Medication Deprescribing

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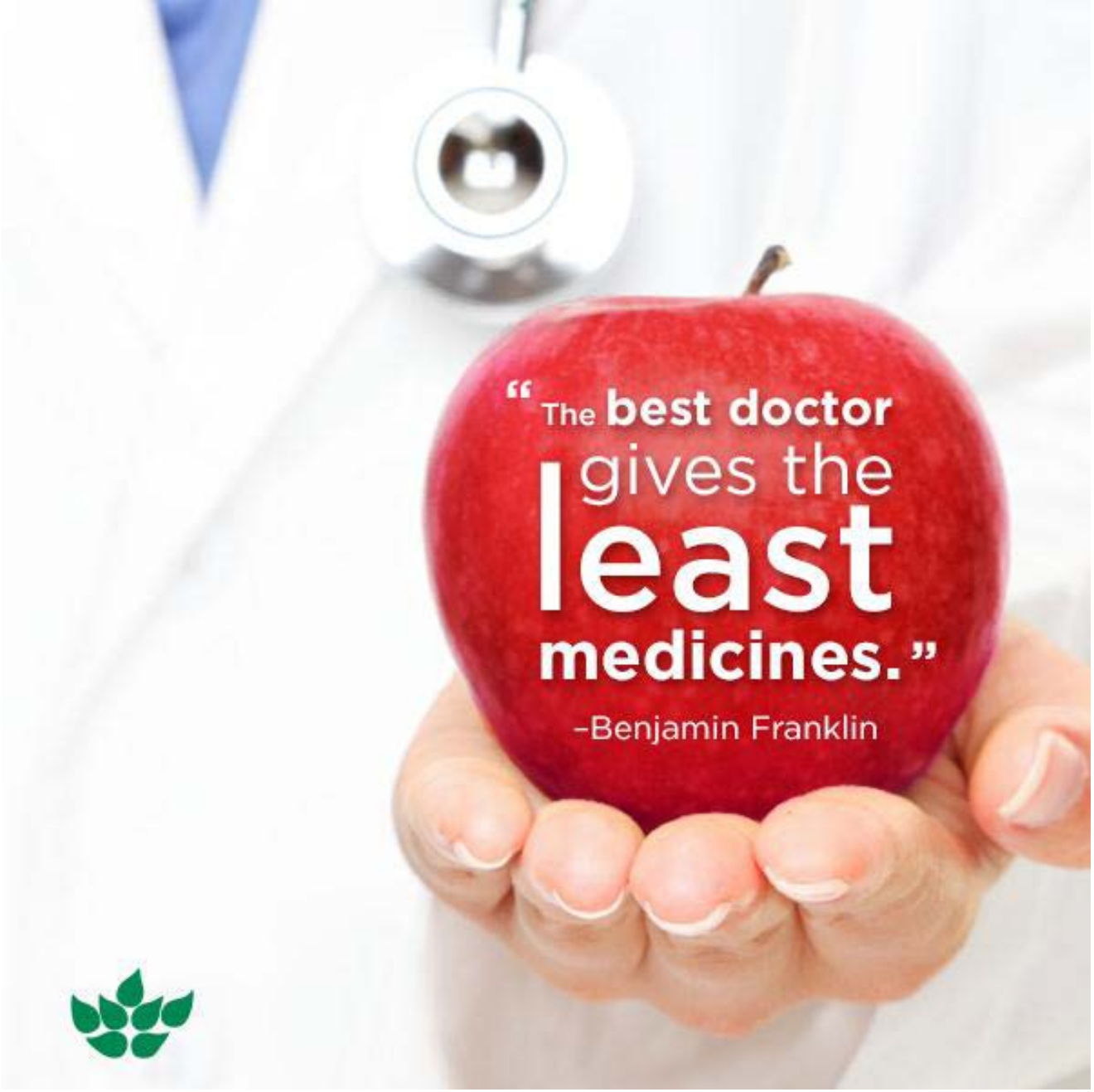
NPTC:

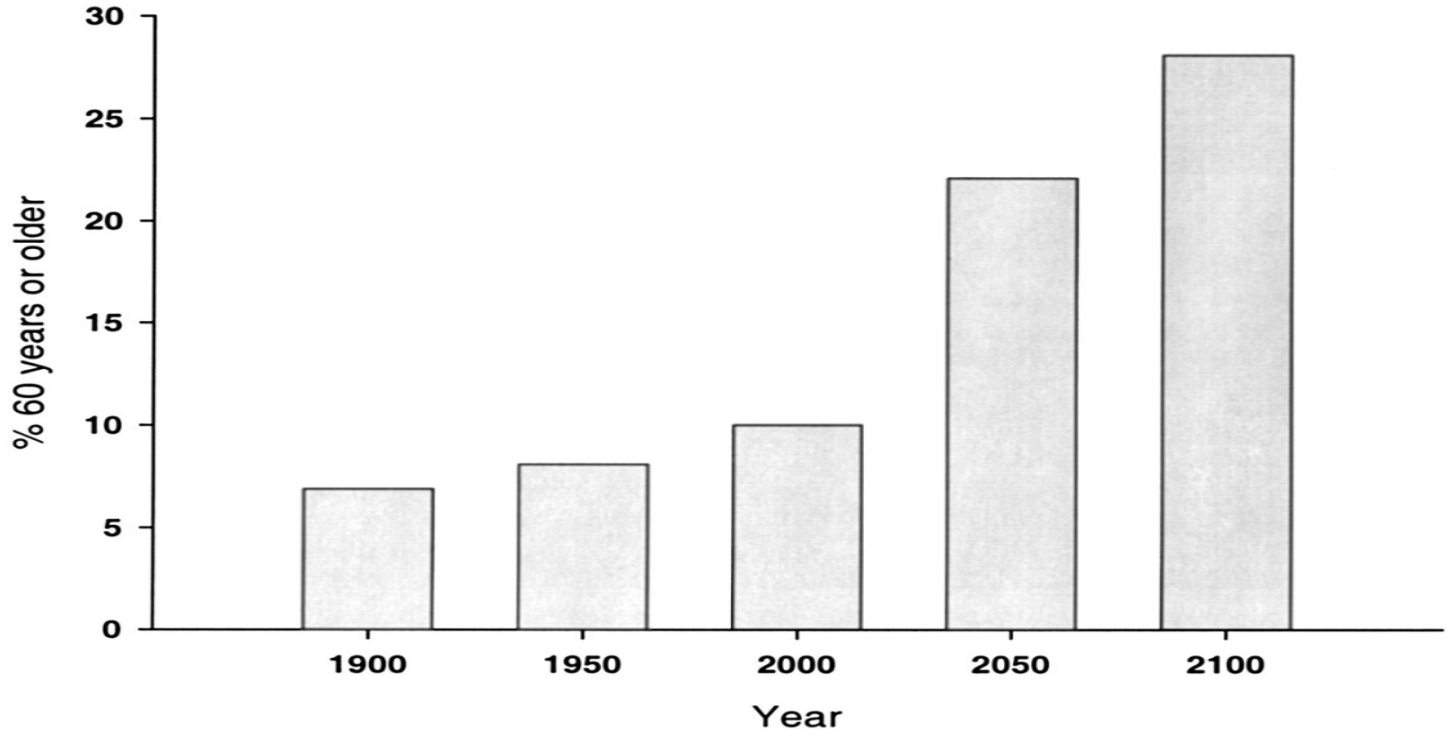
Raising the health of American Indians and Alaska Natives by increasing access to highly effective medications through robust formulary management and education of clinicians within the Indian Health Systems.


