

Medication Optimization in the Geriatric Client

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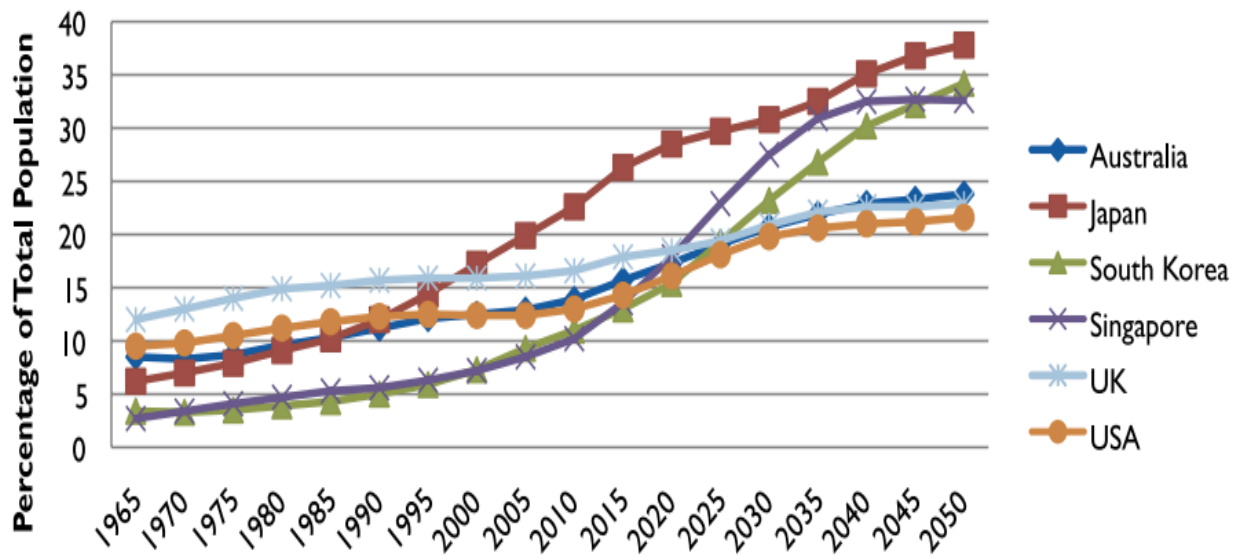
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In 2015, 12% of the population in SG was ≥ 65 years; expected to double in the next 15 years!

I-I. Population Aging Trends, % of Total Population Aged 65 and Above, Medium Variant, International Comparison



Source: Population Division, Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2008 Revision*

Demographics

2014 report:

“The World Health Organization defines an aged society as one where **14%, or more, of the population is aged 65 years and above.**”

“Singapore will become an aged society in the next 5 years” ...”by 2050 will surpass the UK and the USA with respect to percent seniors.”

http://tsaofoundation.org/doc/Profile_Of_Older_Men_-_Singapore.pdf



The Elderly in Canada: Medication Use

- Use 40% of the drugs prescribed
- Use 3x more drugs than their proportion of the population
- Increased use of non-prescription drugs (>50%)
- Inappropriate medication use is associated with nonadherence, adverse reactions, fall risk, errors, hospitalization, mortality
- 2010-11: 14.2% of Canadians were seniors, but accounted for 57.6% of adverse drug reaction-related hospitalization between 2006 and 2011



The Elderly

- More medications = higher risk for adverse drug reactions (ADRs)
- Risk increases with > 4 meds and rises dramatically when ≥ 9 , multiple doses/day (>12)
- Adverse drug reactions account for 11-31% of hospitalizations for the elderly!



