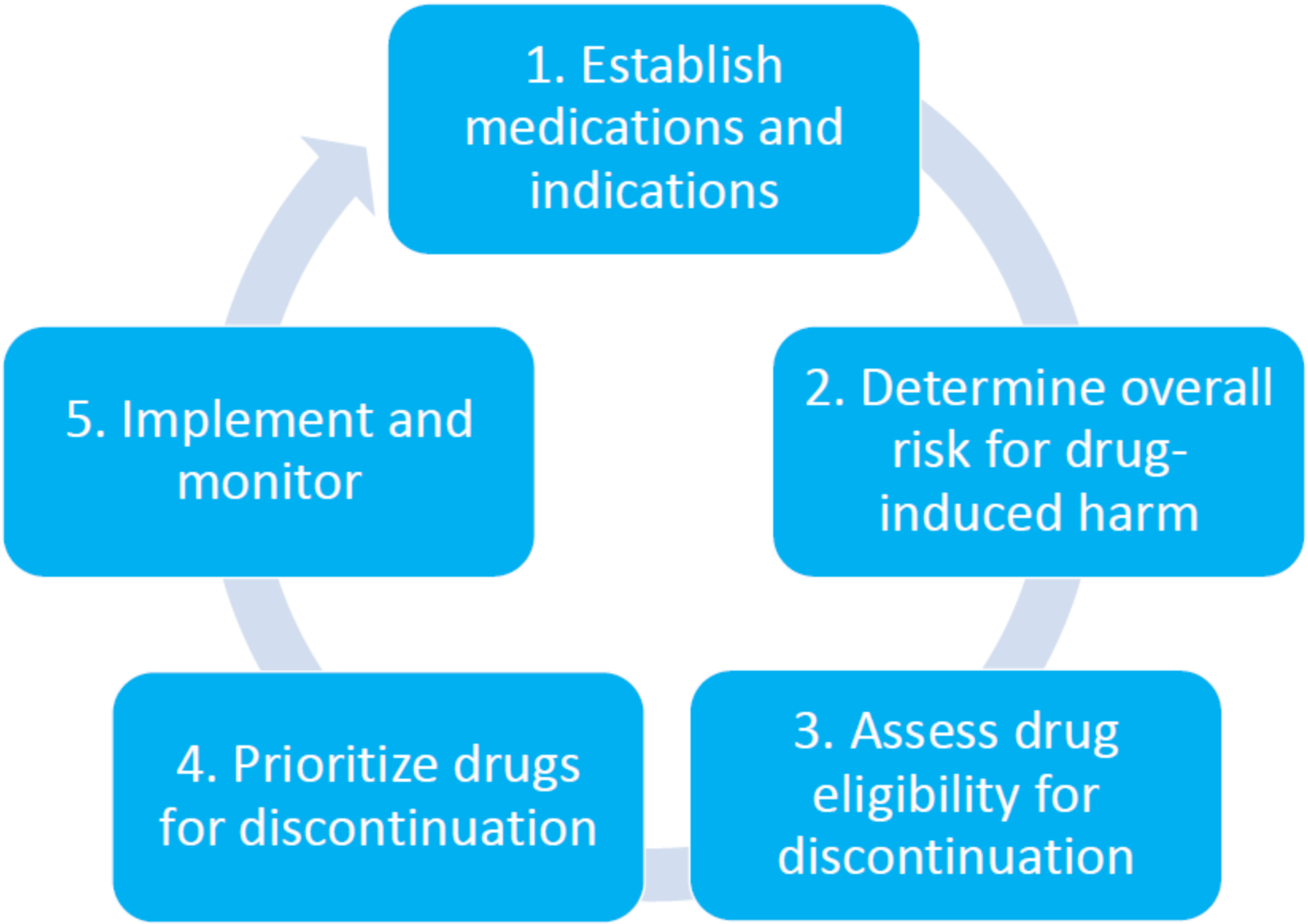
Therapies reach a measurable effect within a limited time horizon

The effect of analgesics: hours to days or weeks

The effect of preventive therapy: extended in years-decades

Study duration or the median/mean follow-up time is a clue

The Process of Deprescribing



Adapted from Scott, *et al.*, *JAMA Internal Medicine*, 2015

Deprescribing Intervention

- **Tools** to identify inappropriate medications
- Challenges in prioritizing high/low risk medications
  - Priority of **harm reduction vs buy in**
- Process when algorithm **not** available for drug class

Age and Ageing 2017; **46:** 600–607
doi: 10.1093/ageing/afx005
Published electronically 24 January 2017

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STOPPFrail (Screening Tool of Older Persons Prescriptions in Frail adults with limited life expectancy): consensus validation

Amanda Hanora Lavan[1,2], Paul Gallagher[1,2], Carole Parsons[3], Denis O'Mahony[1,2]

Lunghi, C., Domenicali, M., Vertullo, S. *et al.* Adopting STOPP/START Criteria Version 3 in Clinical Practice: A Q&A Guide for Healthcare Professionals. *Drug Saf* (2024). https://doi.org/10.1007/s40264-024-01453-1

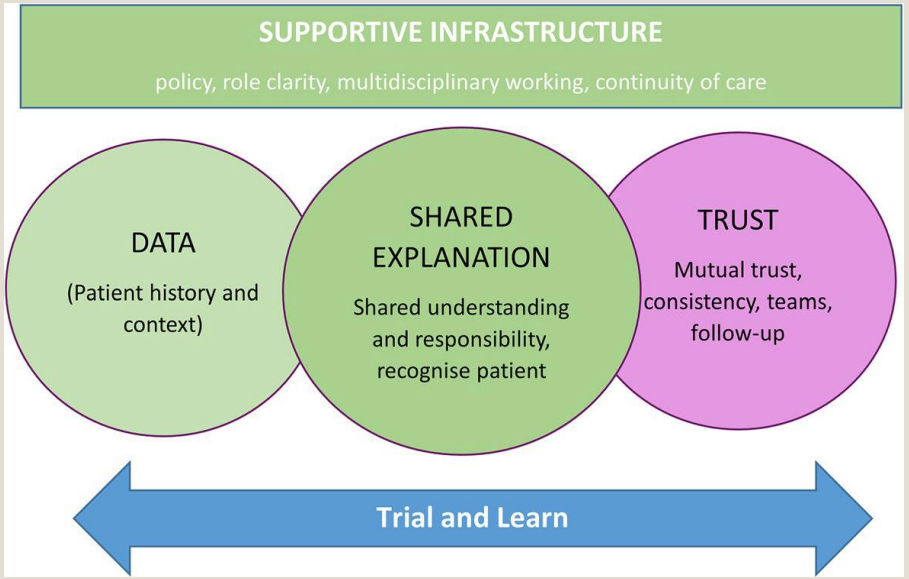
Adopting STOPP/START Criteria Version 3 in Clinical Practice: A Q&A Guide for Healthcare Professionals

Review Article | Open access | Published: 11 July 2024

- This version does include section on limited life expectancy or end of life care
- Prioritize deprescribing
  - focus on individuals overall health status
  - life expectancy
  - quality of life
- Primary goal to minimize burden of polypharmacy
  - avoid medications without benefit or have potential harm
- Involving patients and caregivers and treatment decisions is important
  - ensuring treatment plan aligns with the patient's preferences, care goals