"The best doctor gives the least medicines."
–Benjamin Franklin

Objectives

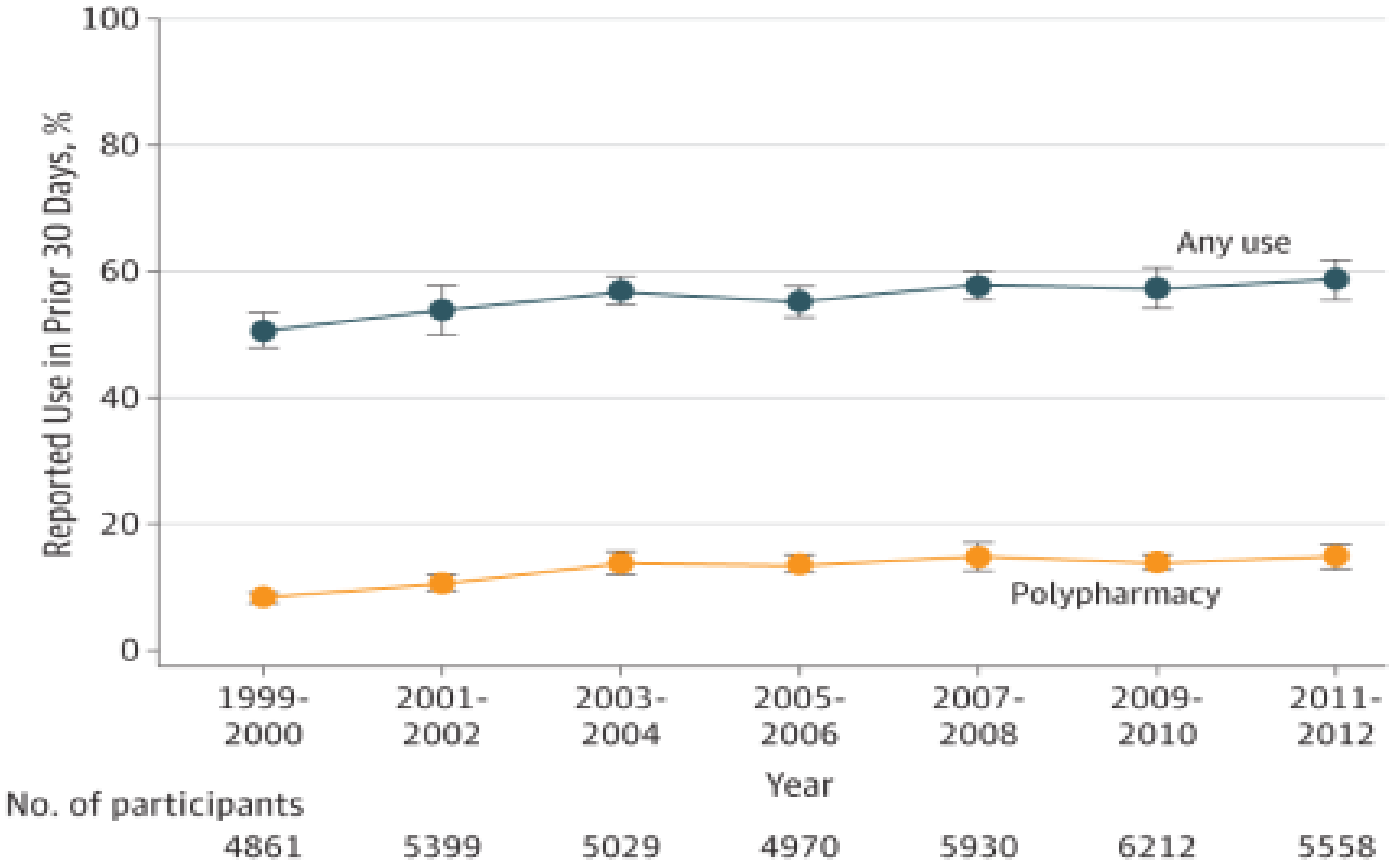
- Define polypharmacy and analyze associated risks, particularly among the elderly.
- Describe “prescribing cascades” and their role in polypharmacy.
- Associate polypharmacy and medication non-adherence.
- Examine tools to reduce polypharmacy.
- Evaluate potential effective strategies for medication de-prescribing.

Aging Population



McLean, A et al, Aging Biology and Geriatric Clinical Pharmacology, *Pharmacological Reviews June 2004 vol. 56 no. 2 163-184.*

Prescription Drug Use Trends



Kantor, E et al. Trends in Prescription Drug Use Among Adults in the United States From 1999-2012, *JAMA*. 2015;314(17):1818-1830.

Elderly Pharmacokinetics

- Absorption
  - Hypochlorhydria, delayed gastric emptying, decreased GI blood flow.
- Volume of distribution
  - Increased body fat, decreased lean muscle mass & body water
  - Decreased protein binding; Hypoalbuminemia
- Drug clearance
  - Hepatic metabolism: Altered/delayed
    - Reduced hepatic blood flow and mass.
  - Decline in glomerular filtration: Decreased elimination

McLean, A et al, Aging Biology and Geriatric Clinical Pharmacology, *Pharmacological Reviews June 2004 vol. 56 no. 2 163-184.*

Elderly Pharmacodynamics

- Thymic involution
- Altered skeletal matrix/trophism
- Altered vitamin D homeostasis
- Reduced activity/expression of drug receptors
- Lower threshold for sedation/cognitive effects

McLean, A et al, Aging Biology and Geriatric Clinical Pharmacology, *Pharmacological Reviews June 2004 vol. 56 no. 2 163-184*.

Epidemiology: ADEs

- CDC estimates ADEs cause over 177,000 ED visits in United States.
- 33% of visits due to one of the following:
  - Warfarin
  - Insulin
  - Digoxin

Budnitz DS et al. Medication use leading to emergency department visits for adverse drug events in older adults. Ann Intern Med 2007;147:755-65.