Overview

I. Changes to the body with aging

- Physiological changes
- How drugs are handled by the body

II. The Geriatric Syndromes

- Cognitive Impairment
- Falls prevention
- Urinary Continence
- Osteoporosis

III. Polypharmacy and Deprescribing

IV. Medication reconciliation during transitions of care

V. Tips on Medication management

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Optimal medication use in Older individuals

- **Social issues** (caregiver, housing, living alone)
- **Economic issues** (nutrition, financial stress, safety)
- **Ethical issues** (informed decision making, elder abuse, driving)
- **Care:** (home, LTC)
- **Medical issues** - complex

I. Changes to the body with aging

- Physiological changes
- Impact on how drugs are handled in the body:
 - Pharmacokinetic changes: how a drug is absorbed, distributed, broken down and excreted
 - pharmacodynamic changes: how a drug works in the body at the receptor level



The Aging body

- Skeletal muscle changes; overall decrease in amount of muscle; proportionally increase in body fat
- Decrease in bone density; bone can be more fragile
- Changes in organ function:
 - Decrease in kidney function
 - Changes in liver function



The Aging body

- The body is slower to respond to changes in blood pressure that occurs with change in position
- Hearing changes: loss of high frequency hearing
- Visual changes: loss of near vision, slower accommodation to lighting, cataracts
- Sleep efficiency decreases; more awakenings



The Aging body

- Cognitive and memory changes
- Increase in cognitive impairment; by 85 yo, 1/3 have some impairment
 - Attention (to perform tasks) often preserved; accumulated knowledge increase
 - Semantic knowledge (word retrieval) declines
 - ↓ reaction time, problem-solving



The Aging body: impact on drug therapy

- Drugs **excreted by the kidney** stay longer in the body
 - Dosing based on Creatinine Clearance
- Some drugs **metabolized by the liver** will require dose changes or should be avoided
- Blood pressure medications – **sensitive to drop in blood pressure** when changing position – orthostatic hypotension
- More **sensitive to central nervous system effects** of drugs
- ***Older patients may experience side effects before noticing the positive effects of drugs***

GERIATRIC SYNDROMES



Common Geriatric Conditions: Geriatric Giants

- Cognitive Impairment (delirium, dementia, depression)
- Postural Instability and Falls
- Urinary Incontinence
- Osteoporosis

Geriatric Giant: Cognitive Impairment

- Delirium
- Dementia
- Depression



Delirium

- Decrease in attention with some disorganized thinking; also patient may be disoriented and may have memory impairment
- Usually acute onset
- Up to 60 % of elderly hospitalized patients for surgery may experience it!
- Medical emergency!
- Causes – drugs (e.g. sedatives, anticholinergics, opioids), infection, pain, metabolic disturbances
- Treatment – quiet, dim room, 1:1 care, hydration, reorientation, d/c drugs that might be causing



Dementia

- new onset cognitive changes that interfere with social and/or occupational functioning
- Prevalence increases with advancing age
- Types: Alzheimer's Dementia (AD) most common (65%), Vascular Dementia, Mixed Vascular + AD, Dementia Lewy Body (DLB) and Frontotemporal Dementia (FTD) each ~ 10 %
- Progressive and irreversibile

Alzheimer's Dementia

- Early on, see memory problems such as forgetting appointments, misplacing items.
- Difficulty performing complex tasks such as paying bills
- Difficulty with names, may not be able to follow a conversation

Alzheimer's Dementia

- While driving may get lost; lost in familiar places
- Apathy and disinterest in surroundings
- May have increase in daytime sleeping; disturbed sleep
- Disinhibiting behavior such as impulsivity, or socially inappropriate behaviour



Mini Mental State Examination (MMSE)

- MMSE 26-30: mild cognitive impairment (preclinical)
 - May not progress to AD
 - Reported by patient or care giver of memory loss
- MMSE 21-25: Early, mild impairment
 - Disoriented to date
 - Naming difficulties
 - Decreased insight
 - Social withdrawal



Mini Mental State Examination (MMSE)

- MMSE 11-20: Moderate Impairment
 - Disoriented to date, place
 - Comprehension difficulties
 - Impaired calculating skills; can't cook, shop, etc.; restless, anxious, depressed
- MMSE 0-10: Severe Impairment
 - Nearly unintelligible verbal output
 - Remote memory gone
 - Unable to write
 - Incontinent; no longer dressing on own



Delirium
vs
Dementia



Decreasing risk for cognitive changes

- Blood pressure control (Canada) – target:
 - **If > 80 of age, aim for < 150/90**
 - Pt < 80 years of age, has diabetes:
 - target would be < 130 / 80
 - If pt does not have diabetes- the target would be < 140 / 90



