

Overview of Prescribing Cascades

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Objectives

1. Interpret the definition of a prescribing cascade
2. Identify common prescribing cascades that can occur in clinical practice
3. Understand how to manage prescribing cascades if deemed appropriate

Polling Question

Per the CDC, adverse drug events cause approximately how many emergency department visits each year?

A: 850,000

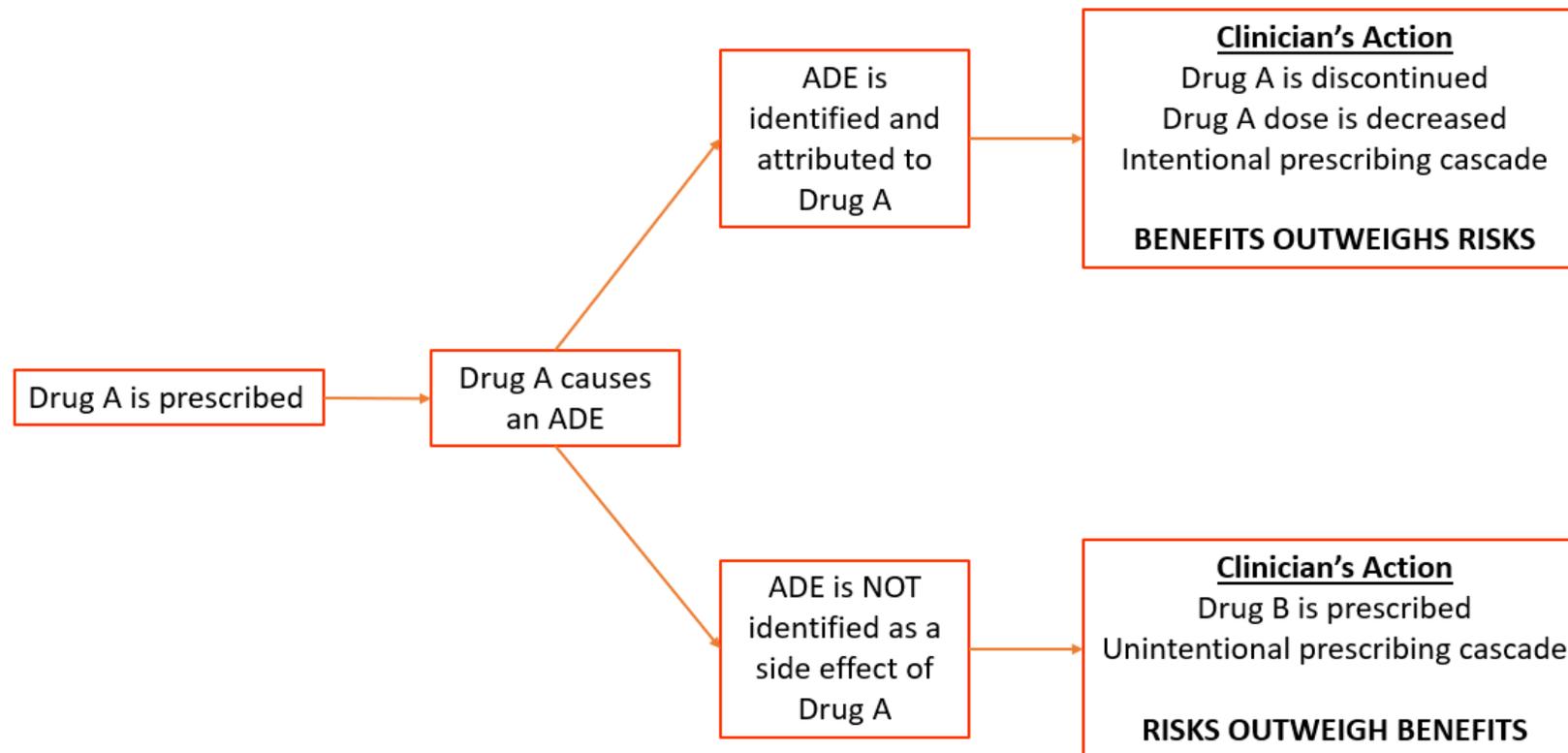
B: 900,000

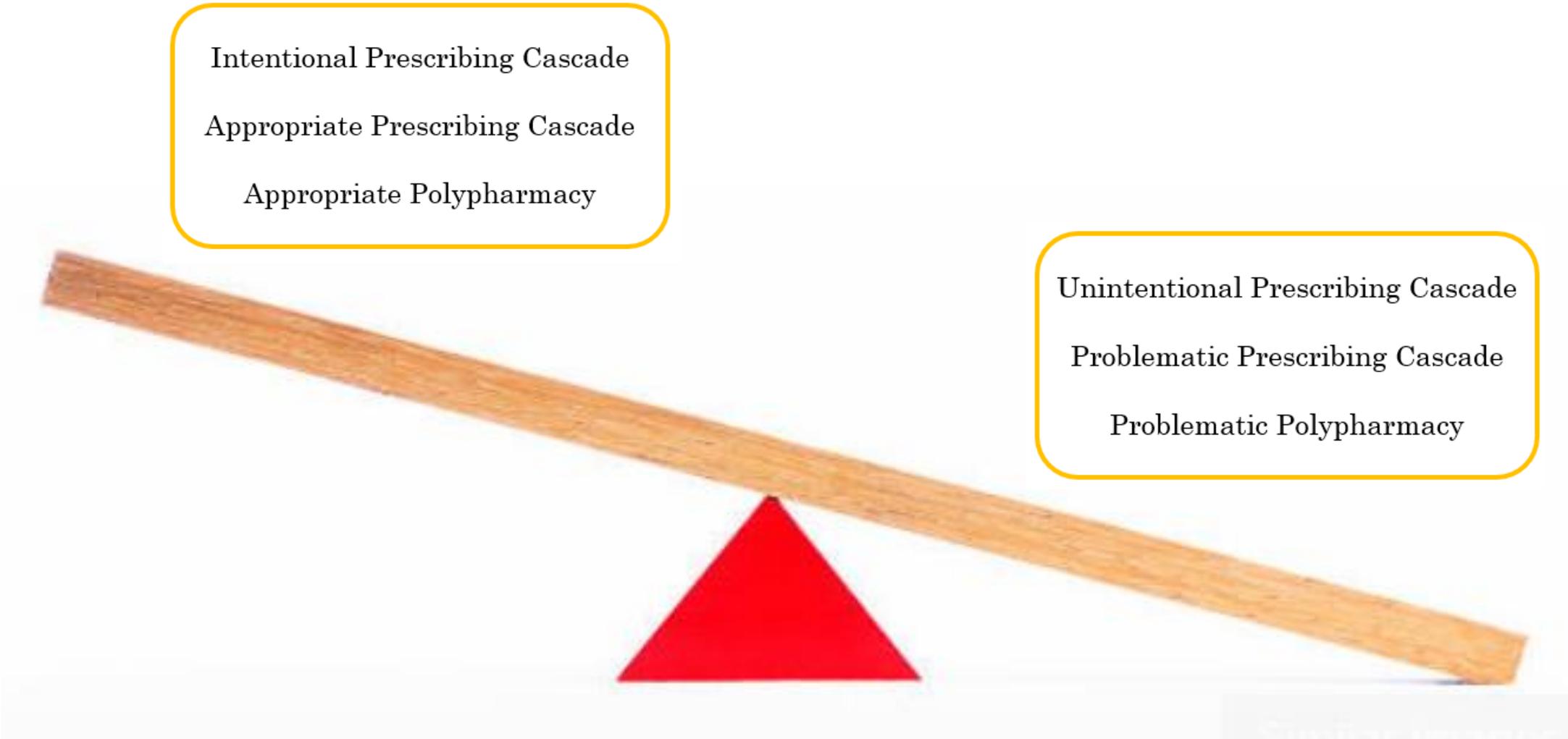
C: 1.3 million

D: 2.1 million

Background

- A prescribing cascade is a sequence of events that occurs when an adverse drug event is misinterpreted as a new medical condition, and a subsequent drug is inadvertently prescribed to treat the new condition