Inappropriate Prescribing

- Medication Without Clinical Indication
- Drug-Drug Interactions
- Dose-Related Adverse Drug Events
- Prescribing Cascades
- Inappropriate Monitoring
- Extended Therapy (Beyond Indication)
- **Polypharmacy**
- Failure to Prescribe Beneficial Therapy

Cartoon Image

Patient to Doctor

"Right now I take a blue pill, a purple pill, an orange pill, a white pill, and a yellow pill. I need you to prescribe a green pill to complete my collection."

Source: Bing Images, Accessed 7/11/16

Polypharmacy

- “Many Drugs”
- Range of definitions referring to the use of multiple medication regimens
- No standard definition is used consistently.
- The administration of more medicines than are clinically indicated.
- More common definition: “The concomitant ingestion of four or more medications.”
  - Inappropriate versus appropriate

1. Stewart RB et al. *Drug Intelligence and Clinical Pharmacy* 1990;24:321-3.
2. Montamat SC et al. *Clinics in Geriatric Medicine* 1992;8:143-58.
3. Patterson, SM et al. Interventions to improve the appropriate use of polypharmacy for older people (Review). Cochrane Database of Systematic Reviews 2014, Issue 10. Art. No.: CD008165.

Adverse Effects of Polypharmacy

- Functional decline
- Geriatric syndromes
  - Delirium
  - Orthostatic hypotension
  - Sleep disorders
  - Gait problems/Falls
- Reduced adherence to essential medications
- Hospital admissions
- Death
- Increased healthcare costs (inappropriate meds, ADEs)

Scott, I et al, First do no harm: a real need to deprescribe in older patients, MJA 201 (7) · 6 October 2014.

Polypharmacy and ADEs

- Risk of adverse drug event
  - Two concurrent medications:13%
  - Four concurrent medications: 38%
  - Seven or more concurrent meds: 82%

Goldberg, R., Mabee, J., Chan, L. and Wong, S. (1996) Drug–drug and drug–disease interactions in the ED: analysis of a high-risk population. *Am J Emerg Med* 14: 447-450.

- Cartoon Image
- Doctor to Patient
- "I'm going to prescribe something to reduce the amount of lint produced by your belly button."

Source: Bing Images, Accessed 7/11/16

Drivers of Polypharmacy

- Incentives to Overprescribe
  - Increasing Intensity of Medical Care
    - Disease Specific Clinical Guidelines
    - Quality Indicators
    - Performance Incentives
  - Focus on pharmacologic versus non-pharmacologic options.
  - Pharma: Direct-to-patient marketing
- Fragmented health care system
  - Multiple prescribers
- Prescribing Cascades

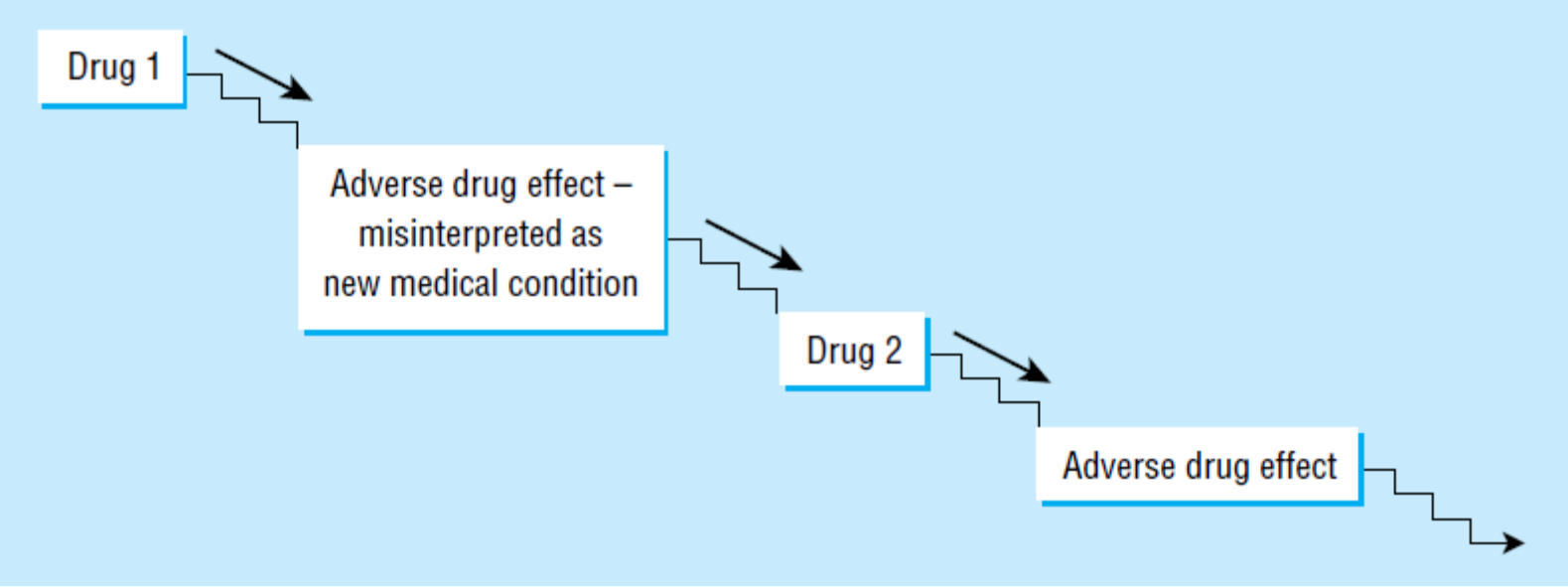
Scott, I et al, First do no harm: a real need to deprescribe in older patients, MJA 201 (7) · 6 October 2014.

Prescribing Cascade

- Sequence
  - Adverse drug reaction is misinterpreted as a new medical condition.
  - Another drug is then prescribed.
  - Patient is placed at risk of developing additional adverse effects.
- Requires vigilance
- Consideration of non-drug treatment.

Rochon, P et al. Optimising Drug Treatment for Elderly People, the Prescribing Cascade. BMJ Vol 315, 25 Oct 1997.

Prescribing Cascade



Rochon, P et al. Optimising Drug Treatment for Elderly People, the Prescribing Cascade. BMJ Vol 315, 25 Oct 1997.

Changing Guidelines

- ADA: Target A1c < 8.0
  - "History of severe hypoglycemia, limited life expectancy, advanced microvascular or macrovascular complications, extensive comorbid conditions, or long-standing diabetes in whom the general goal is difficult to attain."
- JNC-8: Target BP < 150/90
  - "In the general population aged ≥60 years, initiate pharmacologic treatment to lower blood pressure (BP) at systolic blood pressure (SBP) ≥150 mm Hg or diastolic blood pressure (DBP) ≥90 mm Hg and treat to a goal SBP <150 mm Hg and goal DBP <90 mm Hg. (Strong Recommendation – Grade A)."