Physician Interventions

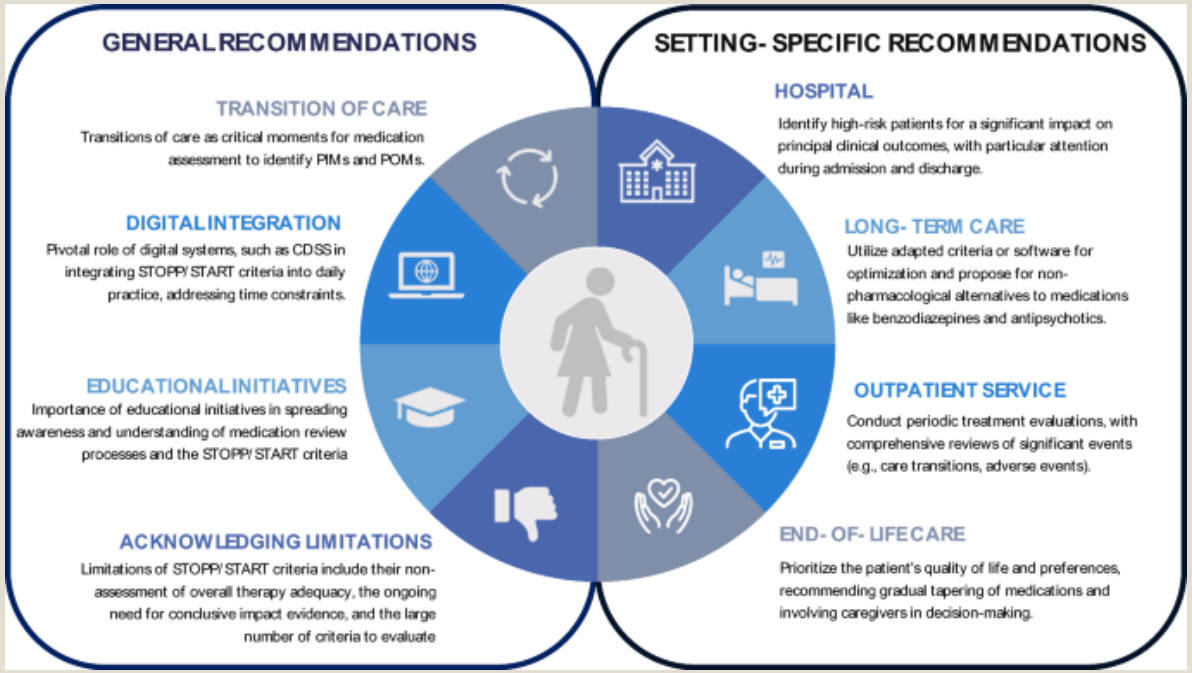
The DExTruS framework (Data, Explanation, Trust) aims to optimize tailored deprescribing through a supportive infrastructure that promotes collaboration, data-driven decision-making, and trust-building between patients and professionals.



- Supportive infrastructure
  - Clear guidance on responsibilities
  - Multidisciplinary working and continuity of care
  - Resources for managing complex cases
- Consistent Access to High-Quality Data
  - Access to patient history and contextual data
  - Shared understanding of the purpose and meaning of medications
- Building Trust
  - Trust between patients and healthcare professionals
  - Continuity of care across professional teams
- Trial and Learn Approach
  - Safe spaces for learning and adopting strategies
  - Reducing cognitive and emotional load during deprescribing

Tools Deprescribing

AGS BEERS CRITERIA® 2023



Beers vs STOPP Criteria

	Criterion	Definition
BEERS		
ID 6.5	Insulin (gradual demand)	Constant changes in insulin dosing regimen, without improvement in hyperglycemia and some occasional record of hypoglycemia.
CD 2.4	History of falls and fractures	Any fall or fracture recorded within the last 3 months or during the 6 months of follow-up.
CD 3.1	Chronic constipation	At least 1 constipation period requiring the use of laxatives.
CD 4.1	Chronic renal disease	GFR < 30 ml/min
STOPP		
A1	Digoxin at a long-term dose > 125mg/day with renal impairment (increase in the risk of intoxication)	Renal failure: Estimated GFR < 50 ml/min
A2	Loop diuretics for dependent ankle oedemas, without clinical signs of heart failure (no evidence of their efficacy; support stockings are usually more adequate).	Extended to patients without diagnosis of decompensation due to hepatic cirrhosis, ascites, arterial hypertension, or severe disease.
B12	SSRI with a history of clinically significant hyponatraemia (< 130mmol/l non-iatrogenic in the previous 2 months).	Hyponatraemia: Na^+ < 130 mmol/l, in the previous 2 months.
E2	NSAID with moderate-severe hypertension	In ≥ 1 arterial hypertension measurement.
E4	Long-term use of NSAID (> 3 months) for relief of mild articular pain in osteoarthritis.	Excluding topical NSAID.
E6	NSAID with chronic renal failure (risk of renal function deterioration).	Renal failure: Estimated GFR < 50 ml/min.
J	Any regular prescription of two drugs within the same class: two opiates, NSAID, SSRI, loop diuretics, ACE inhibitors (monotherapy within one single class must be optimized before considering switch to another drug class). This excludes duplicate prescriptions of drugs that can be needed on demand: inhaled $beta_2$ agonists (long and short-acting) for COPD and asthma, or opiates for management of breakthrough pain.	Duplicate medications: molecules included in the same pharmacological subgroup (third level in the ATC Classification). Two concurrent antiaggregant drugs during > 1 year.

GFR: glomerular filtration rate; NSAID: non-steroidal anti-inflammatory drugs; SSRI: selective serotonin reuptake inhibitors: ACE inhibitors: angiotensin converting enzyme inhibitors; ATC: anatomical-therapeutical-chemical; COPD: chronic obstructive pulmonary disease.

STOPP criteria		Patients [n = 223]	
		n	%
A	Cardiovascular		
13	ASA with no history of ischemic cardiopathy, cerebrovascular condition or peripheral arterial disease, or arterial occlusive disease (not indicated).	30	13.5
12	ASA at doses > 150mg per day (increase in the risk of bleeding, without evidence of higher efficacy).	22	9.9
2	Loop diuretics for dependent ankle oedema, without clinical signs of heart failure (no evidence of their efficacy; support stockings are usually more adequate).	10	4.5
17	ASA, clopidogrel, dipyridamole, warfarin or acenocoumarol with a concurrent bleeding disorder (high risk of bleeding).	6	2.7
5	Non-cardioselective beta-blockers with COPD (risk of bronchospasm).	6	2.7
B	Central Nervous System and Psychotropic Drugs		
7	Prolonged use (> 1 month) of long-acting benzodiazepines (chlordiazepoxide, flurazepam, nitrazepam, clorazepate) or benzodiazepines with long-acting metabolites (diazepam) (risk of prolonged sedation, confusion, balance disorders, falls).	54	24.2
E	Musculoskeletal System		
4	Long-term use of NSAID (> 3 months) for relief of mild articular pain in osteoarthritis.	23	10.3
6	NSAID with chronic renal failure (risk of renal function deterioration).	10	4.4
3	NSAID with heart failure (risk of worsening heart failure).	7	3.1
H	Drugs that adversely affect fallers (1 or more falls during the past 3 months).		
1	Benzodiazepines (sedatives, they can reduce sensorium, there is balance deterioration).	14	6.3
5	Long-term opiates in those with recurrent falls (risk of somnolence, postural hypotension, vertigo).	12	5.4
I	Analgesic Drugs		
3	Long-term opiates in those with dementia, except when indicated for palliative care or management of moderate/ severe pain syndrome (risk of worsening cognitive deterioration).	7	3.1
J	Duplicate Drug Classes		
	Any regular prescription of two drugs within the same class: two concurrent opiates, NSAID, SSRI, loop diuretics, ACE inhibitors (monotherapy within one single class must be optimized before considering switch to another drug class). This excludes duplicate prescriptions of drugs that can be needed on demand: inhaled $beta_2$ agonists (long and short-acting) for COPD and asthma, or opiates for management of breakthrough pain.	58	26

