

Deprescribing, Medication Optimization and the Drug Burden Index

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Presenter Disclosure

- Presenter's Name: Marci Dearing
- I have not a received speaker's fee for this learning activity

Commercial Disclosure

- I have relationship(s) with commercial interests:

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Objectives

- ❖ Discuss polypharmacy, potentially inappropriate medications, and deprescribing
- ❖ Define and review the Drug Burden Index (DBI) and DBI Calculator©
- ❖ Discuss the role of the pharmacist in medication optimization strategies
- ❖ Review pharmacist-led intervention study

Introduction

- ❖ Caring for an aging population is challenging
- ❖ With aging often comes multimorbidity, leading to polypharmacy
- ❖ Older adults are more sensitive to adverse effects due to pharmacokinetic and pharmacodynamic changes
- ❖ Interestingly, concerns about adverse effects of medications was ranked a top health priority by older Canadians

Older Adults



- ❖ High risk of prolonged hospital stays, institutionalization and death
- ❖ High rate of readmission to hospital
- ❖ Frailty
- ❖ Risk of functional deterioration
- ❖ Medical errors
- ❖ Polypharmacy and potentially inappropriate medications (PIMs)
- ❖ Delirium

Polypharmacy

What is the definition of polypharmacy?

- A) Taking more than one medication
- B) Taking four or more medications
- C) Taking five or more medications
- D) Taking ten or more medications
- E) Taking more medications than one can handle

Polypharmacy

- ❖ Definition is variable
- ❖ Majority of studies define polypharmacy as **FIVE** or more medications
- ❖ More medications than clinically indicated
- ❖ May vary depending on setting

- ❖ Multiple medications may be appropriate



Too Many Medications?

- ❖ 2 out of 3 Canadians (66%) over the age of 65 take **5 or more prescription medications**
- ❖ 1 out of 4 Canadians (27%) over the age of 65 take at least **10 different prescription medications**
- ❖ 89% of older inpatients were willing to stop one or more of their regular medications

Potentially Inappropriate Medication Use

- ❖ Almost **half of older adults** are taking one or more medications that are potentially inappropriate
- ❖ Carries significant morbidity and mortality as well as treatment burden
- ❖ Anticholinergic, sedative/hypnotic, antipsychotic, cardiac medications, NSAIDs, etc.

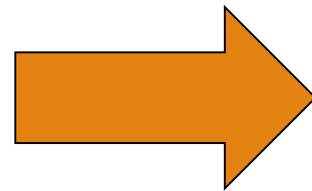
Deprescribing

‘Deprescribing is the process of withdrawal (or dose reduction) of an inappropriate medication, supervised by a health care professional with the goal of managing polypharmacy and improving outcomes.’



Potential Benefits of Deprescribing

- Reduced ADRs
 - Falls
 - Cognitive impairment
- Reduced hospitalizations
- Reduced mortality
- Improved adherence
- Reduced financial costs
- Improved quality of life
- ***No change (?)***

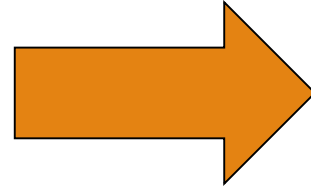


Limited information about long term clinical benefits
Best data on benefits of known high risk medications in specific populations



Potential Harms of Deprescribing

- Adverse drug withdrawal reactions
- Return of medical condition
 - ?long term negative effect to interruption of therapy
- Pharmacokinetic and pharmacodynamic disruptions
- Damage to the doctor-patient relationship
 - Psychological impact on the patient
 - Feeling of being 'given up on'



Likely safe with minimal harms when planned and monitored



Deprescribing

❖ What is the best approach?

❖ Tools to aid in clinical decisions

❖ Resources



Do I still need this medication?

Too many meds?
The risk of harmful effects increases when you take more medications.

Medication harms

- Drug interactions
- Memory problems
- Falls & fractures
- Hospitalizations

Who's at risk of medication harms?
Everyone, but especially:

- People who take lots of medications
- Women
- People over the age of 65

5 questions to ask your doctor or pharmacist

1. Why am I taking this medication?
2. What are the potential benefits and harms of this medication?
3. Can it affect my memory or cause me to fall?
4. Can I stop or reduce the dose of this medication?
5. Who do I follow up with and when?

