Polypharmacy in Primary Care Medicine

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Objectives

- Understand and identify polypharmacy in your patients
- Realize how to prevent polypharmacy
- Understand how to treat polypharmacy
- Use these strategies in practice to manage polypharmacy

Introduction¹

- People live longer
- More medications available
- More diagnoses
- Bigger percent of the population is getting older
- Less time spent with providers
- The internet is the truth
- Everyone wants a "magic bullet" to fix their problems
- Habits are hard to break

Polypharmacy¹

- What is it?
 - It's complicated and misunderstood
 - Old school:
 - A single patient taking a <u>specific</u> number of medications (i.e. >4)
 - New school:
 - A single patient taking <u>multiple unnecessary</u> medications
 - Identify Over and Under treated diseases
 - May do more harm than good

Identify polypharmacy^{2,3}

- 2015 Updated Beers' Criteria
 - Started in 1991, updated in 1997, 2003, 2012, and 2015
 - Lists PIMs (Potentially Inappropriate Medications)
 - Newest additions
 - Adjustments based on kidney function
 - Drug-Drug Interactions

Others:

- Comprehensive Geriatric Assessment (CGA)
- Hyperpharmacotherapy Assessment Tool (HAT)
- Medication Appropriateness Index (MAI)
- Screening Tool to Alert doctors to Right Treatment (START)
- Screening Tool of Older Persons' Prescriptions (STOPP)

Beers Criteria Overview²

- Apply to all populations 65 years and older
 - Does not apply to hospice/palliative care
- Apply to all settings: ambulatory, acute, institutional
- Use criteria in educational and quality measure
- PIMs (Potentially Inappropriate Medications)
 - Avoid in certain conditions/diseases
 - Reduce doses
 - Use with caution
 - Carefully monitored
 - Associated with poor health outcomes falls, confusion, mortality

Medications to AVOID²

- Nitrofurantoin in CrCl < 60ml/min and long term</p>
- Amiodarone as 1st line unless HF/substantial LVH
- Digoxin as 1st line and more than 0.125mg/d
- Benzodiazepine agonists (zolpidem, etc.)
- Insulin siding scale
- Proton Pump Inhibitors beyond 8 weeks without justification
- Desmopressin for nocturia
- Opioids in fall/fracture risk
- Antipsychotics for 1st line dementia
- 3 or more CNS acting medications
- Alpha-blockers and loop diuretics in women

Polypharmacy Statistics⁴

	1988-1991	2009-2010
Adults 65 years old and older	29.2 million	38.7 million
Median # of medications	2	4
On 5 or more medications	3.7 million	15.1 million
Adults 80 years old and older	5.8 million	9.8 million
On a statin	0.09%	45.7%
On an antihypertensive	50.4%	79%
On an antihyperglycemic	6.4%	16.9%

NHANES excludes patient in nursing homes or other care facilities.

Polypharmacy Statistics³

- US National Nursing Home Survey 2004
 - Pt on more than 9 medications
 - 3x higher in patients with over 10 co-morbidities compared to less than 3 co-morbidities
 - Associated diseases
 - CAD/Stroke
 - HF
 - DM
 - COPD
 - Associated medication classes
 - Cardiovascular
 - Metabolic
 - CNS

Polypharmacy Statistics⁵

- Expensive
 - Costs health plans more than \$50 billion per year in 2002
- Patients 65 years old and older in the US
 - Largest consumer of prescription and non-prescription medications
 - Medication use more than doubled since 1990
 - Consume one-third of prescriptions per year

US Center for Medicare and Medicaid Services

Risk factors³

- Co-Morbidities
 - 8% increase medications per co-morbidity in women over 64 y/o
- Multiple providers
- Following Clinical Practice Guidelines (CPGs)
- Multiple pharmacies
- Drug Interactions
- Self treating (excessive over-the-counter medications)
- Use of herbals/supplements that are unproven/dangerous
- Hospitalization
- Reduced communication
 - No medication list

Risk factors

- Patient conditions
 - Low economic status
 - Formal/Informal support
 - Mental decline
 - Visual impairment
 - Dysphagia
 - Muscle mass or venous access
 - Patient's needs and preferences

Effects

- Adverse Reactions
 - 8.6% increase risk for each medication
 - Falls
- Non-Compliance
- Increase cost
 - To patients
 - To society

Prevent polypharmacy^{1,6}

- Quantifying the problem is difficult
- Know your patient and use most current information
- Follow Evidence Based Medicine understanding the limitations
- Understand Pharmacokinetics and Pharmacodynamics
- Recognize Contributing Patient Factors
- Avoid the prescribing cascade
- Prescribe only medications you know thoroughly

Communication¹

- Allow enough time to answer questions
- Avoid distractions
- Sit face to face, maintain eye contact, Listen
- Speak slowly, clearly and loudly
- Use simple language, do not judge
- Obtain interpreters as necessary
- Give written instructions

Write answers to questions:

1.