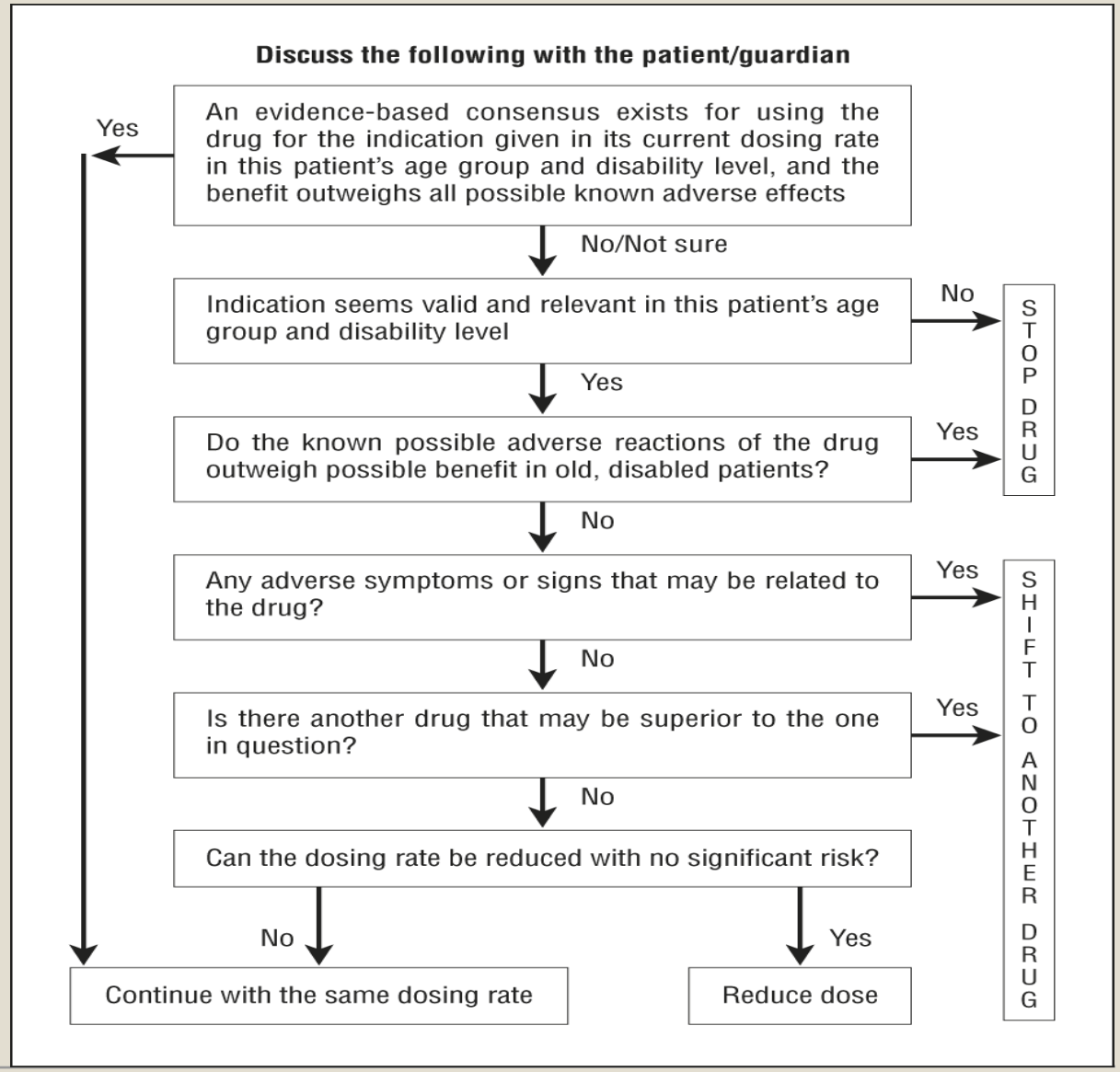
ASA: acetylsalicylic acid; NSAID: non-steroidal anti-inflammatory drugs; SSRI: selective serotonin reuptake inhibitors; ACE inhibitors: angiotensin converting enzyme inhibitors; COPD: chronic obstructive pulmonary disease.

JAMA Network™

From: **Feasibility Study of a Systematic Approach for Discontinuation of Multiple Medications in Older Adults: Addressing Polypharmacy**

Figure Legend:

Improving drug therapy in elderly patients—the Good Palliative–Geriatric Practice algorithm. Revised from Garfinkel et al with permission from the Israel Medical Association Journal.



Arch Intern Med. 2010;170(18):1648-1654. doi:10.1001/archinternmed.2010.355

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Date of download: 9/7/2024

Conversation starters

- Direct deprescribing method
  - "I see you are taking a lot of pills, I want to discuss getting you off some of them"
- Indirect method:
  - "How's your sleep?...There is some new research about sleeping pills that I want to discuss with you"
- Emotional, assertive method
  - "About your memory problems, falls, etc….I'm worried that …."
- Use the EMPOWER brochure
  - "Read this for next time"