Always speak to your doctor or pharmacist before stopping any medication.

www.deprescribingnetwork.ca

Resources



**Canadian
Deprescribing
Network**





Deprescribing Opportunities in Hospital

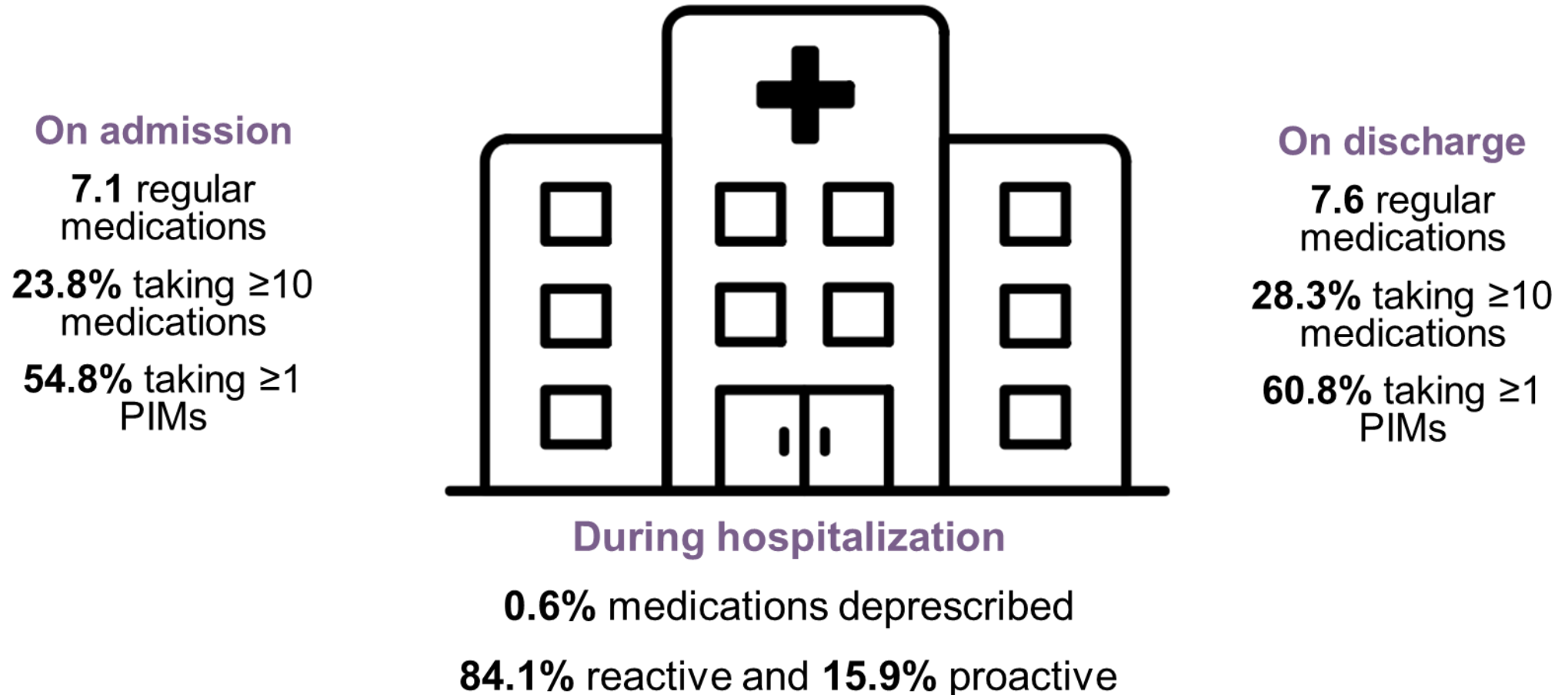
- ❖ Medication history is routinely done
- ❖ Close monitoring
- ❖ Collection of full history and investigations, routine discussion and consideration of patient specific factors
- ❖ Multidisciplinary team

Barriers to Medication Optimization

- ❖ Presentation of an acute problem
- ❖ The culture is to prescribe more medications, with stopping a lower priority
- ❖ Inertia in work practice, and reluctance to question a colleague's prescribing decisions, may lead to prescribing medications without review
- ❖ Fragmented care – difficulties accessing complete medical histories
- ❖ Fear of consequences
- ❖ Lack of processes



