POLYPHARMACY

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Faculty/Presenter Disclosure

Faculty: Samantha Yau

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Mitigating Potential Bias

The information presented in this CME program is based on recent information that is explicitly “evidence-based”.

This CME Program and its material is peer reviewed and all the recommendations involving clinical medicine are based on evidence that is accepted within the profession; and all scientific research referred to, reported, or used in the CME/CPD activity in support or justification of patient care recommendations conforms to the generally accepted standards

Learning Objectives

Click By the end of the session participants will:

- Recognize factors leading to polypharmacy in the elderly
- Describe the difference in polypharmacy management vs deprescribing
- Provide an approach towards evidence-based deprescribing & tools to reduce polypharmacy

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Polling Question

Principles to consider to avoid Polypharmacy are….

a) **Pharmacodynamic redundancy** – combining 2 drugs with the same MOA; addition of drug unlikely to give additional benefit

b) **Pharmacodynamic interactions** – opposing MOA; one inhibits action of another ie acetylcholinesterase inhibitor + TCA

c) **Pharmacokinetic interactions** – CYP 450 enzyme ie carbamazepine inhibitor / substrate of CYP 3A4

d) **Inadequate dosing** – subtherapeutic doses.. Fear ..intent to minimize side effects

e) **All of the above**

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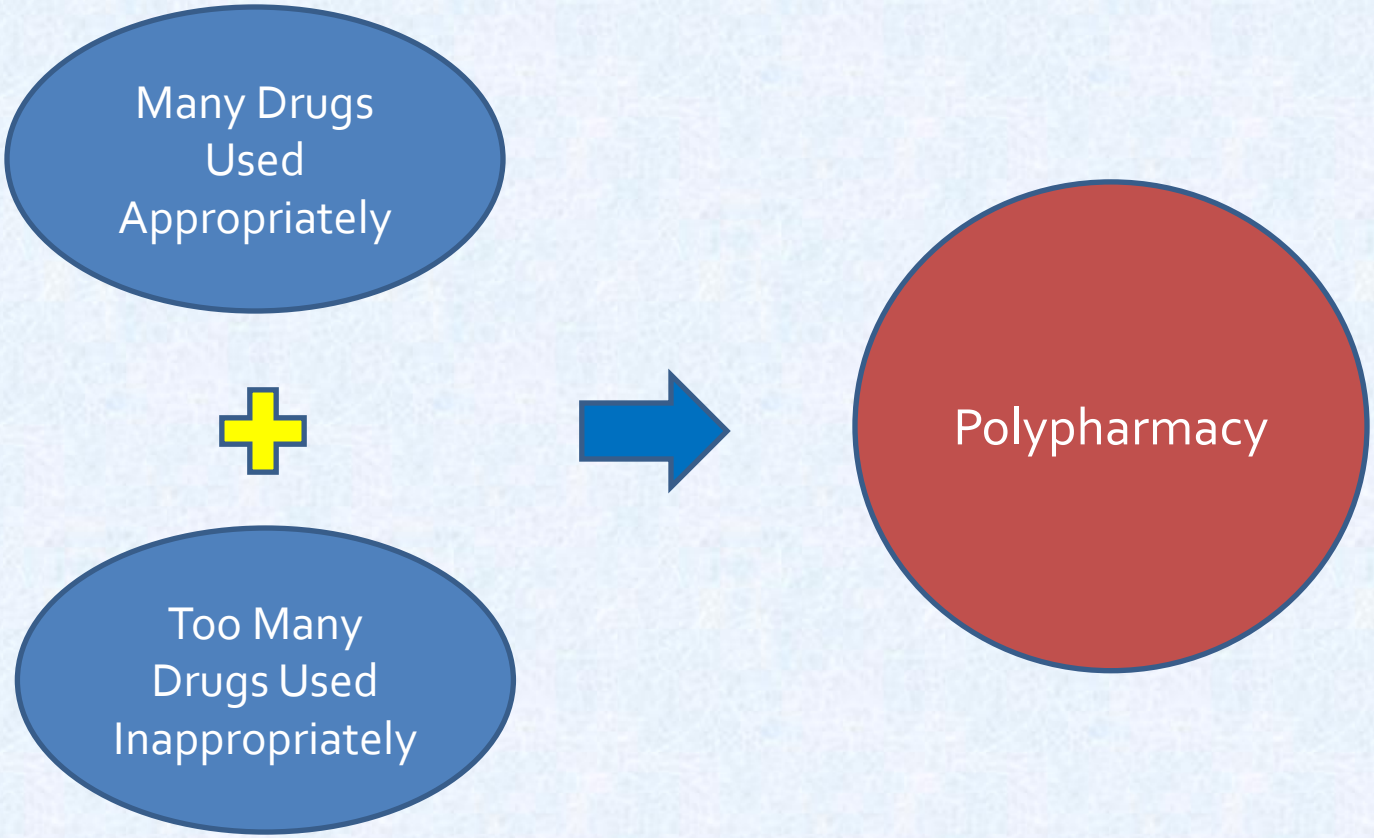
What is “Polypharmacy”?