Motivational Interviewing

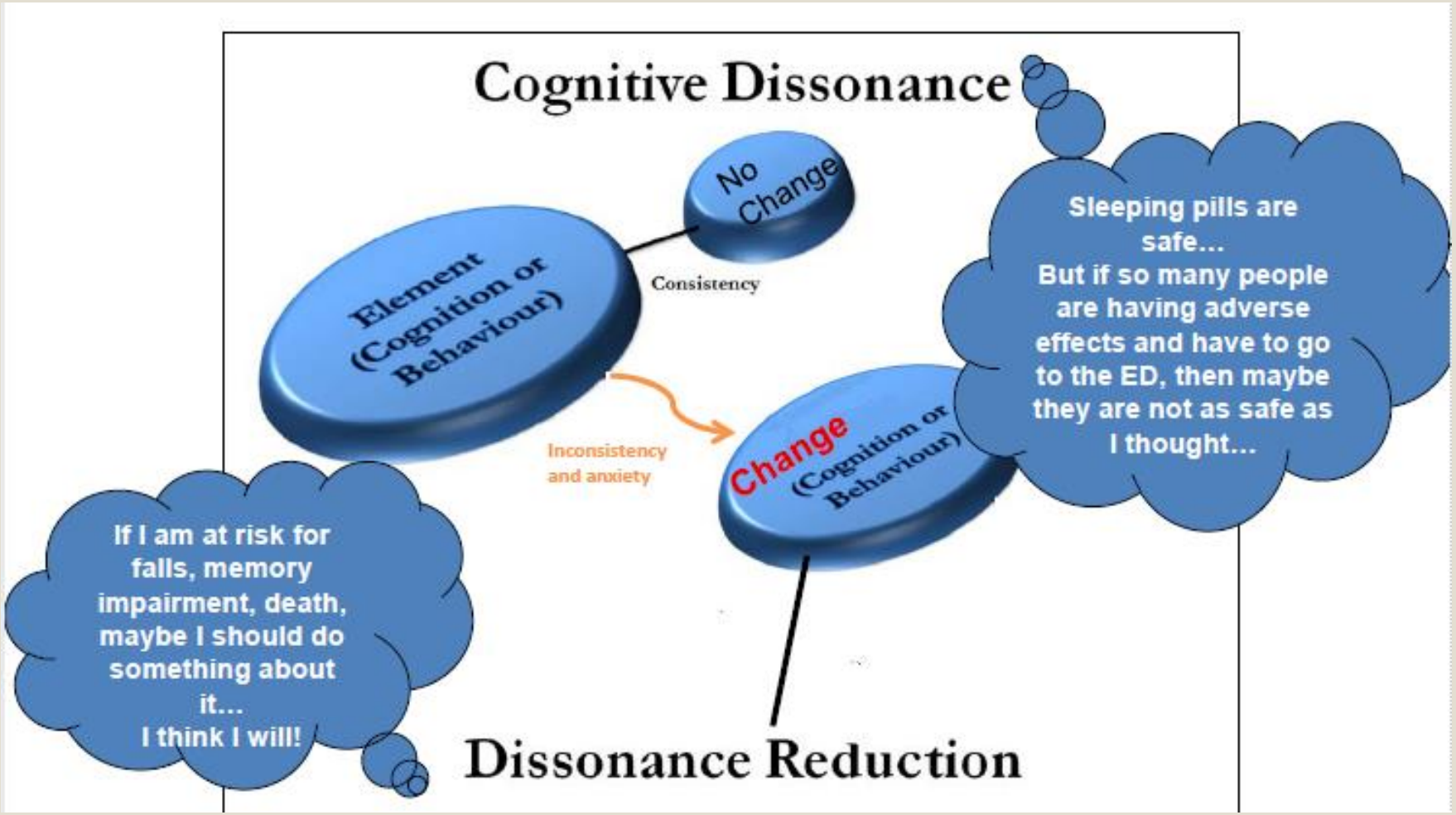
- Strengthen motivation & commitment to behavior change
- Improves partnership between provider & patient
- Provider to demonstrate empathy
- Develop rapport with patient
- Learning about patient's world can improve successful change
- Not a 1 time process
- Address at stages of time during different visits
- New patient will need frequent visits to establish rapport
- Partnering requires open discussion about risks, benefits and other options

Motivational Interviewing

- MI- PACE
  - Partnership
    - Provider = patient
    - Avoid just giving advice
    - Treat patient as expert in their behavior
  - Acceptance
    - Nonjudgmental
    - Avoid confrontation
  - Compassion
    - Be empathetic
    - Advocate for patient
  - Evocation
    - Evoke talk of change
    - Elicit patient reasons for change
    - Express genuine curiosity

Cognitive dissonance=Buy In

- Psychological stress experienced when simultaneously hold 2 or more contradictions
  - Beliefs
  - Ideas
  - Values
- Providers create by confronting patients with new information contradicting patient's beliefs



Tannenbaum Cara, AGS 2017

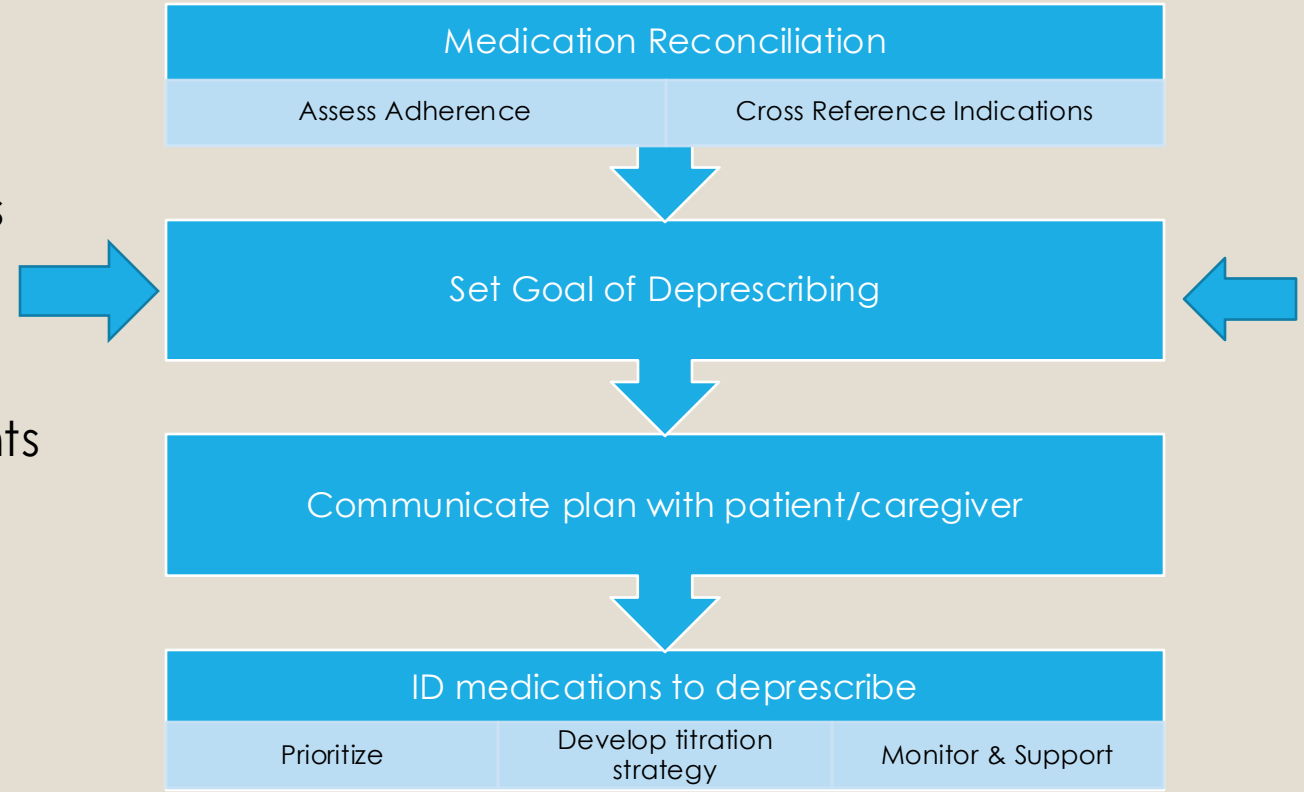
Eliciting Cognitive Dissonance

- Are you a poor sleeper? ……"Oh yes, just terrible! I need my pills"
- Really? How many times do you wake up each night? …… "At least 3-4 times.
- Oh my! I guess the pills really don't work then….."Well…"