Medication Optimization During Hospitalization



Deprescribing Post Discharge

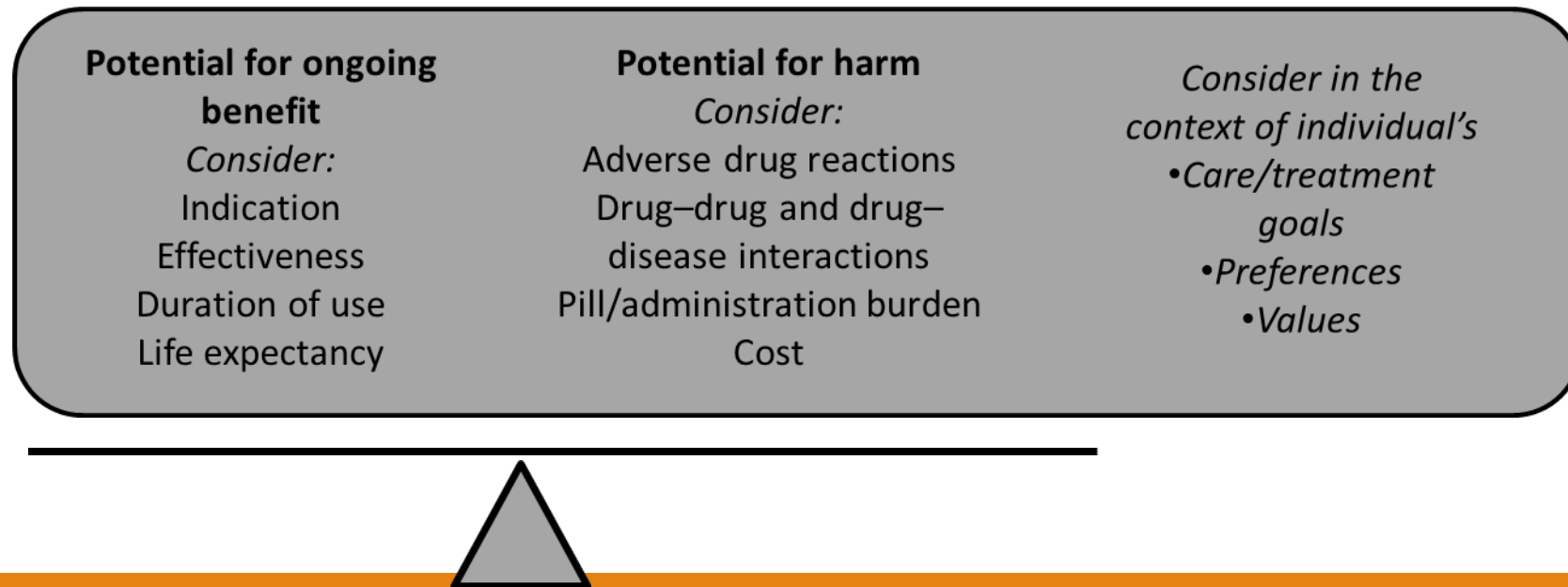
22% of medications that were intentionally ceased during hospital admission were **restarted** in the 5 months following discharge

27% of medications that were ceased in hospital due to an ADR were **restarted** in the following 6 months

Intervention study (comprehensive geriatric assessment) - 25% of medications that had been ceased were **restarted** within 1 year

Optimizing Medication Use

Appropriate use of medications involves both **prescribing medications which are appropriate** and will benefit the individual and **deprescribing medications where the risks outweigh the benefits**



Pharmacist Role in Medication Optimization

Catalyst for
deprescribing

Tools can assist in
deprescribing

Patient
interaction

Collaboration

Improving
outcomes

Project Introduction

- ❖ Pharmacist-led intervention to improve medication use in older in-patients: the Drug Burden Index (DBI)
- ❖ The DBI Calculator© is a clinical tool to enhance deprescribing in hospital
- ❖ Five wards within NSHA, Central Zone
- ❖ Patients ≥ 70 years old taking one or more medications with an anticholinergic or sedative effect regularly
- ❖ Started February 2019

Anticholinergic and Sedative Medications

Intended Effect
(central to therapeutic
action)

- Anticholinergics: i.e. allergic rhinitis, urinary incontinence, nausea/vomiting
- Sedatives: i.e. insomnia