Cooper,Cadogan et al. 2015
Patterson, Cadogan et at. 2014

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What's the Concern?

- Risk is 15% with two medications
- Risk increases to 58% with 5 meds
- Risk increases to 82% with ≥ 7 meds
- Additional medications lead to greater incidence of drug interactions
- Studies suggest ADE in at least 15% of older adults leading to disability, hospitalization, death.

1. Fulton MM, Allen ER. Journal of the American Academy of Nurse Practitioners 2005;17(4):123–32.
2. Prybys KM. Emergency Medicine Reports 2002;23(11):145–53.
3. Gallagher LP. Applied Nursing Research 2001;14(4):220–4

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Medications and the Elderly

- Receive more than 50% of all prescription medications
- Most who engage in healthcare system take 6-8 medications
- Treating commonly occurring, multiple chronic conditions appropriately (ie. such as HTN, DM, Heart failure) often require multiple medications, based on a “guideline based’ or “disease driven” approach to medications

Pretorius RW et al. Am Fam Physician. 2013;87:331-6

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Common Prescribing Situations Associated with Polypharmacy

- Attempting to treat multiple illnesses
- Attempting to control symptomatology
- Attempting to accelerate onset of action or augment effects of proceeding drug
- Attempting to treat phasic illness (ie affective, anxiety, seizure & neurodegenerative disorders)
- Attempting to treat or prevent adverse effects of other drugs

Werder S and Preskorn S. Current Psychiatry Online; 2(2): February.

Is total drug burden important?

Intervention: Discontinuation of average 2.8 drugs per patient. 119 patient in geriatric nursing care in Israel vs age, gender and co-morbidity matched controls in the same facility.		
	Study Group	**Control Group**
One year mortality rate	21%	45%
Annual referral to ED	11.8%	30%
	Type of medication discontinued	**Outcome**
Example of meds discontinued	Nitrates in patients who had no chest pain for 3 months. Failure defined as return of symptoms or ECG changes.	22 patients had nitrates discontinued with no clinical or ECG changes.
	H2 blockers in patients with no proven peptic ulcer, gastrointestinal bleeding or dyspepsia for 1 year. Failure defined as return of UGI bleed.	Discontinuation of H2 blockers did not cause UGI symptoms in 94% of patients.
	When several antihypertensive agents were used, they tried to remove only one while maintaining the dosage of others. Failure defined as increase in dbp > 90mmHG or sbp>140 mmHG	Discontinuation of blood pressure medications did not cause increased bp in 82% (42/51) of patients.