1. Diabetes Care 2016 Jan; 39(Supplement 1): S39-S46.
2. James, P et al, 2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults: Report From the Panel Members Appointed to the Eighth Joint National Committee (JNC 8), *JAMA.* 2014;311(5):507-520.

Under-Prescribing

- Lack of drug treatment for a clinical condition for which drug therapy is indicated according to clinical practice guidelines.
- Treatment/Risk Paradox (Risk/Treatment Mismatch)
  - Polypharmacy leads to under-prescribing
  - Unwillingness of physicians to prescribe additional drugs for patients with polypharmacy (for reasons such as complexity of drug regimens, fear of ADEs and drug-drug interactions and poor adherence).

Patterson, SM et al, Interventions to improve the appropriate use of polypharmacy for older people (Review), Cochrane Database of Systematic Reviews 2014, Issue 10.

Tools to Reduce Polypharmacy

- Beers Criteria
- Screening Tool of Older Persons' Prescriptions (STOPP)
- Screening Tool to Alert doctors to Right Treatments (START)
- Medication Appropriateness Index (MAI)
- Improving Prescribing in the Elderly (IPET Canadian Tool)
- Fit for the Aged Criteria (FORTA)
- Assess, Review, Minimize, Optimize, Reassess (ARMOR)
- Good Palliative-Geriatric Practice Algorithm
- Patient Focused Drug Surveillance (Sweden)
- Geriatric Risk Assessment MedGuide
- Prescribing Optimization Method (POM)
- Anticholinergic Risk Scale (ARS)
- Drug Burden Index (DRI)
- Priscus List (Germany)

Gokula, M et al, Tools to Reduce Polypharmacy, Clin Geriatr Med 28 (2012) 323–341.

Beers Criteria: History

- Dr. Mark Beers (Geriatrician)
- JAMA 1988- Association between psychoactive drugs and confusion in elderly nursing home residents.
- Archives 1991- Consensus Panel, “Beers criteria” list.
- Potentially Inappropriate Medication use
- American Geriatric Society, Expert Panel, Evidence-Based reviews/updates
- Updates 1997, 2003, 2012, 2015

Source: ***www.nytimes.com****/2009/03/10/health/10****beers****.html*
(accessed 5/9/16)

Beers Categories

1. Medications potentially inappropriate for older people because;
   - Either pose high risks of adverse effects or;
   - Appear to have limited effectiveness in older patients, and;
   - There are alternatives to these medications.
2. Medications that are potentially inappropriate for older people who have certain diseases or disorders because;
   - These drugs may exacerbate the specified health problems.
3. Medications to be used with caution in older adults that;
   - May be associated with more risks than benefits in general,
   - May be the best choice for a particular individual if administered with caution.
   - Emphasizes that medications need to be tailored to the unique needs of each patient.

American Geriatrics Society 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. J Am Geriatr Soc 63:2227–2246, 2015.

New Beers Categories

4. Drug–Drug interactions (excluding anti-infectives) that are highly associated with harmful outcomes in older adults.
   - The list is selective, and not comprehensive.
   - Not intended to diminish the clinical importance of known drug–drug interactions not listed.
5. Drugs that should be avoided or for which the dose should be adjusted in individuals with a specific degree of kidney impairment to avoid harm.

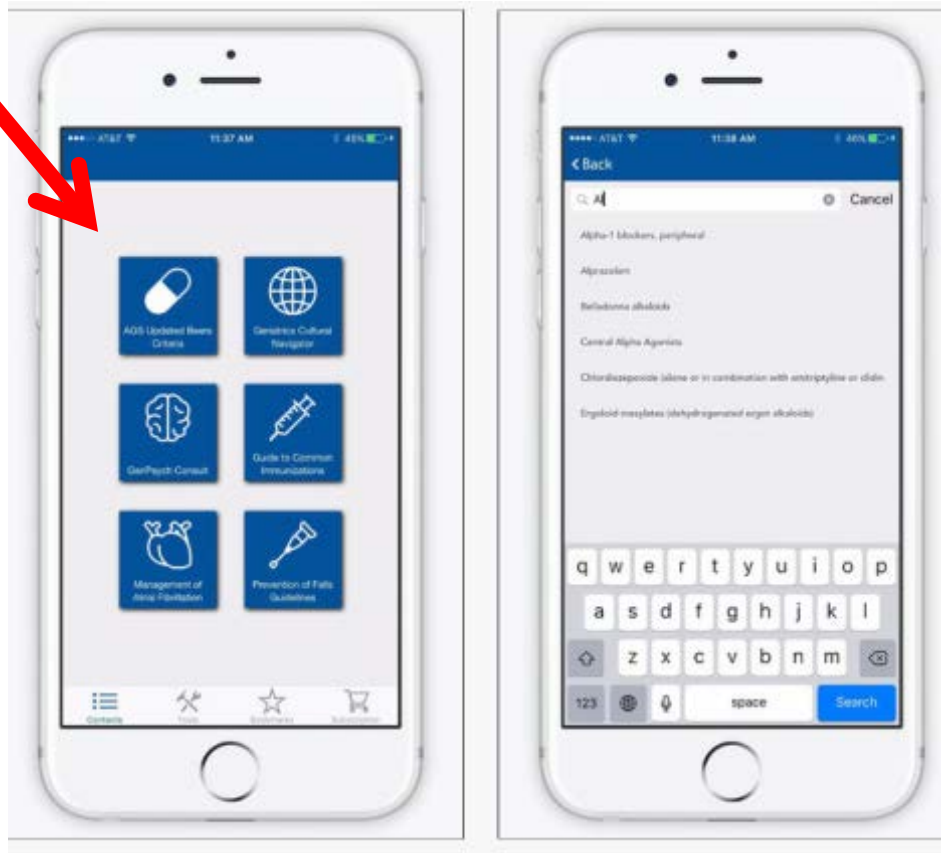
American Geriatrics Society 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. J Am Geriatr Soc 63:2227–2246, 2015.

2015 Beers Criteria

- Drug-List Tables- Based on Beers categories.
- Examples: Anti-cholinergics, anti-thrombotics, cardiovascular agents, anti-depressants, benzodiazepines.
- Drug-disease, drug-syndrome, drug-drug interactions
- For each drug/class;
  - Rationale, recommendation, quality of evidence, strength of recommendation

American Geriatrics Society 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. JAGS 63:2227–2246, 2015.