- Patients can resist change by "relying" on medication and taken for "years"
  - "It's a tiny little pill!"
  - "I only take half!"
  - "I don't take it every night!"
  - "I would rather die a few years early, but sleep well through the night.."
  - "My previous doctor never said there was a problem with it"

Deprescribing Approach

Prepare Patient
-clarify expectations
-develop timeframe for review
-advise a change in health status warrants a review



Provider Preparation
-ID meds w/o indication
-ID patient/caregiver concerns
-ID adverse effects (falls)
-Assess better options in drug class

Frank C, Weir E Deprescribing for older patients. CMAJ, Dec 9 2014 186(18)

Reason to stop med	Examples	Comment
Noncompliance	Anti-HTN, Diabetic oral	ID in med rec, discuss attitude toward med
Taken incorrectly	Inhalers	Prescribe easier delivery system, aero chamber
Not indicated, relative contraindication	Statin for primary prev. Docusate CCB in heart failure	No evidence of benefit in older adults
No longer indicated	Bisphosphonate after 5 yr Clopidogrel for ACS Benzo, NSAID, PPI Cholinesterase inhibitor	Treatment often extends beyond guideline rec. Intended for short term use=prescribing inertia Terminal phase of illness
Inappropriate choice for geriatrics	Digoxin >125mcg/d Amitriptyline Cyclobenzaprine	Risk of adverse effects, toxicity, falls, fracture
No longer aligns with goals of care or life expectancy	Statin <5yr LE Bisphosphonate <2 yr LE Warfarin risk/benefit balance	Age is not a criteria look at function, frailty and life expectancy

Frank C, Weir E Deprescribing for older patients. CMAJ, Dec 9 2014 186(18)

Deprescribing Examples

Tools for deprescribing

Tool	Description	Level Evidence	Comments
Beers criteria	List of drugs of concern with quality of evidence and strength of recommendation	Consensus of expert panel using Delphi technique; strong link b/t medications on the list and poor patient outcomes	Many drugs are older and out of use; excludes drugs of concern with insufficiency evidence
STOPP	Screening tool with 65 indicators; focuses on drug-drug, drug-food interactions		Items grouped by physiologic systems and by drug class, short time to complete
START	Screening tool to ID possible prescribing omissions		Similar to STOPP in structure, may optimize medications
Anticholinergic risk scale	Ranked categorical list of medications with anticholinergic potential	SS correlation b/t higher ARS scores and increased risk of adv effects	May ID meds contributing to confusion, urinary retention and adv effects
ARMOR	Algorithm that prompts review of drug classes, interactions, functional status, systems review and reassess status	Tested in only 1 nursing facility	Can be used to assess meds, initial assessment, falls or behavioral disturbance, and rehab potential
Geriatric-Palliative method	Consensus-based flowchart to reduce polypharmacy	Applied in 6 geriatric nursing departments; SS reduction mortality, hospital admission, cost	
Choosing Wisely	Management recommendations from American Geriatrics Society	Expert opinion based on variety of evidence levels	Recommendations may advise against using specific meds, treatment targets that would facilitate deprescribing

Frank C, Weir E Deprescribing for older patients. CMAJ, Dec 9 2014 186(18)

Deprescribing Risks

Increased risk of discontinuation syndrome

- Antiangional agent- recurrence angina
- Anticonvulsant- withdrawal, recurrence
  - Anxiety, depression, seizure
- Benzodiazepine
- Beta-blocker- rebound recurrence
  - Angina, htn, ACS, tachycardia
- Corticosteroid- withdrawal, rebound, recurrence
  - Anorexia, hypotension, nausea, adrenal crisis

Decreased risk of discontinuation syndrome

- Ace Inhibitor-recurrence
  - Heart failure, htn
- Antipsychotic- withdrawal, recurrence
  - Taper dose 25% every 1-2 wk
  - Dyskinesias, insomnia, nausea, restlessness
- Anticholinergic- withdrawal
  - anxiety, n/v, HA, dizziness
- Digoxin- recurrence
  - heart failure, tachycardia
- Diuretic- recurrence
  - Heart failure, HTN, edema
- Narcotic analgesia- withdrawal, tapering preferred
  - Abd cramping, anxiety, chills, diaphoresis, diarrhea, insomnia

Frank C, Weir E Deprescribing for older patients. CMAJ, Dec 9 2014 186(18)

MEDICATIONS & EOL

European Journal of Clinical Pharmacology (2018) 74:1333–1342
https://doi.org/10.1007/s00228-018-2507-4

PHARMACOEPIDEMIOLOGY AND PRESCRIPTION

Adequate, questionable, and inadequate drug prescribing for older adults at the end of life: a European expert consensus

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European Expert Consensus 2018 Medications last 3 months of life

- Often Adequate
  - Scopolamine
  - Anti-emetics
  - Laxatives
  - Glucocorticoids
  - Thyroid hormone
  - Opioid analgesics
  - Non-opioid analgesics
  - Antiepileptics
  - Anxiolytics
  - Levodopa
  - Inhaled medications for obstructive lung disease
- Often Inadequate
  - Vit D
  - Calcium
  - Cardiac stimulants
  - Anti-hypertensives
  - Peripheral vasodilators
  - Lipid-modifying agents
  - Immunostimulants
  - Bisphosphonates
  - Osteoporosis drugs
  - Anti-dementia drugs
- Questionable
  - Acid related drugs (excluding PPI)
  - Sulfonylureas, oral anti-diabetic
  - Vitamin K antagonists
  - Unfractionated heparin
  - Aspirin, low dose
  - Other platelet aggregation inhibitors
  - Novel oral anticoagulants/other anticoagulants
  - Anti-anemic preparations
  - Digoxin
  - ACE/ARB
  - Finasteride
  - Anti-neoplastic drugs
  - Endocrine therapies
  - Systemic drugs for obstructive lung disease

Original Article

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SAGE

How many older adults receive drugs of questionable clinical benefit near the end of life? A cohort study

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Older adults receiving drugs questionable benefit EOL

- Swedish study 58,415 older adults final 3 months of life
  - Majority female 55.9%
  - Age 87 on average
  - Cause of death
    - 40% organ failure
    - 28% cancer
  - 60% diagnosed with >6 chronic conditions
  - 14% high hospital frailty risk score
  - 42% living in nursing homes

- Received 8.9 different drugs (avg)
- 32% >1 prescription of **questionable** clinical benefit continued
- 14% had initiation of drugs of **questionable** clinical benefit
- 4.5% both continued and initiated drugs of **questionable** benefit
- 58% had neither continued or initiation
- chronic multi-morbidity associated increase in the probability of both continuing and initiating questionably beneficial drugs

Older Medicare Beneficiaries Frequently Continue Medications with Limited Benefit Following Hospice Admission

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Medications continued on Hospice

- 70,035 patient cohort
- traditional Medicare patient
- age over 66
- limited benefit medications
  - anti hyperlipidemic
  - antihypertensives
  - oral anti diabetics
  - antiplatelets
  - anti dementia
  - anti osteoporotic
  - proton pump inhibitor
  - over-the-counter medications

