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.
“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

Prescription Drug Use Trends

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

Elderly Pharmacodynamics

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

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
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."
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

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%

• Cartoon Image

• Doctor to Patient

• "I'm going to prescribe something to reduce the amount of lint produced by your belly button."
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.

Prescribing Cascade

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).”

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)

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

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.
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.
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
AGS iPhone App

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)

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.

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. 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

The Prescribing Continuum

Initiation of Therapy → Dose Titration → Drug Change or Addition → Deprescribing

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.

Barriers to Deprescribing

Considerations and/or challenges of deprescribing

Prescribing Factors
- Uncertainties regarding applying evidence based medicine
- Lack of access to user friendly evidence based deprescribing guidelines
- Fear of consequences

Social Influences
- Residential care staff
- Patient and family factors
- Other prescribers

Policy and processes
- Communication at transfer points of healthcare
- Nursing home policies and a chaotic prescribing environment
- Time and funding constraints

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.

Patients’ Attitudes Towards Deprescribing (PATD)

<table>
<thead>
<tr>
<th>Participant Number:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| 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 |

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

---

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

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

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-bi and improved monitoring of ACE-I and loop diuretics.

Targeted Deprescribing

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

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

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 Threshold
• Relative Drug Utility

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)

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

Medication Factors

• Medication Reconciliation: “Brown Bag”
• ADR Risk Factors

• Medication Benefit/Harm Threshold
  • Prediction Tools (www.mdcalc.com)
  • Estimate absolute benefit and harm

• Relative Drug Utility

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

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

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

• 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

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.

Deprescribing Tool

Good Palliative–Geriatric Practice algorithm

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

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.

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. William 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.