AGS iPhone App



AGS iGeriatrics

Source: https://itunes.apple.com/us/app/igeriatrics/id365560773?mt=8
Accessed 5.17.16

STOPP/START

- United Kingdom (DRAFT 2003, Validation 2006, Published 2008, Update 2014)
- Potential Errors of Prescribing (Commission and Omission)
- Screening Tool of Older Persons' Prescriptions (STOPP)
- Screening Tool to Alert doctors to Right Treatments (START)

O'Mahony, D et al, STOPP & START criteria: A new approach to detecting potentially inappropriate prescribing in old age. European Geriatric Medicine 1 (2010) 45–51.

STOPP/START Precepts

- Capture instances of inappropriate prescribing;
- Organized according to physiological systems;
- Special attention to drugs that adversely affect elderly patients at risk of falls;
- Special attention to opiate use in older people;
- Highlight duplicate drug class prescription;
- Address potentially serious errors of prescribing omission in older people;
- Criteria represent the consensus views of a panel of experts in prescribing in older people.

O'Mahony, D et al, STOPP & START criteria: A new approach to detecting potentially inappropriate prescribing in old age. European Geriatric Medicine 1 (2010) 45–51.

Medication Appropriateness Index

1. Is there an indication for the drug?
2. Is the medication effective for the condition?
3. Is the dosage correct?
4. Are the directions correct?
5. Are the directions practical?
6. Are there clinically significant drug-drug interactions?
7. Are there clinically significant drug-disease/condition interactions?
8. Is there unnecessary duplication with other drugs?
9. Is the duration of therapy acceptable?
10. Is this drug the least expensive alternative compared to others of equal utility?

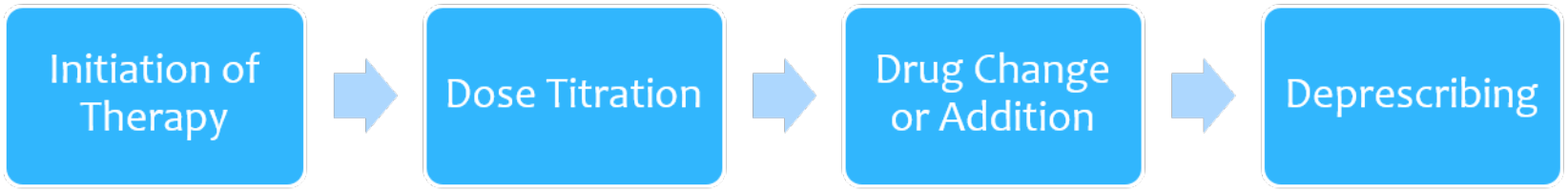
Hanlon JT, et al. A method for assessing drug therapy appropriateness. J Clin Epidemiol. 1992; 45:1045–51.
Hanlon, JT, et al. The Medication Appropriateness Index at 20: Where it Started, Where it has been and Where it May be Going, Drugs Aging. 2013 November ; 30(11).

Other Issues

- "Shift"
  - Medication Utility
  - Goals of Care
- End of Life Care
  - Disease progression
  - Life Expectancy
  - Time until benefit

Todd, A et al, Recommendations to support de-prescribing medications late in life. Int J Clin Pharm (2015) 37:678–681.

The Prescribing Continuum



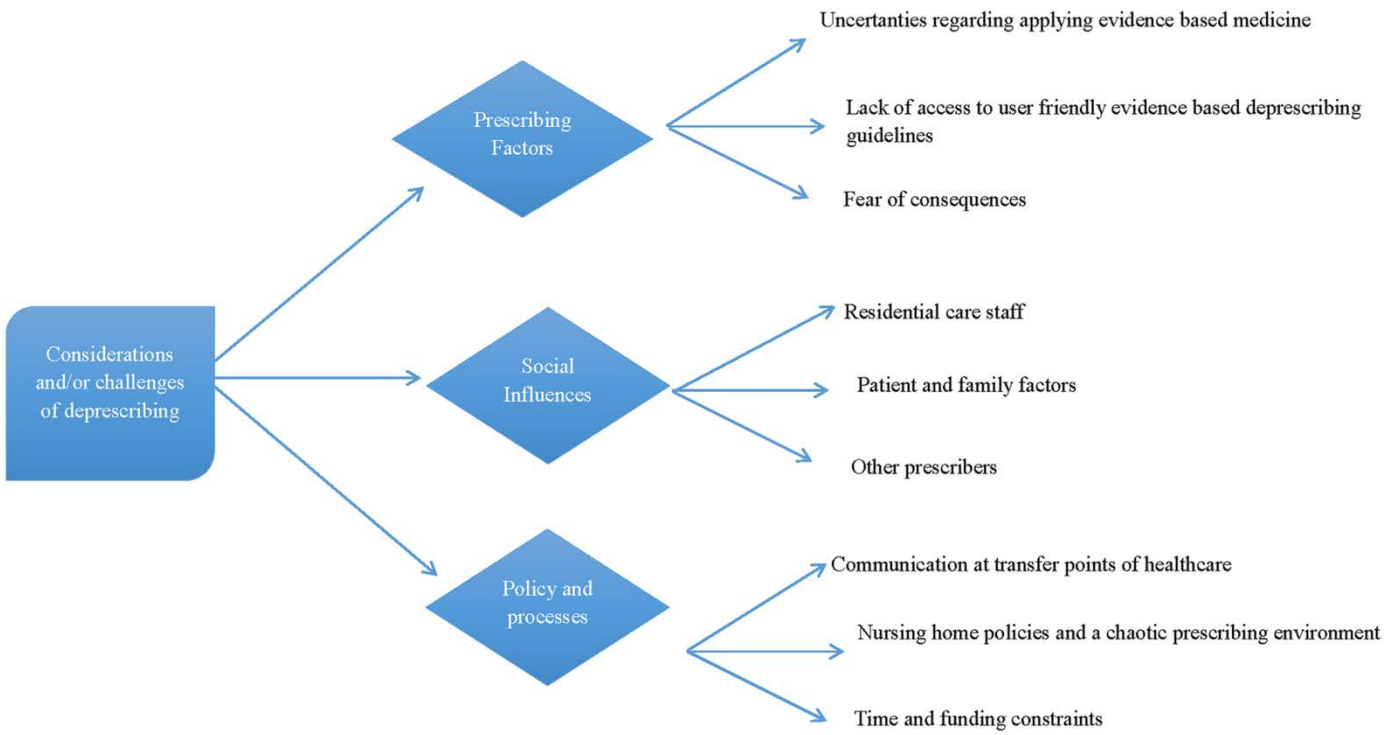
Scott, I et al. Reducing Inappropriate Polypharmacy: The Process of Deprescribing. JAMA Intern Med. 2015;175(5):827-834.