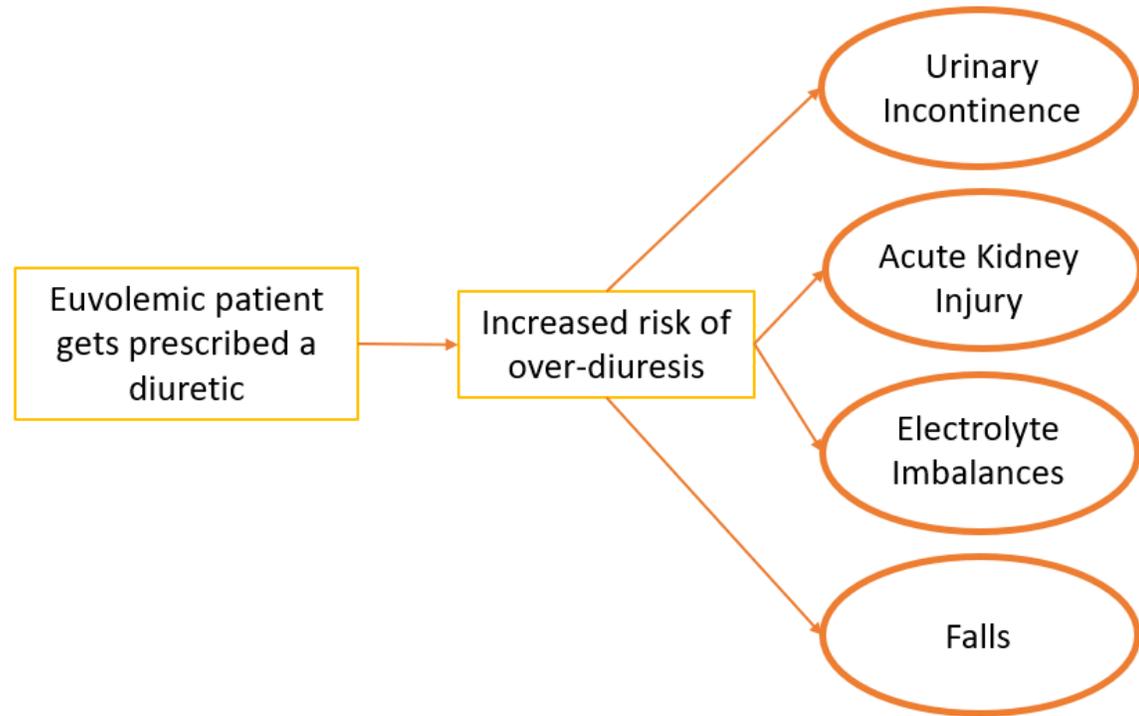


Intentional Prescribing Cascade
Appropriate Prescribing Cascade
Appropriate Polypharmacy

Unintentional Prescribing Cascade
Problematic Prescribing Cascade
Problematic Polypharmacy

Calcium Channel Blockers (CCB's) & Diuretics

- CCB's are first-line agents for hypertension and can cause peripheral edema
- Edema can be misinterpreted as a new medical condition and a diuretic may be prescribed as treatment
- CCB-induced edema is not caused by fluid overload



Evaluation of a Common Prescribing Cascade of CCB's and Diuretics

Study Objective:

- To measure the association between being newly dispensed a CCB and subsequent dispensing of a loop diuretic in older adults with hypertension

Study Design:

- Population-based cohort study using health administrative databases of community-dwelling adults 66 years or older