- 29.8% admitted for cancer diagnosis
- 30.5% admitted for non cancer related cause

- anti dementia medications were continued most frequently 29.3%
- osteoporotic medications less likely to be continued 14.1%
- limited benefit medications were most likely to be continued and patient is living in facilities
- more often limited benefit medications were continued and patients with the hospice stay over 180 days compared to 1 week or less

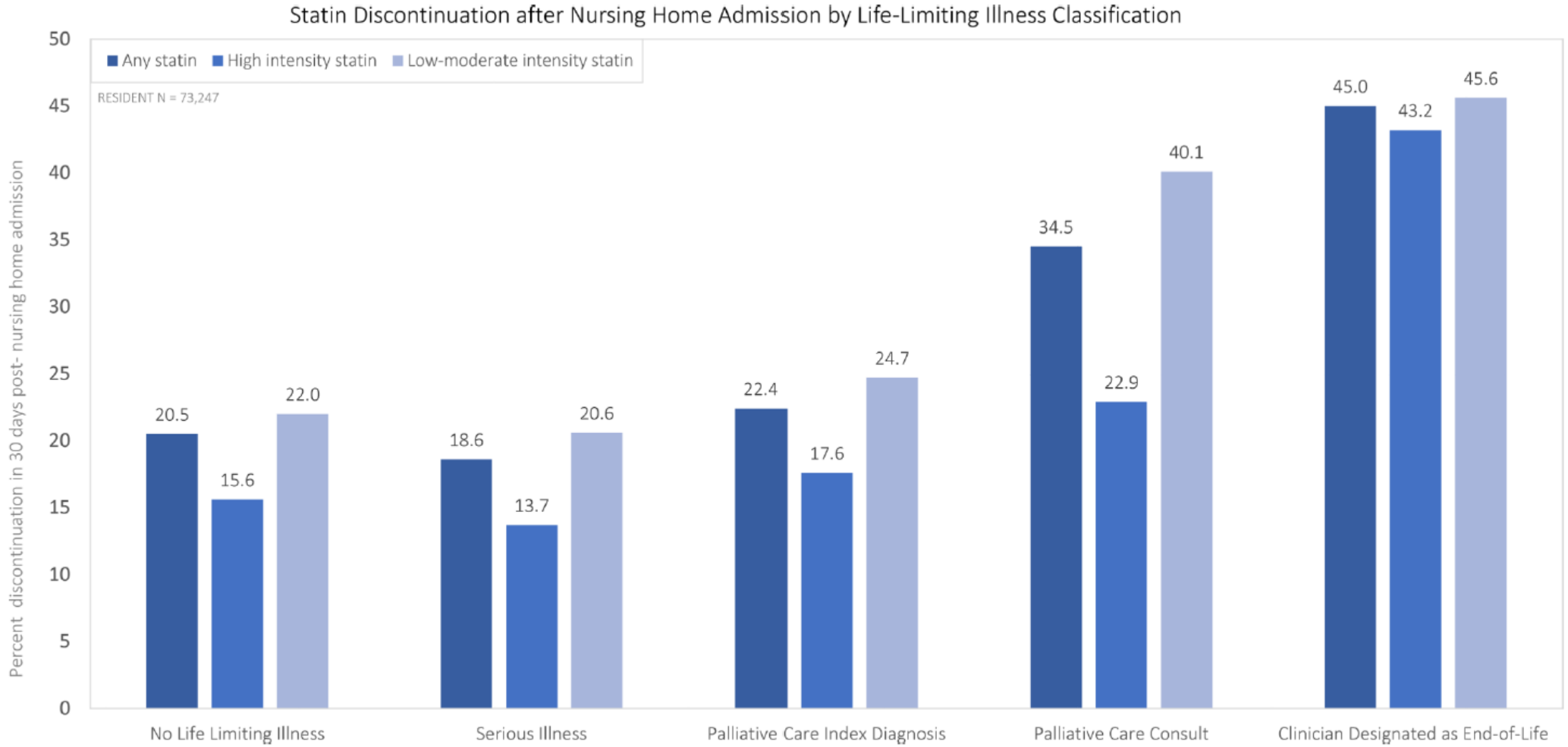

Figure 3.
Percent statin discontinuation within 30 days of nursing home admission by life-limiting illness classification (statin intensity designation based on 2013 ACC/AHA guidelines

CLINICAL IMPACT

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REVIEW ARTICLE

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Clinical impact of medication review and deprescribing in older inpatients: A systematic review and meta-analysis

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Medication review Deprescribing

- interventions for reducing PIMs are feasible and safe
- Significant reduction in readmissions by
  - 8% in older hospitalized patients
- Although high risk for bias no change in mortality

Table 2. Most Commonly Prescribed Potentially Inappropriate Medications (PIMs) as per STOPP Criteria[a]

STOPP Criteria PIMs	No.[b]
Proton pump inhibitors for uncomplicated peptic ulcer disease at full therapeutic dosage for >8 wk	128
Aspirin with no history of coronary, cerebral, or peripheral vascular symptoms or occlusive arterial events	66
Benzodiazepines in patients who have had ≥1 fall in the past 3 mo	56
Duplicate drug class prescriptions	56
Long-term (>1 mo), long-acting benzodiazepines or benzodiazepines with long-acting metabolites	48
Loop diuretic as first-line monotherapy for hypertension	24
Long-term use of nonsteroidal anti-inflammatory drugs (>3 mo) for relief of mild joint pain in osteoarthritis	19
Long-term opiates in those with recurrent falls (≥1 fall in past 3 mo)	18
Neuroleptic drugs in those with recurrent falls (≥1 fall in past 3 mo)	16
Long-term opiates in those with recurrent falls (≥1 fall in past 3 mo)	14

Abbreviation: STOPP, Screening Tool of Older Persons' potentially inappropriate Prescriptions.

[a] A total of 610 STOPP criteria PIMs were prescribed to the 600 patients studied.

[b] The number of PIM instances.

Evidence for Quality Deprescribing

Randomized Controlled Studies Designed to Improve Medication Quality in Older Adults using Multiple Medications