De-prescribing

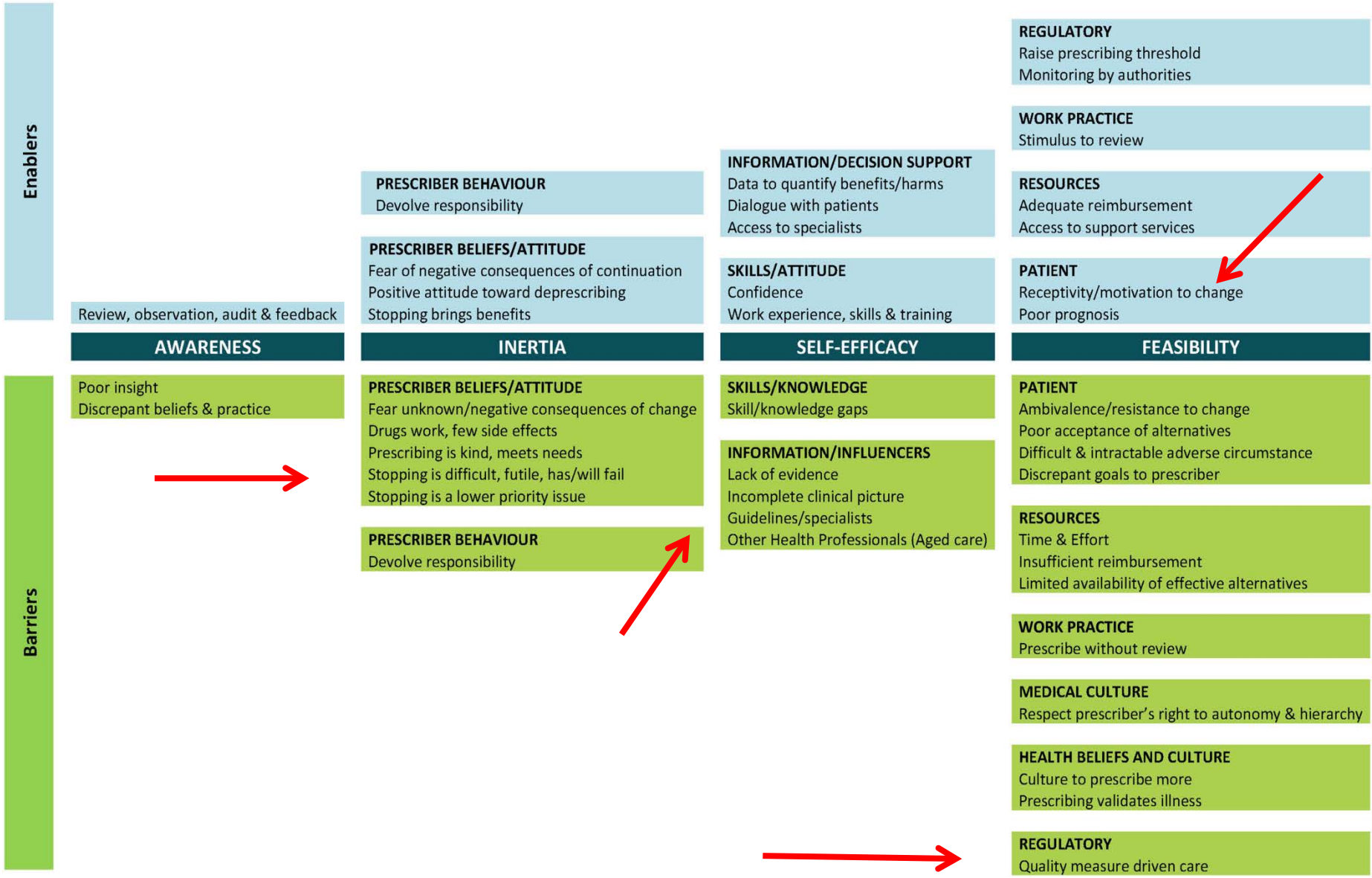
Deprescribing is the process of withdrawal of an inappropriate medication, supervised by a health care professional with the goal of managing polypharmacy and improving outcomes.

Reeve, E et al, A systematic review of the emerging definition of 'deprescribing' with network analysis: implications for future research and clinical practice. Br J Clin Pharmacol / 80:6.

Barriers to Deprescribing



Ailabouni, J et al, Challenges and Enablers of Deprescribing: A General Practitioner Perspective, PLOS ONE, April 19, 2016.



Anderson, K et al. Prescriber barriers and enablers to minimizing potentially inappropriate medications in adults: a systematic review and thematic synthesis, BMJ Open 2014;4.

Prescribing Inertia

The tendency to automatically renew a medication even when the original indication is no longer present.

Frank, C et al. Deprescribing for older patients, CMAJ, December 9, 2014, 186(18).

Patients' Attitudes Towards Deprescribing (PATD)

Government of South Australia
Central Northern Adelaide Health Service

University of South Australia

Participant Number: **Date:**

	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree
1. I feel that I am taking a large number of medications					
2. I am comfortable with the number of medications that I am taking					
3. I believe that all my medications are necessary					
4. If my doctor said it was possible I would be willing to stop one or more of my regular medications					
5. I would like to reduce the number of medications that I am taking					
6. I feel that I may be taking one or more medications that I no longer need					
7. I would accept taking more medications for my health conditions					
8. I have a good understanding of the reasons I was prescribed each of my medications					
9. Having to pay for less medications would play a role in my willingness to stop one or more of my medications					
10. I believe one or more of my medications is giving me side effects					

11. How many different tablets/capsules per day would you consider to be **a lot**? – *circle one of the below numbers*

5-10, 10-15, 15-20, 20-25, >25

Please turn over

12. What is the **MAXIMUM** number of tablets/capsules that you would be comfortable taking per day- *circle one of the below pictures*

13. How comfortable would you be if a pharmacist was involved in stopping one or more of your regular medications and provided the follow-up (informing your doctor of the progress)?

Uncomfortable ☐ Unsure ☐ Comfortable ☐

14. If one of your regular medications was stopped, what follow-up would you like?

- ☐ Face to face appointment
- ☐ Phone call(s)
- ☐ Written information via post
- ☐ Written information via email
- ☐ I wouldn't need planned follow-up. I would be happy contacting a health professional if I had any problems

Thank you for completing the questionnaire

Reeve, E, et al. Development and validation of the patients' attitudes towards deprescribing (PATD) questionnaire, Int J Clin Pharm. 2013 Feb;35(1):51-6.

PATD Results

- Ambulatory and community pharmacy population.
- Average age 69-71 years.
- Average 5-6 medications for average of 3 conditions.
- Willingness to deprescribe > 90%.
- Factors
  - Trust in physician
  - Number of medications
  - Medication cost/access

Reeve, E, et al. Development and validation of the patients' attitudes towards deprescribing (PATD) questionnaire, Int J Clin Pharm. 2013 Feb;35(1):51-6.

Shared Decision Making

- Patient-centered approach
- Education and Informed Consent
- Takes into account patient attitudes, beliefs, and choices.