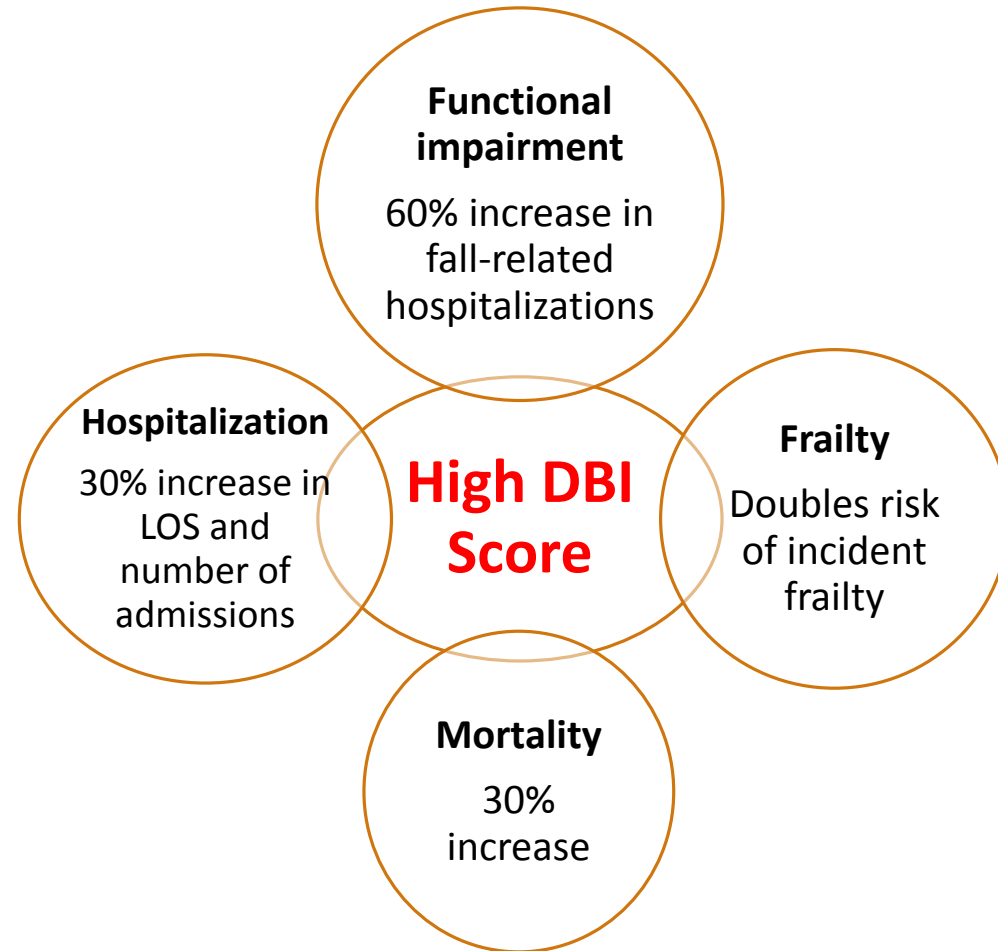
Unintended Effect (not
central to therapeutic
action)

- Anticholinergic: i.e. antidepressants, antipsychotics
- Sedatives: i.e. opioids, anticonvulsants

Concerns

- Reduced/limited efficacy in older adults
- Increased risk of harms in older adults
- Negative effects of combinations

Why is the DBI Important?



DBI Score

- ❖ DBI score has been associated with **poorer physical function, reduced quality of life, frailty, falls and hospital readmission** in several studies
- ❖ **Cognition and mortality** have been affected by DBI score **in some studies, but not others**
- ❖ Longitudinal studies have found increased DBI is associated with **lower physical function, poorer delayed memory performance, increased physician visits and mortality**

Implementation of the DBI Calculator©

- ❖ Use of the DBI Calculator© to enhance communication between healthcare professionals
- ❖ Provides guidance for deprescribing of anticholinergic and sedating medications
- ❖ Increasing DBI associated with negative outcomes
- ❖ Validated in other countries
- ❖ Supports deprescribing

Pharmacist Activities



Enter medications into system
(online DBI calculator)



System calculates DBI score and
generates recommendation
report to discuss with team and
then patient/family



Medication calendar and
discussion on discharge

The DBI Report

The Drug Burden Index Report

This report is part of a research study conducted by Royal North Shore Hospital and the University of Sydney

Patient Name Test One Canada	Date of Report 14/09/2018
DOB 02/01/1948	General Practitioner Dr Test

This patient has the following potential **anticholinergic and sedative side effects**

Falls

Medication	Frequency	DBI	Deprescribe?	Medication	Frequency	DBI	Deprescribe?
perindopril arginine 10mg	Daily	0.00		temazepam 10mg	nocte	0.50	
paracetamol 500mg	2-4x daily prn	0.00		amitriptyline 25mg	nocte	0.71	▶
hydrochlorothiazide 25mg	Daily	0.00		tiotropium 18mcg	1 puff daily	0.00	▶

Total DBI for this patient: **1.21**



Low risk: DBI = 0

Moderate risk: $0 < \text{DBI} < 1$

High risk: DBI ≥ 1

Note: When one medication is entered multiple times, the total DBI is calculated as a cumulative dose. Individual components may not add up to sum total.