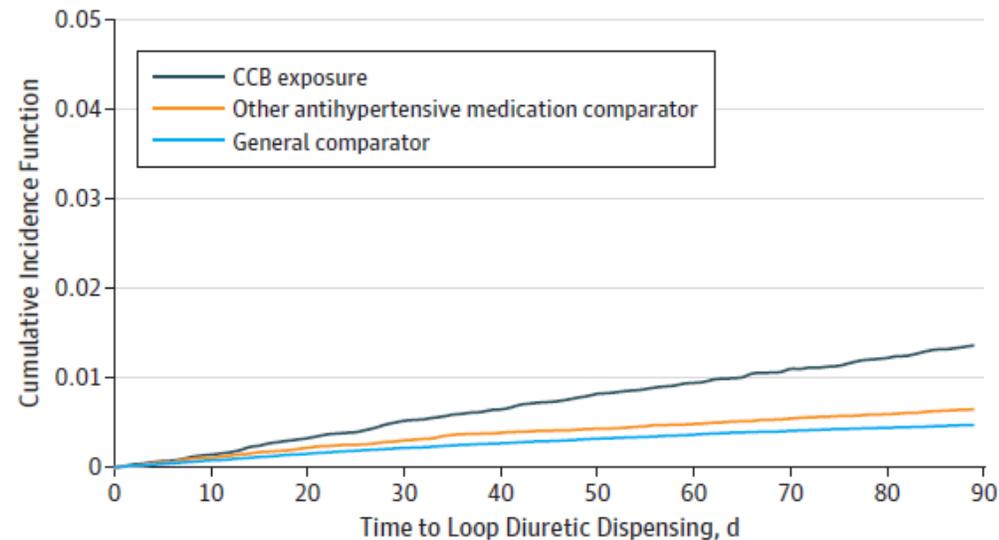
Study Population:

- Individuals newly dispensed a CCB were compared with the following 2 groups:
 - 1) Individuals newly dispensed an ACEi or ARB, AND
 - 2) Individuals newly dispensed an unrelated medication

CCB Cascade Contd.

Results:

Figure. Cumulative Incidence of Being Dispensed a Loop Diuretic Among Older Adults With Hypertension Who Were Newly Dispensed a Calcium Channel Blocker (CCB) Compared With Other Antihypertensive Medication Comparators and General Comparators



- By 90 days, individuals newly dispensed a CCB had a higher cumulative incidence of receiving a loop diuretic compared with both the other antihypertensive medication and general comparator groups

Prescribing Cascade in Older Patients with Dementia

Study Objective:

- Examine association between use of cholinesterase inhibitors and subsequent prescription of anticholinergic drugs to manage urinary incontinence

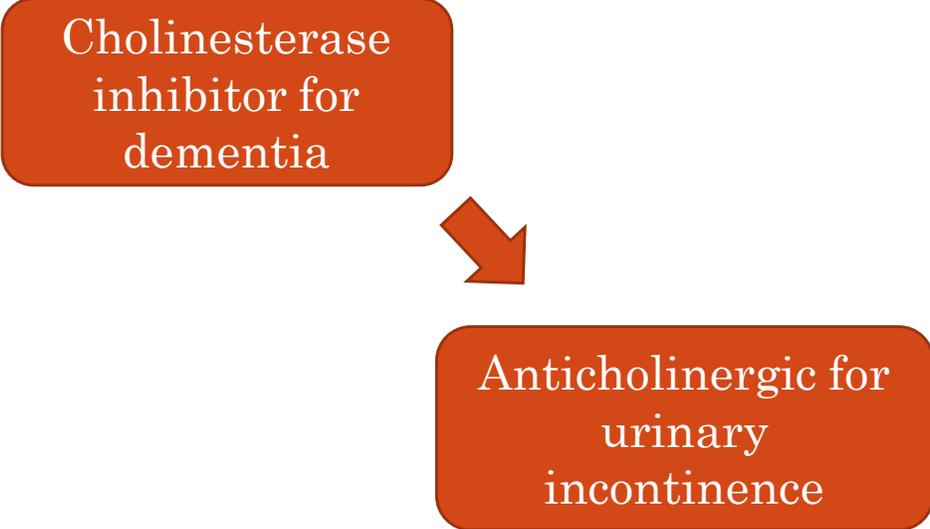
Study Population:

- Control: Patients with dementia not prescribed a cholinesterase inhibitor
- Comparison: Patients with dementia prescribed a cholinesterase inhibitor

Inclusion Criteria:

- No evidence of urinary incontinence
- No anticholinergic prescribed

Cholinesterase
inhibitor for
dementia



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graph TD; A[Cholinesterase inhibitor for dementia] --> B[Anticholinergic for urinary incontinence]
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Anticholinergic for
urinary
incontinence

Anticholinergic Cascade Contd.

- **Result:**

- Patients in drug cohort were more likely to be prescribed an anticholinergic medication at follow up
 - 4.5% vs 3.1% ($p < 0.001$)

- **Clinical Practice Application:**

- Be conscious of opposing actions of these two medication classes
- Weigh risk versus benefit of co-prescribing rather than decreasing dose of cholinesterase inhibitor

Polling Question

Dementia patients on acetylcholinesterase inhibitors were ___ times more likely to be prescribed a medication for rhinorrhea than patients not on acetylcholinesterase inhibitors

A: 2

B: 5

C: 4

D: No difference

Examples of Other Prescribing Cascades

Drug A	Adverse Drug Event	Drug B
NSAIDs	Hypertension GI upset	Anti-hypertensive H2 antagonist/PPI
Thiazide-like diuretics	Gout	Anti-gout
Cholinesterase inhibitors	Urinary incontinence	Anticholinergic
Antipsychotics	Parkinsonian symptoms	Antiparkinsonian
ACE inhibitors	Cough	Cough suppressant
Opioids/Benzodiazepines	Sedation/Confusion	Cholinesterase inhibitor
SGLT2 inhibitors	Genital mycotic & urinary tract infections	Antimicrobials