Study	Setting	Patients/Inclusion Criteria	Intervention (Duration)	Process Measures (I vs. C)	Clinical Outcome Measures (I vs. C)
Pharmacist	*Interventions*				
Hanlon, 1996	1 VA general medicine clinic, USA	208 age ≥65 taking ≥5 medications	Pharmacist review, written drug recommendations to PCP and patient counseling at each clinic visit; (12 months)	↓ MAI score (12.8 vs. 16.7, P<.001) (Lower is better)	NS differences in HRQOL or ADEs (30% vs. 40%) or; health care costs ($7873 vs. $5926)
Krska, 2001	6 general practices, Scotland	332 age ≥65 with ≥4 medications and ≥2 chronic disease states	Pharmacist review of medication related issues; pharmacist implemented recommendations agreed to by patient's GP; 3mos	↑ resolution of monitoring issues, ineffective therapy (83% vs. 41%, P<.001)	NS differences in medication costs, HRQOL, clinic visits, hospitalizations
Crotty, 2004	85 LTCFs, Australia	110 hospitalized patients age ≥65 transferred to a LTCF; Average # of medications 8.7	Pharmacist summary of medications at hospital d/c given to community pharmacist, MD and nurse; Pharmacist conducted drug review discussed at case conference	Better MAI score (2.5 vs 6.5, p<<0.001)	↓ pain, NS differences in ADEs, falls, mobility, behavior, confusion, ER/ hospitalizations
Multidisciplinary	*Team*	*Intervention*			
Schmader, 2004	Clinics at 11 VA medical centers, USA	834 frail persons age ≥65 after hospital discharge (mean ≥10 medications)	Multidisciplinary, protocol-driven GEM clinic; (12 months)	NS difference in # of unnecessary drugs, # of inappropriate drugs, or MAI score (P>.25 for each), ↓ number of conditions with omitted drugs (↓ 0.2 vs. ↑0.1, P<.001)	NS difference in all ADEs (RR 1.03; P=.75);↓ risk of serious ADEs (RR 0.65; P=. 02)
Crotty, 2004	10 LTCFs, Australia	154 patients age ≥65 with mean ≥5.9 medications	Case conference with MDs, pharmacist, care worker, dementia expert	↑ change in MAI score (4.1 vs 0.4, P<.001)	NS differences in behavior

Abbreviations: ADE(Adverse Drug Event), C (Control Group), D/C(Discontinue), GEM (Geriatric Evaluation Management), GP (General Practitioner), HRQOL(Health Related Quality of Life), I (Interventio), LTCF (Long Term Care Facility), MAI (Medication Appropriateness Index), MD (Doctor of Medicine), NS (Non-significant), PCP(Primary Care Physician), RR(Relative Risk), VA (Veteran's Administration), MOS (months)

Expert Opin Drug Saf. 2014 January ; 13(1): . doi:10.1517/14740338.2013.827660

Table 4. Deprescribing Rates of Commonly Alerted Potentially Inappropriate Medications

		Control (n = 2667)			Intervention (n = 2256)			% Difference (95% CI)	
Specific PIMs	Possible problem	Users (%)	PIM (%)	PIM deprescribed (%)	Users (%)	PIM (%)	PIM deprescribed (%)	Unadjusted	Adjusted
Benzodiazepines and sedative hypnotics[a]	Increased risk of delirium, falls, death	665 (24.9)	553 (83.2)	113 (20.4)	538 (23.8)	524 (97.4)	210 (40.1)	19.6 (14.3 to 25.0)	22.7 (12.0 to 33.5)
Codeine and tramadol[b]	Unpredictably metabolized. If opioids are needed, a safer choice should be made	272 (10.2)	216 (79.4)	74 (34.3)	182 (8.1)	179 (98.4)	98 (54.7)	20.5 (10.8 to 30.1)	43.0 (30.5 to 55.5)
Combination antiplatelet and anticoagulants	Increased risk of bleeding; may be inappropriate	269 (10.1)	215 (79.9)	75 (34.9)	173 (7.7)	146 (84.4)	65 (44.5)	9.6 (−0.6 to 19.9)	24.8 (8.0 to 41.7)
Opioids (excluding codeine and tramadol) [b]	Opioid use outside of cancer pain is associated with risk of death	430 (16.1)	201 (46.7)	57 (28.4)	374 (16.6)	210 (56.1)	83 (39.5)	11.2 (2.1 to 20.3)	17.8 (−2.4 to 37.9)
Trazodone[a]	Off-label use for sleep is not indicated	231 (8.7)	156 (67.5)	23 (14.7)	132 (5.9)	92 (69.7)	30 (32.6)	17.9 (6.8 to 28.9)	24.3 (2.2 to 46.5)
Nonsteroidal anti-inflammatories	Can exacerbate congestive heart failure or hypertension	230 (8.6)	155 (67.4)	36 (23.2)	145 (6.4)	120 (82.8)	42 (35.0)	11.8 (1.0 to 22.6)	12.7 (−3.2 to 28.7)
Antipsychotics[a]	Not recommended as first line treatment for sleep or agitation in dementia	239 (9.0)	144 (60.3)	33 (22.9)	238 (10.5)	206 (86.6)	70 (34.0)	11.1 (1.6 to 20.5)	12.9 (−6.2 to 32.1)
Mirtazapine[a]	Off-label use for sleep is not indicated	136 (5.1)	54 (39.7)	5 (9.3)	122 (5.4)	62 (50.8)	12 (19.4)	10.1 (−2.4 to 22.6)	4.4 (−11.2 to 20.0)
Proton-pump inhibitors	Frequently used without indication	1442 (54.1)	1227 (85.1)	127 (10.4)	1149 (50.9)	1056 (91.9)	222 (21.0)	10.7 (7.7 to 13.7)	9.4 (2.5 to 16.4)
Diabetes therapies[c]	Demonstrated hypoglycemia; contraindicated agents in kidney failure	948 (35.5)	436 (46.0)	159 (36.5)	756 (33.5)	381 (50.4)	192 (50.4)	13.9 (7.2 to 20.7)	11.3 (−2.3 to 25.0)
Gabapentinoids	Frequently used off label and have many adverse effects (fluid retention, worsening cognition, and death)	558 (20.9)	406 (72.8)	86 (21.2)	367 (16.3)	323 (88.0)	114 (35.3)	14.1 (7.6 to 20.7)	0.6 (−11.6 to 12.9)
Thiazides	High risk of hyponatremia if prior hyponatremic event	467 (17.5)	152 (32.5)	78 (51.3)	356 (15.8)	129 (36.2)	101 (78.3)	27.0 (16.3 to 37.6)	32.8 (17.4 to 48.2)
SSRIs	Can contribute to recurrent falls in older adults	407 (15.3)	91 (22.4)	16 (17.6)	351 (15.6)	88 (25.1)	19 (21.6)	4.0 (−7.6 to 15.6)	14.8 (−4.6 to 34.1)
High-dose iron salts[d]	Less tolerated and no more effective than standard dosage	535 (20.1)	129 (24.1)	21 (16.3)	398 (17.6)	109 (27.4)	54 (49.5)	33.3 (21.9 to 44.6)	26.5 (1.2 to 51.7)
Docusate	Ineffective for treatment or prevention of constipation	248 (9.3)	248 (100.0)	99 (39.9)	208 (9.2)	208 (100.0)	133 (63.9)	24.0 (15.1 to 33.0)	23.4 (5.6 to 41.2)
Nonstatin cholesterol medications[c]	Limited evidence of efficacy	145 (5.4)	137 (94.5)	12 (8.8)	120 (5.3)	120 (100.0)	35 (29.2)	20.4 (11.0 to 29.8)	12.7 (−8.3 to 33.8)

Abbreviations: PIM, potentially inappropriate medication; SSRI, selective serotonin reuptake inhibitors.

[a] Excludes patients with psychiatric indication (or seizure for benzodiazepines).

[b] Excludes patients in palliative care or with cancer as possible indication.

[c] Users may have been taking >1 medication, and user numbers represent ≥1.

[d] Excludes those already taking low-dose iron salts.