Garfinkel, Zur-Gil et al. 2007

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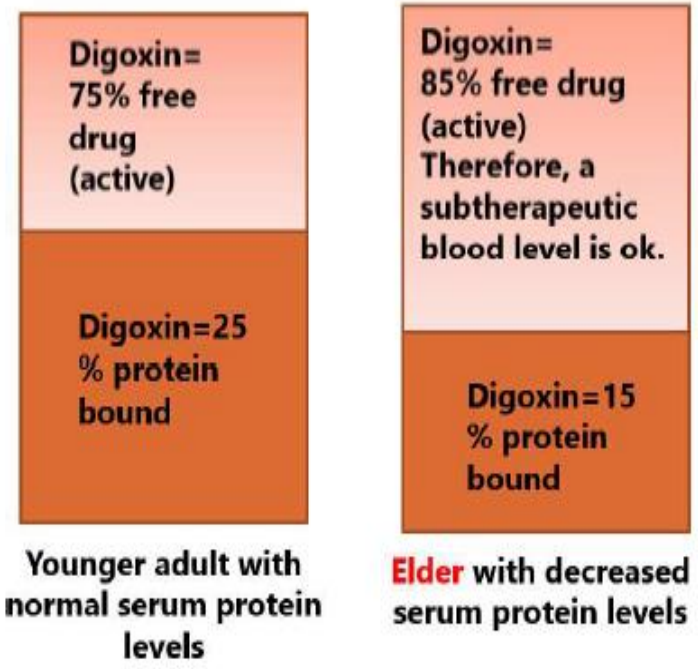
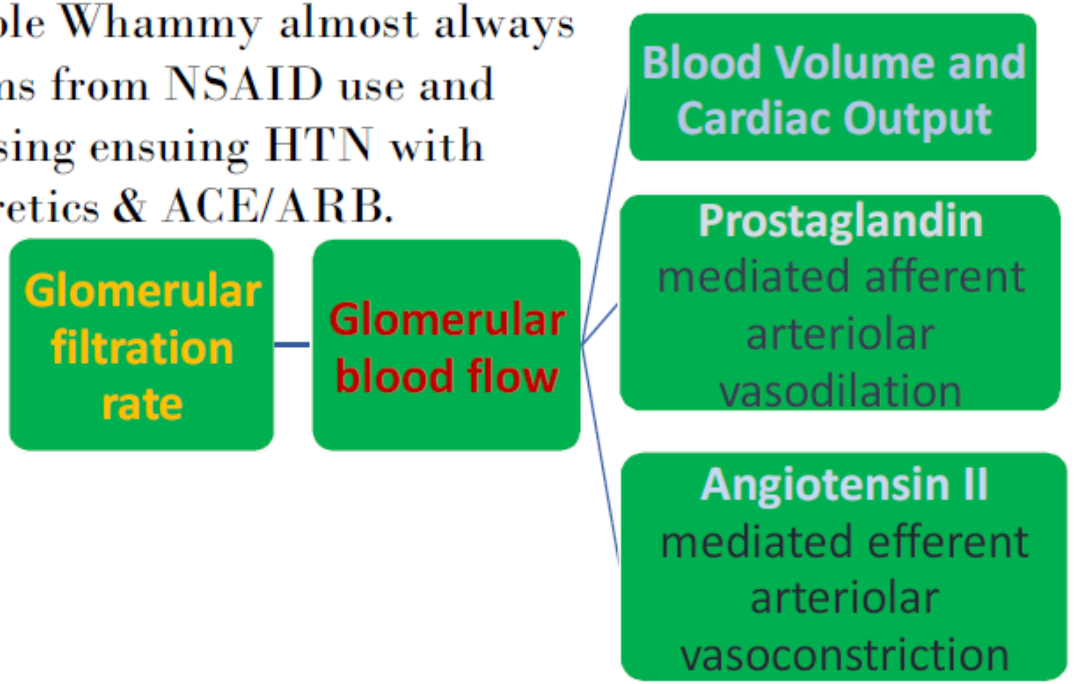
Polypharmacy: Usual Suspects



(Zeevi, Pachter et al. 2010) (Bateman 2004)

Clinical Pearl!

Triple Whammy almost always stems from NSAID use and chasing ensuing HTN with diuretics & ACE/ARB.



Drug induced nephrotoxicity: incidence may be up to 60%!