Prescribing Cascades in Geriatrics

- **Study Objectives:**

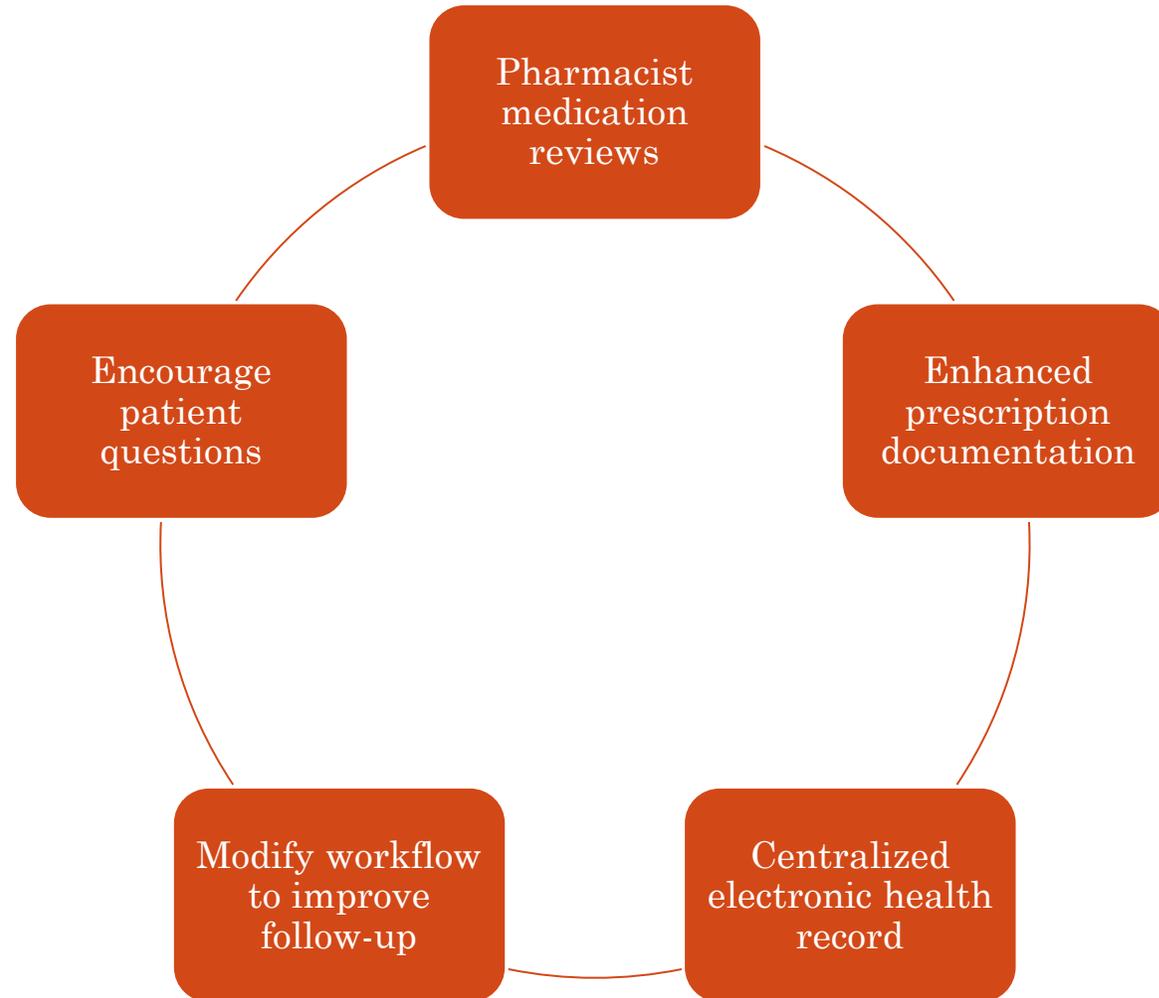
1. Understand how prescribing cascades develop and persist
2. Identify potential strategies to help identify, prevent or manage these cascades

- **Patient Population:** frail, community-dwelling older adults (65 years and older) who have two or more concerns related to:
 - Mobility/falls
 - Activities of daily living
 - Cognition
 - Function
 - Medication
 - Future planning/caregiver stress

Three Themes in Geriatric Prescribing Cascades

1. Varying awareness of medications and cascades
 - Timing of initiation and modification
 - General medication management
2. Varying feelings of accountability for making decisions about medication-related care
 - Patient vs provider vs pharmacist
3. Accessibility to an ideal environment and relevant information
 - Utilizing team-based approach is key

Prevent, Detect, Resolve



Tips for Cascade Management

Management

- Have all alternative options been explored?
- Document, document, document!

Initial Assessment

- Risk vs benefit discussion with patient
- Treatment plan in alignment with goals?

Ongoing Assessment

- Is improvement in ADE objectively measurable?
- Plan ahead for follow-up

Clinical Application at the Minneapolis VA

Pharmacy Quality Improvement Project

Pharmacist led chart reviews assessing:

- Anticholinergic medication use in patients with dementia currently on acetylcholinesterase inhibitors
- Medications being used to treat side effects of anticholinergic medications



Pharmacists make recommendations for therapy modification based on assessment

- Anticholinergic medication discontinued
- Anticholinergic medication changed to alternative agent

Conclusion

- It is important to consider patient's goals and quality of life when making the decision to propagate a prescribing cascade
- Prescribing cascades may be clinically appropriate and therapeutically beneficial in some cases
- Ongoing assessment of the appropriateness of a prescribing cascade should be evaluated throughout the patient's journey

References

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Questions?