What is the Drug Burden Index (DBI)?

The DBI is a measure of a patient's total exposure to medications with **anticholinergic and sedative** properties only.

Why is the DBI important?

High DBI is associated with poor clinical outcomes in older patients including:

Functional impairment e.g. balance, falls

60% increase in fall-related hospitalisations

Hospitalisation

30% increase in length of stay and number of admissions

Frailty

Doubles risk of incident frailty

Mortality

30% increase

What does the score mean?

The DBI score measures the risk of functional impairment from a patient's prescribed anticholinergic and sedative medications

What can you do?

- Review all of your patient's medications that contribute to DBI score and may be impairing their function
- Review all of your patient's medications as risks and benefits of medicines change over time, and polypharmacy is associated with adverse outcomes in older people
- Where clinically appropriate, trial dose reduction or cessation of those medications where risk outweighs benefit

Preliminary Intervention Results

Baseline Characteristic	N=27
Clinical Frailty Scale [mean]	5.26
Number of Comorbidities [mean]	7.67
Number of Falls in the Last Year [mean]	3.26
Reason for Admission [total (percent)]	
Falls/Fracture	7 (26)
Pneumonia	3 (11)
Falls	2 (7)
Total Number of Medications [mean]	7.56
Number of DBI Medications (ATC Code) [total]	
Antidepressant (N06A)	22
Hypnotic/Sedative (N05C)	8
Antiepileptic (N03A)	7

Results are available for 27 participants

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graph TD; A[Results are available for 27 participants] --> B[Mean DBI score was 1.34 (standard deviation (SD)=1.11) on admission and 1.09 (SD=0.99) on discharge]; B --> C[No adverse medication-associated events related to the intervention have been observed];
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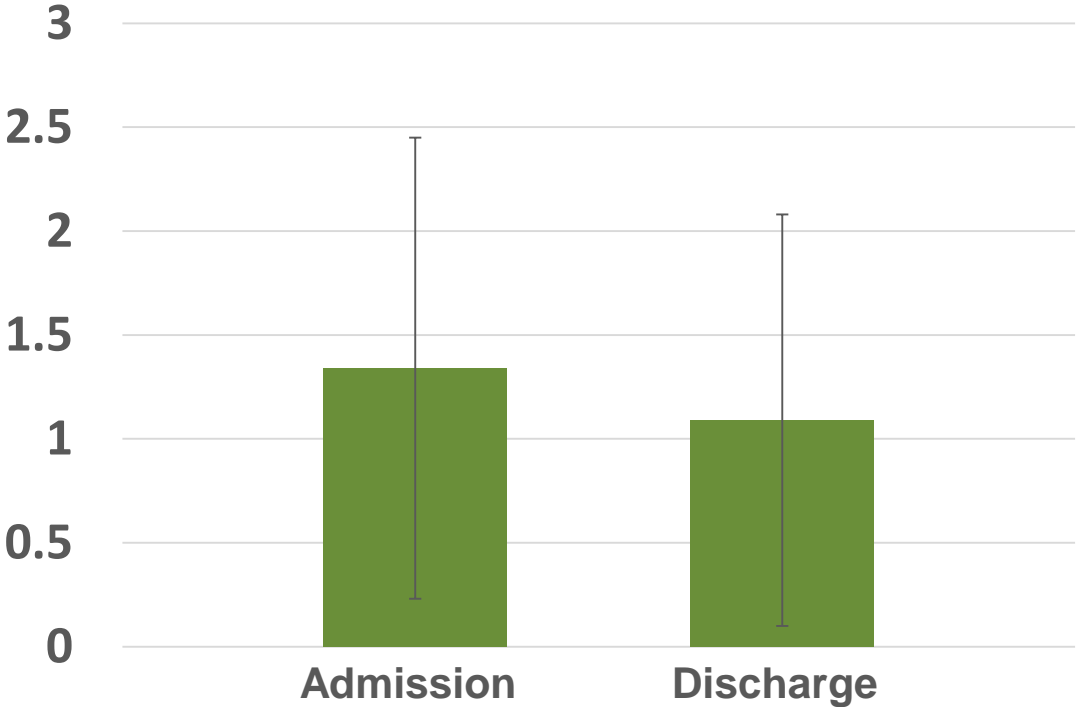
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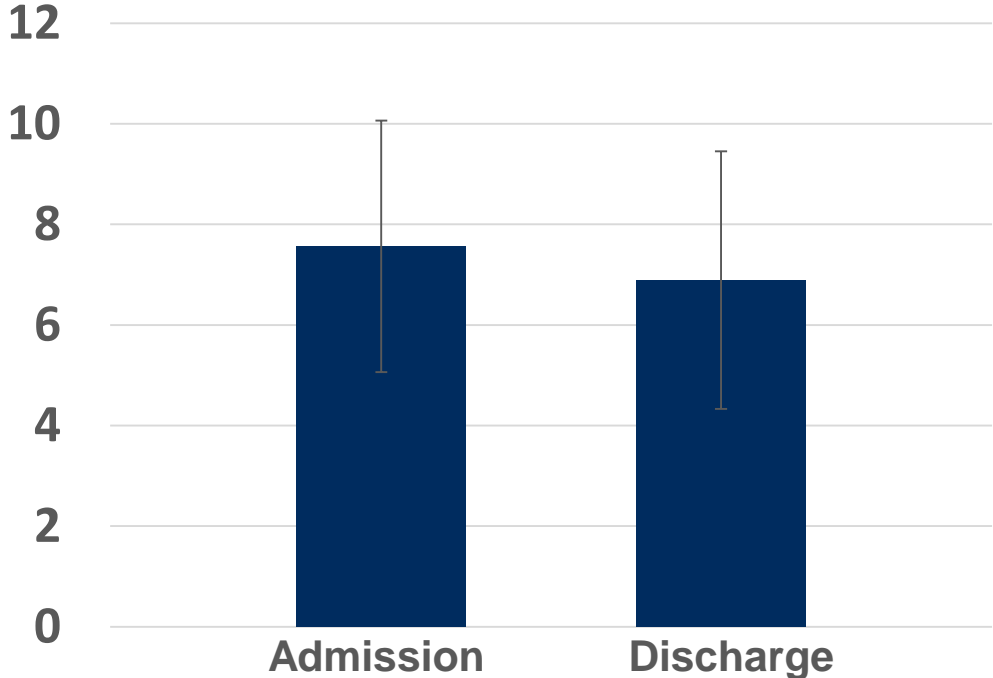
Results to Date