Medication Optimization Approaches

- Provider Education
  - Passive (printed materials)
  - Academic Detailing
- Computerized Decision Support
- Pharmaceutical Care Programs
- Geriatric Medicine Consults
- Multi-Disciplinary Teams
- Combination Approaches

Spinewine, A. et al, Appropriate prescribing in elderly people: how well can it be measured and optimised? *Lancet* 2007; 370: 173–84.

PINCER

- UK, multi-center trial, >480,000 elderly patients, 6 months
- Pharmacist-led information technology intervention for medication errors.
  - Intensive intervention
  - Feedback, educational outreach, dedicated support
- Combines elements of pharmaceutical care and computerized decision support.
- Decreased inappropriate prescribing of NSAID/B-bl and improved monitoring of ACE-I and loop diuretics.

Avery, A et al, A pharmacist-led information technology intervention for medication errors (PINCER): a multicentre, cluster randomised, controlled trial and cost effectiveness analysis, Lancet. 2012 Apr 7; 379(9823): 136–142.

Targeted Deprescribing

- Drugs that are no longer indicated.
- Drugs that are no longer appropriate.
- Drugs that no longer align with goals.

Frank, C et al. Deprescribing for older patients, CMAJ, December 9, 2014, 186(18).

Reasons to Deprescribe

- Lack of efficacy
- Actual or potential adverse drug reactions
- Non-adherence
- Resolution of condition
- Development of contraindication
- Introduction of an interacting drug

Galicia-Castillo, M. When Less is More, Deprescribing, EVMS, Accessed 4/14/16.

Deprescribing Checklist

- Medication Factors
- Patient Factors
- Indications
- Discontinuation Plan

Scott, I. et al, Deciding when to stop: towards evidence-based deprescribing of drugs in older populations. Evid Based Med August 2013 | volume 18 | number 4 .

Medication Factors

- Medication Reconciliation: “Brown Bag”
- ADR Risk Factors
- Medication Benefit/Harm Threshhold
- Relative Drug Utility

Scott, I. et al, Deciding when to stop: towards evidence-based deprescribing of drugs in older populations. Evid Based Med August 2013 | volume 18 | number 4 .

Brown Bag Checkups

- Institute for Safe Medication Practices
- "Brown Bag" All medications & OTCs

  -Prescription Medications -Herbal products

  -OTC medications -Natural products
- Provider/Pharmacist: Monthly or Quarterly
- Medication Review
  - Reconcile with med list
  - Check correct dosage, strength, frequency
  - Eliminate duplications (med/therapy), expired/discontinued meds
  - Review potential interactions
  - Review patient understanding (how/why, adverse effects, monitoring)

https://www.ismp.org/newsletters/consumer/alerts/BrownBag.asp

Medication Factors

- Medication Reconciliation: “Brown Bag”
- ADR Risk Factors
  - High-risk medication, advanced age, med count > 5
  - Drug toxicities (Past, Current)
  - High-risk combinations.
- Medication Benefit/Harm Threshold
- Relative Drug Utility

Scott, I. et al, Deciding when to stop: towards evidence-based deprescribing of drugs in older populations. Evid Based Med August 2013 | volume 18 | number 4 .

Medication Factors

- Medication Reconciliation: “Brown Bag”
- ADR Risk Factors
- Medication Benefit/Harm Threshhold
  - Prediction Tools (www.mdcalc.com)
  - Estimate absolute benefit and harm
- Relative Drug Utility

Scott, I. et al, Deciding when to stop: towards evidence-based deprescribing of drugs in older populations. Evid Based Med August 2013 | volume 18 | number 4 .

Patient Factors

- Life Expectancy
  - Age, Diagnosis, Disease Severity, Functional Status
- Care Goals (Individualized, Patient-Centered)
  - Prevention
  - Disease Progression
  - Symptom Control/Palliation
  - Maintaining Functional Status
  - Quality of Life

Scott, I. et al, Deciding when to stop: towards evidence-based deprescribing of drugs in older populations. Evid Based Med August 2013 | volume 18 | number 4 .

ePrognosis | Estimating Prognosis for Elders

1. Yourman, L et al, Prognostic Indices for Older Adults, A Systematic Review, JAMA, January 11, 2012—Vol 307, No. 2.
2. http://eprognosis.ucsf.edu/calculators/index.php#/, Accessed 7/11/16

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  - Quality of Life

Scott, I. et al, Deciding when to stop: towards evidence-based deprescribing of drugs in older populations. Evid Based Med August 2013 | volume 18 | number 4 .

Indications

- Medication Reconciliation: Diagnosis
  - Confirm diagnostic label, based on diagnostic criteria
  - Assign diagnostic indication for each medication
- Disease Guidelines/Preventive Medications
  - Time to benefit, relative to projected lifespan

Scott, I. et al, Deciding when to stop: towards evidence-based deprescribing of drugs in older populations. Evid Based Med August 2013 | volume 18 | number 4 .

- Cartoon Image
- Title: Prescriptions
- Person to Pharmacist
- "I've been taking this medication for 50 years and I'm going to sue! The side effects made me wrinkled, fat and bald!"

Source: Bing Images, Accessed 7/11/16

Discontinuation Plan

- Patient Consent
- Implementation
- Monitoring

Scott, I. et al, Deciding when to stop: towards evidence-based deprescribing of drugs in older populations. Evid Based Med August 2013 | volume 18 | number 4 .