HOSPICE RELATEDNESS

Hospice Relatedness: Terminology

- Terminal prognosis
  - Life expectancy <6 months
- Principal diagnosis
  - Diagnosis most contributory to terminal prognosis
- Terminal illness
  - Combination of diagnoses that contribute to terminal prognosis

Related vs Medical Necessity

	Reasonable Medical Necessity	**Not Reasonable Medical Necessity**
Related to Terminal Prognosis	Hospice pay	Deprescribing conversation
Not Related to Terminal Prognosis	Prior payor	Deprescribing conversation

Determining Relatedness

- Questions to ask
  - Is it for symptom management? Pain, nausea, constipation, anxiety
  - Is it related to hospice diagnosis or 6 month prognosis?
  - Do we agree?
    - Is it helpful? Not symptom management but related to hospice diagnosis and deemed beneficial in a hospice plan of care
    - Can we offer a formulary alternative? Less expensive

- Examples:
  - Levothyroxinc and glaucoma meds are not hospice related
  - Chemotherapy and donepezil are related to hospice diagnosis but not covered because not helpful

Relatedness: Do we agree?

Original Investigation

March 23, 2015

Safety and Benefit of Discontinuing Statin Therapy in the Setting of Advanced, Life-Limiting Illness

A Randomized Clinical Trial

Jean S. Kutner, MD, MSPH[1]; Patrick J. Blatchford, PhD[2]; Donald H. Taylor Jr, PhD[3]; et al

» Author Affiliations | Article Information

JAMA Intern Med. 2015;175(5):691-700. doi:10.1001/jamainternmed.2015.0289

- No change in survival
- Improved quality of life when stopped

Hospice Relatedness Tips

- In your Certification of Terminal Illness statements (CTIs) do not list unrelated diagnoses
  - Previous practice list multi-morbid illnesses
  - Now I don't add hypertension if cancer diagnosis etc
- For any condition you claim in the CTI is related to their 6-month prognosis, hospice will be responsible for covering medications and services related to that diagnosis

- OTC Medications are likely related, inexpensive and usually for symptoms

Conclusions

- Polypharmacy is common and important to recognize as a diagnosis
- Deprescribing has evidence for benefits in elders
- Motivational interviewing can establish cognitive dissonance
- Use a deprescribing tool to help identify medications that are potentially harmful or unnecessary
- Taper benzodiazepine and sedative hypnotics slowly
- Monitor for recurrence of disease, symptoms or withdrawal

References

- *Expert Opin Drug Saf*. 2014 January ; 13(1): . doi:10.1517/14740338.2013.827660
- Hajjar E, Hanlon JT, Sloane RJ, et al. Unnecessary drug use in frail older people at hospital discharge. J Am Geriatr Soc. 2005; 53:1518–1523. [PubMed: 16137281]
- Maclagan et al. Frailty and Potentially Inappropriate Medication Use at Nursing Home Transition J Am Geriatr Soc 65:2205–2212, 2017.
- George MD, Claudene, Verghese, Joe MBBS Polypharmacy and GAit Performance in Community -dwelling Older Adults. J Am Geriatr Soc 65:2082–2087, 2017.
- Deprescribing.org
- Morin & Benca. Chronic Insomnia. Lancet 2012;379:1129-41
- Frank C, Weir E Deprescribing for older patients. CMAJ, Dec 9 2014 186(18)
- By the 2023 American Geriatrics Society Beers Criteria® Update Expert Panel. American Geriatrics Society 2023 updated AGS Beers Criteria® for potentially inappropriate medication use in older adults. J Am Geriatr Soc. 2023;71(7):2052-2081. doi:10.1111/jgs.18372
- Carollo M, Crisafulli S, Vitturi G, et al. Clinical impact of medication review and deprescribing in older inpatients: A systematic review and meta-analysis. J Am GeriatrSoc. 2024;1-20. doi:10.1111/jgs.19035
- Borrelli EP. Assessing the prevalence of Beers medication utilization in the Medicare Part D population in 2020. J AmGeriatr Soc. 2024;1-7. doi:10.1111/jgs.18943
- Lunghi, C., Domenicali, M., Vertullo, S. *et al*. Adopting STOPP/START Criteria Version 3 in Clinical Practice: A Q&A Guide for Healthcare Professionals. *Drug Saf* (2024). https://doi.org/10.1007/s40264-024-01453-1
- Nicieza-García ML, Salgueiro-Vázquez ME, Jimeno-Demuth FJ, Manso G.Beers versus STOPP criteria in polyharmacy community-dwelling older patients.Farm Hosp. 2016;40(3):150-164.
- Gray SL, Brandt N, Schmader KE, Hanlon JT. Medication use quality and safety in older adults: 2022 update. J Am GeriatrSoc. 2024;72(5):1329-1337. doi:10.1111/jgs.18684
- Borrelli EP. Assessing the prevalence of Beers medication utilization in the Medicare Part D population in 2020. J Am Geriatr Soc. 2024;1-7. doi:10.1111/jgs.18943
- Morin, L et al How many older adults receive drugs of questionable clinical benefit near the end of life? A cohort study *Palliative Medicine* 2019, Vol. 33(8) 1080– 1090

References

- Goyal MD, et al. Physician Perspectives on Deprescribing Cardiovascular Medications for Older Adults. J Am Geriatr Soc 68:78–86, 2019
- Kristen Anderson et al. BMJ Open 2014;4:e006544
- Robinson, M., Mokrzecki, S. & Mallett, A.J. Attitudes and barriers towards deprescribing in older patients experiencing polypharmacy: a narrative review. *npj Aging* **10**, 6 (2024). https://doi.org/10.1038/s41514-023-00132-2
- Scott et al. Reducing Inappropriate Polypharmacy The Process of Deprescribing JAMA Intern Med. 2015;175(5):827-834. doi:10.1001/jamainternmed.2015.0324
- *Garfinkel et al. Feasibility Study of a Systematic Approach for Discontinuation of Multiple Medications in Older Adults. Arch Intern Med.* 2010;170(18):1648-1654. doi:10.1001/archinternmed.2010.355
- Turk et al. Optimising a person-centred approach to stopping medicines in older people with multimorbidity and polypharmacy using the DExTruS framework: a realist review BMC Medicine (2022) 20:297
- Reeve et al. Assessment of Attitudes Toward Deprescribing in Older Medicare Beneficiaries in the United States. *JAMA Intern Med*. 2018;178(12):1673-1680
- Clark CM, Guan J, Patel AR, et al. Association between potentially inappropriate medications prescription and healthrelated quality of life among US older adults. J Am Geriatr Soc. 2024;1-9.
- Lavan, AH et al. STOPPFrail (Screening Tool of Older Persons Prescriptions in Frail adults with limited life expectancy): consensus validation Age and Ageing 2017; 46: 600–607doi: 10.1093/ageing/afx005

References

- Zueger PM et al. Older Medicare Beneficiaries Frequently Continue Medications with limited Benefit Following Hospice Admission. J Gen Intern Med 34(10):2029–37
- Mack DS et al. Statin Discontinuation and Life-Limiting Illness in Non-Skilled Stay Nursing Homes at Admission J Am Geriatr Soc. 2020 December ; 68(12): 2787–2796
- McDonald EG et al. The MedSafer Study—Electronic Decision Support for Deprescribing in Hospitalized Older Adults A Cluster Randomized Clinical Trial. *JAMA Intern Med*. 2022;182(3):265-273.