Results to Date

DBI Score [mean]

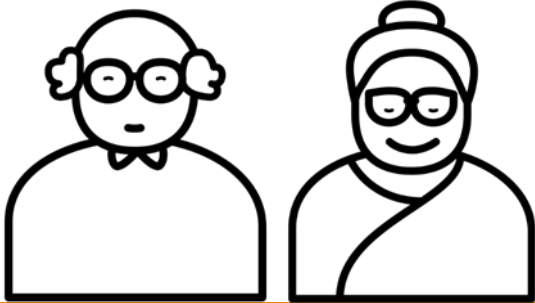


Total Medications [mean]



Results to Date

Preliminary results indicate that the intervention may be effective at reducing DBI scores in older adults during hospitalization which could lead to reduced medication-related harms.



After Discharge



- ❖ Communication with primary care provider and regular pharmacy
- ❖ Follow-up at 3 months to determine sustainability and impact of intervention
- ❖ Assessing DBI score, ER visits, rehospitalization, and mortality
- ❖ Sub-study to determine barriers and enablers to success of implementation

Deprescribing Research in Hospital

- ❖ A recent pharmacist-led RCT using the DBI Calculator© found that the intervention group had a greater reduction in their DBI score, **improved clinical outcomes, and fewer new adverse drug reactions while in hospital**
- ❖ The MedSafer Study: A Controlled Trial of an Electronic Decision Support Tool for Deprescribing in Acute Care **increased the proportion of patients deprescribed PIMs** at hospital discharge
- ❖ Shed-MEDS: pilot of a patient-centered deprescribing framework **reduces medications** in hospitalized older adults being transferred to inpatient post-acute care

Take Home Points



Polypharmacy is a prevalent and concerning issue



Opportunity to improve health outcomes in older adults



Potential for pharmacist intervention



Opportunities and barriers to deprescribing



Project aims to describe feasibility and evaluate success of The DBI Calculator© implementation

Questions?



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