2.

3.

4

5.

6. OTC product:

Communication

It's time to eat grandpa

Communication

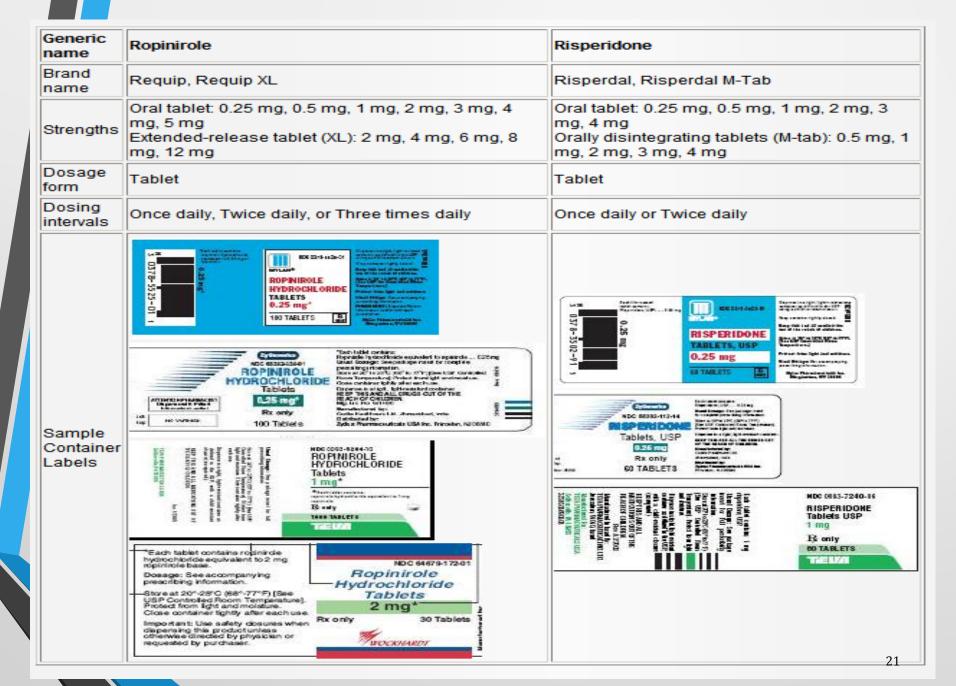
I love you

- Brand vs. Generic
- Look and Sound alike
- Different salts and formulations
 - Metoprolol tartrate vs. succinate
 - XL, LA, XR, ODT, SL, SR, CD, etc.

Look Alike AND Sound Alike

sulfasalazine and sulfadiazine

- clonidine and klonopin
- celebrex and celexa
- risperidone and ropinirole



Dose

Split/multiple tabs, measure (tsp, tbsp, mL, etc.)

Frequency

What time is daily? Bedtime? PRN is NOT a frequency!

Routes/Techniques/Calculations

Injections, Inhalers, Suppositories, etc.

Duration

Side effects

Allergies vs. Intolerances

Compliance

- Don't feel they help, Affordable, Side effects, Forgetful
- Patients need Buy-In

Storage

- Cool and dry
- Separate from other family members
- Protect from others (kids and animals)

Don't save expired or transfer to others

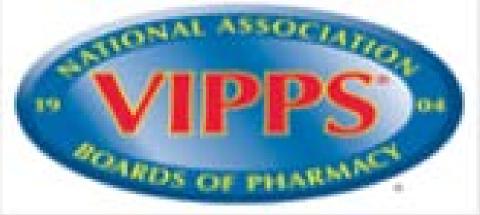
Transfer of care - hospitalizations

Self prescribe OTCs and Herbals

- Not regulated by FDA
- Purchase on internet
- Don't realize ALL that's in it

Get quality products - USP verified products





Office visit

Who is the source of truth?

- Have patient bring in all medications each visit
 - Can check for expiration, integrity, provider, directions, ingredients, techniques
- Get pharmacy refill history for compliance
- Give patient written information
- Have patient/family/pharmacy make medication list
 - Include product, form, dose, frequency, indications, special instructions, prescriber, indications
 - May also include diagnoses, allergies, tests, pharmacies, etc.