Ghane Shahrbaf and Assadi 2015
Thomas 2000

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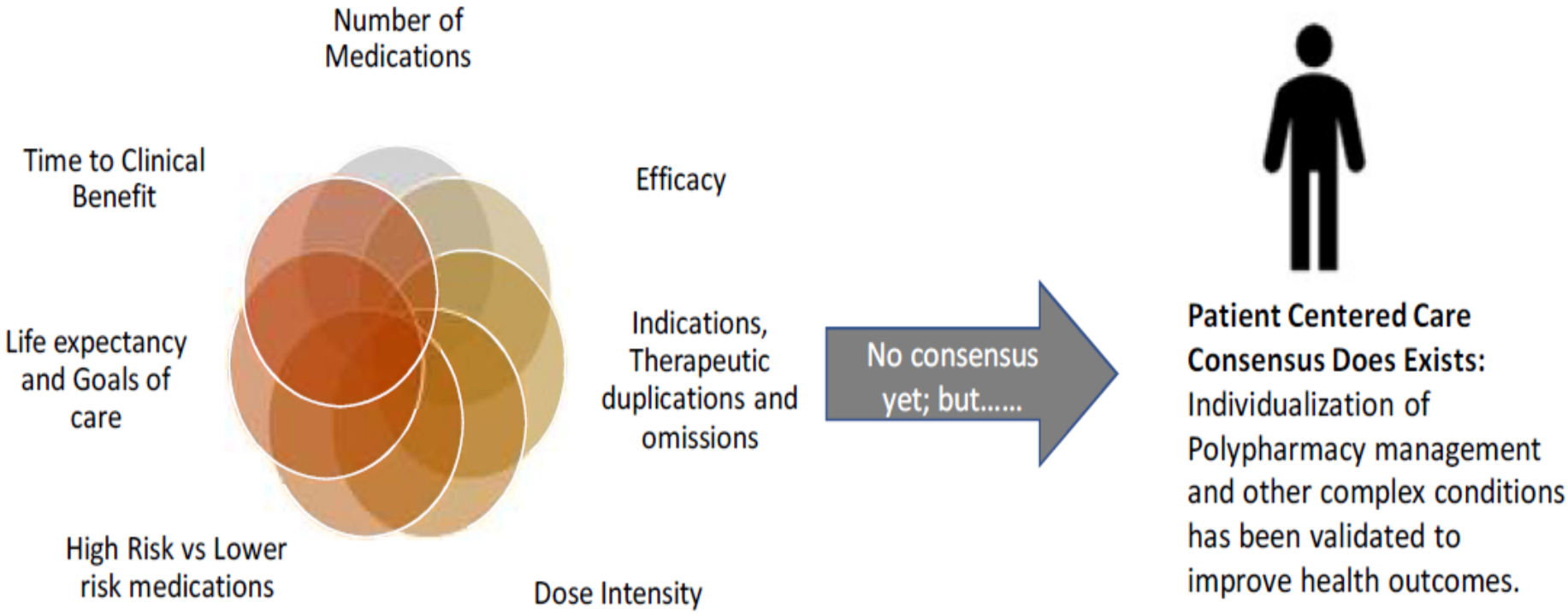
Ways to Study and Approach Polypharmacy



1.American Geriatrics Society Beers Criteria Update Expert 2015) 2. O'Mahony, O'Sullivan et al. 2015 3. Hanlon, Semla et al. 2015 4.Tjia and Lapane 2017
5. Roth, Ivey et al. 2013 6. Crisp, Burkhart et al. 2011

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Deprescribing

"The systematic process of identifying and discontinuing drugs in instances in which existing or potential harms outweigh the existing or potential benefits within the context of patient's care goals, current level of functioning, life expectancy, values, and preferences".

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Towards Evidence-Based Deprescribing

1. Accurately ascertain all current drug use
2. Identify patients at risk or experiencing ADRs
3. Estimate Life expectancy
4. Define overall goals of care
5. Verify current indications for ongoing treatments
6. Determine need for disease specific preventive medications
7. Determine absolute harm-benefit thresholds
8. Review relative utility of individual drugs
9. Identify drugs that can be discontinued and seek consent
10. Devise and implement drug discontinuing plan with close monitoring.

Scott et al Evid Based Med 2013;18:121-4

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ARMOR

- ARMOR (Assess, Review, Minimize, Optimize, Reassess)
- Consolidate recommendations into a functional and interactive tool
- Takes into account
  - patient's clinical profile and
  - functional status
  - balance evidence-based practice

- Stepwise approach for assessment of geriatric patient who:
  1. Receiving nine or more medications
  2. Initial assessment
  3. Seen for falls and/or behaviour and/ or
  4. Admitted for rehab

Haque, R. Annals of Long-Term Care June 2009

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ARMOR		
A	Assess	Beers Criteria Beta blockers Pain medications Antidepressants Antipsychotics Other psychotropics Vitamins and supplements
R	Review	Drug-disease interactions Drug-drug interactions Adverse drug reactions
M	Minimize	Number of medications according to functional status rather than evidence-based medicine
O	Optimize	For renal/hepatic clearance, PT/PTT, beta-blockers, pacemaker function, anticonvulsants, pain medications, and hypoglycemics; gradual dose reduction for antidepressants
R	Reassess	Functional/cognitive status Clinical status and medication compliance

Resources

- BEERS Criteria - Available at http://www.americangeriatrics.org
- Deprescribing.org
- STOPP Criteria
  - Screening Tool of Older Persons' Potentially Inappropriate Prescriptions
- START Criteria
  - Screening Tool to Alert Doctors To Right Treatments

1. American Geriatrics Society 2012 Beers Criteria Update Expert Panel. J Am Geriatr Soc.2012;60(4):616631.
2. Gallagher P, Ryan C, Byrne S, Kennedy J, O'Mahony D. International Journal of Clinical Pharmacology and Therapeutics 2008;46(2):72–83.

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QUESTIONS

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