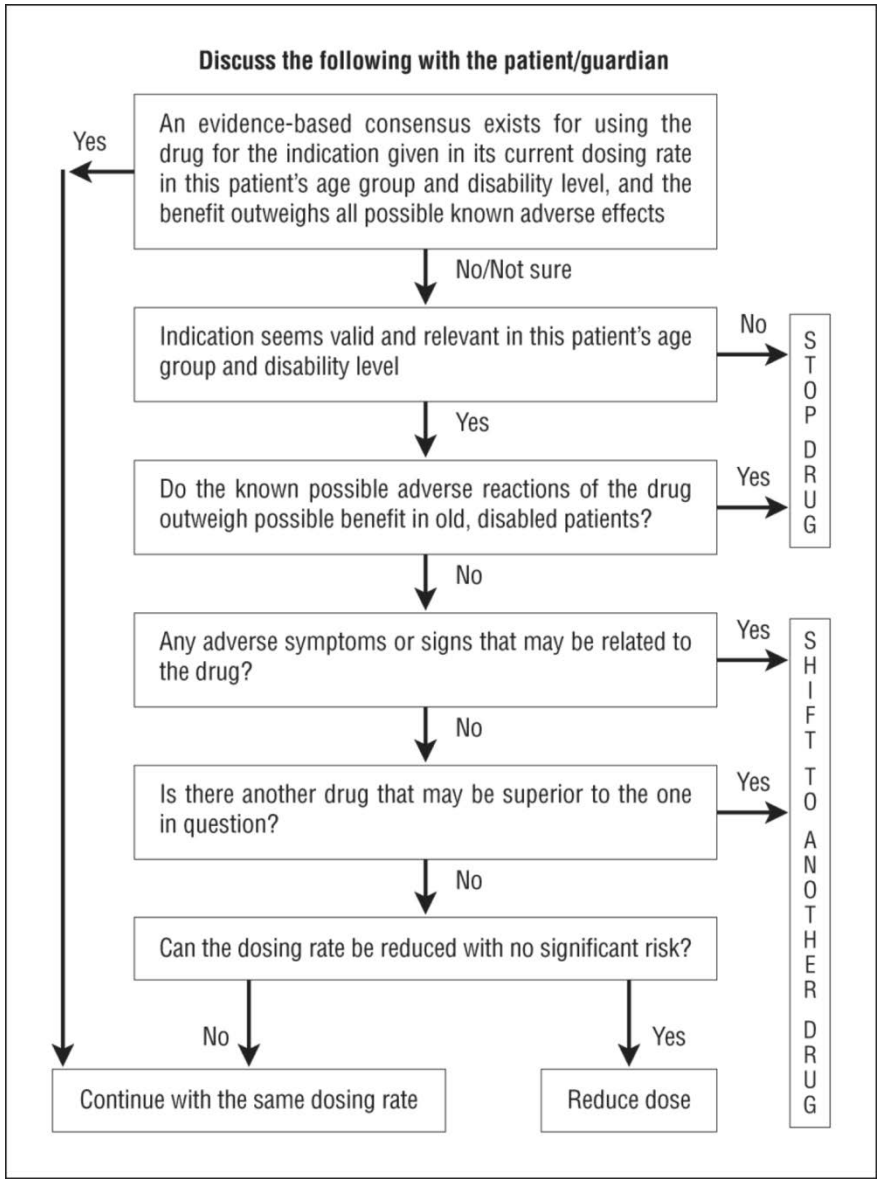
De-prescribing Protocol

1. Determine patient's current drugs and drug indications.
2. Match intensity of deprescribing to risk of drug-induced harm.
3. Compare current/future benefit and current/future harm for each drug.
4. Prioritize drugs for discontinuation with lowest benefit-harm ratio and lowest likelihood of adverse withdrawal reactions or disease rebound syndromes; and
5. Implement a discontinuation regimen and monitor patients closely.

Scott, I et al. Reducing Inappropriate Polypharmacy: The Process of Deprescribing. JAMA Intern Med. 2015;175(5):827-834.

Deprescribing Tool

Good Palliative–Geriatric Practice algorithm



Garfinkel, D et al, Feasibility Study of a Systematic Approach for Discontinuation of Multiple Medications in Older Adults , *Addressing Polypharmacy, Arch Intern Med. 2010;170(18):1648-1654.*

Deprescribing
What is the Evidence?

- Deprescribing Trials (Gnjidic et al, 2012)
  - Pharmacist, physician, and multi-disciplinary interventions.
  - Reductions in medication use and cost.
  - No difference in clinical outcomes.
    - Limited by short duration of follow up, lack of statistical power.
- Systematic Review (Iyer et al, 2008)
  - Small, short-term studies
  - Focus on tolerability of deprescribing
  - Found little evidence of harm from medication withdrawal

1. Gnjidic D, Le Couteur DG, Kouladjian L, Hilmer SN. Deprescribing trials: methods to reduce polypharmacy and the impact on prescribing and clinical outcomes. *Clin Geriatr Med.* 2012;28(2):237–53.
2. Iyer S, Naganathan V, McLachlan AJ, Le Couteur DG. Medication withdrawal trials in people aged 65 years and older: a systematic review. *Drugs Aging.* 2008;25(12):1021–31.
3. Thompson, W et al, Deprescribing: What Is It and What Does the Evidence Tell Us, Canadian Journal of Hospital Pharmacy , VOLUME 66 , NUMBER 3 , May-June 2013.

Cochrane 2014

- 12 studies: 22,000 participants
- Pharmaceutical Care
  - Pharmacist directed
  - Identifying, preventing, & resolving medication-related problems.
  - Promoting correct use of medications
  - Education and health promotion
- Computerized Decision Support
  - Prescriber-oriented
  - Selection of proper treatment
- Both interventions reduce inappropriate polypharmacy.
- No significant effects on clinical outcomes (ADEs, hospitalizations)

Patterson, SM et al, Interventions to improve the appropriate use of polypharmacy for older people (Review), Cochrane Database of Systematic Reviews 2014, Issue 10.

NICE 2015

- Systems for identifying, reporting and learning from medicine-related patient safety incidents.
- Medicine-related communication systems when patients move from one care setting to another.
- Medication reconciliation
- Medication review
- Self-management plans
- Patient decision aides
- Clinical decision support
- Multi-disciplinary team approach

Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes NICE guideline, Published: 4 March 2015.

Practical Points

Drug Prescribing in the Elderly

1. Periodically review the medication regimen of all elderly patients.
2. Discontinue medications when there is no ongoing need for treatment.
3. Consider adverse drug effects as a potential cause for any new symptom.
4. Always consider non-pharmacological approaches first.
5. Select carefully within a drug class to reduce the risk of adverse effects.
6. Use the lowest feasible dose to achieve the desired therapeutic effect.
7. Advanced patient age, in and of itself, should never be considered a contraindication to potentially beneficial drug therapy.

Ronchon, P et al. Drug Therapy. Lancet, Volume 346, July 1, 1995.

Conclusions

- Medication use and polypharmacy are trending upward, particularly in the elderly.
- Both polypharmacy as well as age-related changes in drug pharmacokinetics and pharmacodynamics increase risk of adverse drug effects.
- Inappropriate prescribing can lead to increased morbidity and mortality.
- Polypharmacy adversely impacts medication adherence.

Conclusions

- Periodic medication reviews and reconciliation with diagnoses and indications are essential safe medication practices.
- Use of web-based tools facilitate decisions about medication appropriateness and patient prognosis.
- Deprescribing is safe, can reduce polypharmacy, and may improve health outcomes.
- Deprescribing requires a proactive, patient-centered approach.
- Effective deprescribing strategies include use of a validated algorithm, pharmaceutical care and computerized decision support.

The person who takes medicine must recover twice. Once from the disease and once from the medicine.

Dr. Willaim Osler

Medication Deprescribing

Matthew A. Clark, MD, FAAP, FACP

Clinical Director

Ute Mountain Ute Health Center

NPTC:

Raising the health of American Indians and Alaska Natives by increasing access to highly effective medications through robust formulary management and education of clinicians within the Indian Health Systems.