Anyone can copy them down incorrectly or omit info

Follow Evidence Based Medicine understanding the limitations¹

- What was the population?
 - Inclusion/exclusions
- What was the quality of trial?
 - Randomized, double blind, controlled, sample size, bias
- Does the treatment need to be modified?
 - Weight, renal, hepatic
- Can it be easily monitored and administered?
 - Cost, compliance

Understand Pharmacokinetics and Pharmacodynamics⁶

- Pharmacokinetic changes
 - Absorption (motility, gastric secretions, liver blood flow, etc.)
 - Distribution (albumin, fat stores)
 - Metabolism (liver blood flow and enzymes)
 - Elimination (kidney function)
- Pharmacodynamic changes
 - Receptor sensitivity

Common P450 Drug Interactions⁶

Enzyme	Inhibitors	Inducers
CYP1A2	Ciprofloxacin Fluvoxamine	Phenytoin Rifampin
CYP2C9	Fluconazole	Carbamazepine Rifampin
CYP2D6	Buproprion Fluoxetine Paroxetine	
CYP3A	Azole antifungals Cimetidine Ciprofloxacin Grapefruit juice Macrolides Protease inhibitors	Carbamazepine Modafinil Phenobarbital Phenytoin Rifabutin Rifampicin St. John's wort

Pharmacodynamic changes⁶

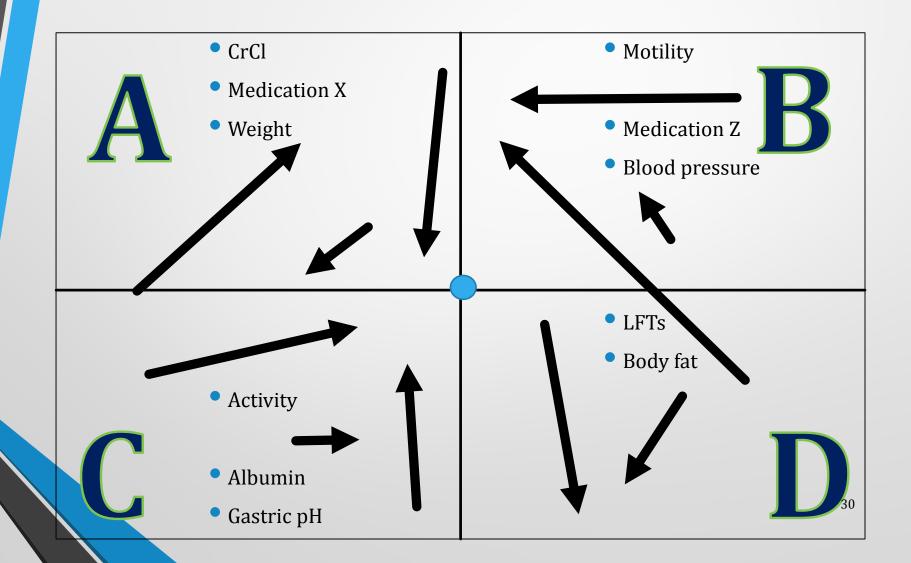
Serotonin Syndrome

- Hyperthermia, Hyperreflexia, Hypertension
- Tramadol, SSRIs, SNRIs, buspirone, meperidine, etc.

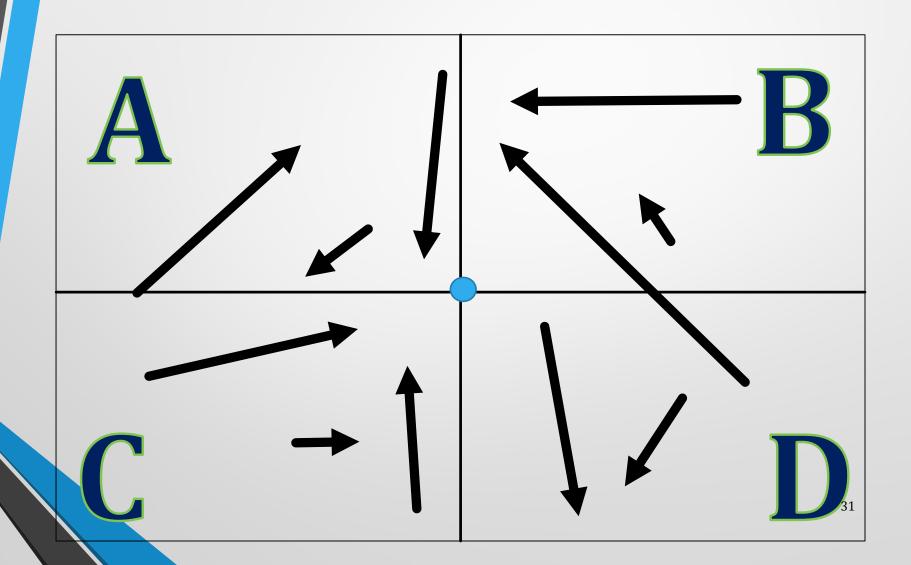
Anticholinergic syndrome

- Antihistamines, anticholinergics, TCAs, etc.
 - Hot as a rock
 - Red as a beet
 - Dry as a bone
 - Blind as a bat
 - Mad as a hatter

Adding it all together



In which box will adding all vectors end?



Contributing Patient Factors

- Medications
- Healthcare providers
- Pharmacies used
- Comorbidities
 - Diabetes, Depression, Osteoporosis, Parkinson, Hearth failure, etc.
- Deficiencies
 - Hearing, Vision, Dexterity, Swallowing
 - Illiteracy/numeracy
 - Cognitive, Communication, Understanding
 - Economic

Avoid the prescribing cascade¹

- Side effects lead to more medication
 - Opioids → Constipation → Laxatives → Electrolytes →
 - Beta-blockers → Erectile dysfunction → PDE-5 inhibitors
 - ACE inhibitors → Cough → Antitussives
 - Calcium Channel blockers \rightarrow Edema \rightarrow Diuretics

Prescribe only medications you know thoroughly⁶

- Use
- Directions
 - Dose and dosage forms
 - Dosage adjustments
- Side effects
- Monitoring
- Interactions medications, diet, and alcohol

Treat polypharmacy⁵

- Hyperpharmacotherapy Assessment Tool (HAT)
 - Goal I: Monitor number of medications
 - Goal II: Decrease inappropriate medication use
 - Goal III: Decrease inappropriate pharmacology
 - Goal IV: Optimize dosing regimen
 - Goal V: Organize sources of medications
 - Goal VI: Educate patient

Treat polypharmacy^{3,7}

- Comprehensive Geriatric Assessment (CGA)
 - Multidimensional, interdisciplinary approach to clinical, nutritional, functional, cognitive and social parameters
- Deprescribing
 - Systematically identifying and discontinuing medications which pose more harm than risk
 - Considering patient goals, function, prognosis, values and preferences
 - Not negative or denying medication
 - Positive, patient centered, reaching consensus
 - Requires stepwise approach and follow-up monitoring

Deprescribing Steps⁷

- 1. Find out ALL medications patient is taking and why
 - Including herbal, OTC, infrequent, non-oral
- 2. Evaluate OVERALL risk of medication HARM
 - Number of medications, high risk, cognitive status, co-morbidities, substance abuse, number of providers, etc.
- 3. Assess EACH medication for NEED
 - Diagnosis, effectiveness, prescribing cascade, adverse effects, benefit vs. lifespan, pill burden
- 4. Prioritize medications for DISCONTINUATION
 - Greatest harm/no benefit
 - Easy/no withdrawal effects
 - Patient willing to try
- 5. Implement and monitor discontinuation regimen
 - Create a plan, communicate to ALL involved, fully document

ICD-10 codes

ICD-10-CM Code	Condition
T88.7	Unspecified adverse effect of drug or medicament
Z91.12	Patient's intentional underdosing of medication regimen
Z91.13	Patient's unintentional underdosing of medication regimen
Z91.14	Patient's other noncompliance with medication regimen
Z91.120	Patient's intentional underdosing of medication regimen due to financial hardship
Z91.128	Patient's intentional underdosing of medication regimen for other reason
Z91.130	Patient's unintentional underdosing of medication regimen due to age-related debility
Z91.138	Patient's unintentional underdosing of medication regimen for other reason

Polypharmacy/hyperpharmacotherapy Summary

- Be aware of it
- Understand there are many causes
- Evaluate the situation
- Try to prevent it in the future
- Communicate well with your patients
 - Listen to them, get all the facts
 - Print out information
- Address it when you see it

Questions

1. Polypharmacy is easy to identify and treat.

True

False

2. Beers criteria have been around for over 20 years and identify medications that have high risks to the elderly.

True

False

- 3. All of the following are risks for polypharmacy except:
 - A. Hospitalization
 - B. Using multiple pharmacies
 - C. Noncompliance
 - D. Drug interactions
- 4. Providers can help manage polypharmacy by:
 - A. Deprescribing inappropriate medications
 - B. Monitoring the number of medications
 - C. Organizing sources of medications
 - D. Educate patient
 - **E.** All of the above

References

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- 4. Charlesworth CJ. Smit E. Lee DSH. Polypharmacy Among Adults Aged 65 Years and Older in the United States: 1988-2010 J Gerotolog A Biol Sci Med Sci 2015: 989-995.
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