Decreasing risk for cognitive changes

- Blood glucose control in those with diabetes (Canada)
 - Frail elderly: target **A1C \leq 8.5%**
 - Potential benefit of treatment vs risks (hypoglycemia, hypotension, falls)
 - FBG: **5.0 – 12.0 mmol/L** (depending on frailty)
 - Hypoglycemia: Cognitive impairment, falls



Depression

- Most common psychiatric condition in the elderly
- This is often not recognized and is undertreated
- Screening tool: Geriatric Depression Scale (GDS)
- Older individuals experience many conditions / factors that may increase risk for depression: bereavement, dementia, admission to a LTC facility, social isolation, stroke, Parkinson's disease, chronic pain, chronic conditions



Depression- treatment

- Non-pharmacologic – psychotherapy
- Avoid using older agents such as the tricyclic antidepressants (TCAs) due to high anticholinergic effects
- Selective serotonin reuptake inhibitors (SSRI's) safest in elderly; less interactions with other meds



Postural Instability and Falls

Orthostatic Hypotension: Significant drop in BP when changing from lying/sitting position to standing
-20 mmHg systolic / 10 mmHg diastolic
-Can result in dizziness, faints, falls

Many other potential causes:

-diarrhea/vomiting, anemia, Parkinson's disease, deconditioning and prolonged bed rest
Medication-related causes



Predisposing risk factors for falls:

- Previous falls
- Balance impairment
- Decrease muscle strength
- **Medications**
- Gait impairment & walking difficulty
- Visual impairment
- Arthritis
- Pain
- Cognitive impairment
- Depression
- Dizziness & orthostatic hypotension
- Functional limitation
- Age >80
- Female
- Low BMI
- Urinary incontinence
- Diabetes

Drug-induced falls

- Benzodiazepines
- Antidepressants
- Anticonvulsants
- Antipsychotics
- Antihistamines
- Anticholinergics
- Sedatives/hypnotics
- Anxiolytics
- Opioid analgesic
- Antihypertensives
- Antiarrhythmics
- Vasodilators
- NSAIDs
- Metoclopramide
- H2-blockers

Geriatric Giant:

Urinary Incontinence

- Involuntary loss of urine in sufficient amount or frequency to constitute a social or health problem

Types:

Urge – leakage due to urgency

Stress – leakage due to cough, laugh, sneezing

Mixed – Urge and Stress

Overflow – leakage due to overextended bladder

Functional – leakage due to inability to toilet

Reversible causes of Urinary Incontinence

- **D** delirium
- **R** restricted mobility, retention.
- **I** infection, inflammation, impaction (fecal).
- **P** polyuria, pharmaceuticals

Drug-induced causes of Urinary Incontinence

- Alpha blockers e.g. terazosin
- **Anticholinergics e.g. amitriptyline**
- Antipsychotics/neuroleptics
- Calcium-channel blockers e.g. diltiazem
- **Antihistamines e.g. diphenhydramine**
- **Diuretics e.g. furosemide**
- Drugs for Alzheimer's Disease e.g. donepezil
Metoclopramide
- Opioids
- Phenytoin
- Sedatives/hypnotics e.g. lorazepam
Skeletal Muscle Relaxants e.g. methocarbamol,
baclofen

Geriatric Giant: Osteoporosis

- In Canada, one in 3 ♀ and one in 5 ♂ will suffer from an osteoporotic fracture in their lifetime!
- Causes 70-90% of the 30,000 hip fractures that occur in Canada each year
- 23 % of those who fracture a hip die within the first year!
- In Singapore, approx. 900 hip fractures occur each year

Osteoporosis

- ↓ Bone mass and bone strength
- Bones fragile and break easily
- Post-menopausal loss of estrogen
- Other causes: renal/liver failure, hyperthyroidism, glucocorticoid excess, chronic steroid use, phenytoin, long-term heparin use, reports of fracture with proton pump inhibitors, etc.

Polypharmacy
&
Deprescribing

Polypharmacy - Definition

- An individual being on complex medication regimens:
 - Being on five or more medications
 - Some literature indicate 6 or more or 9 or more
 - Use of unnecessary medications

Managing Polypharmacy

- Guidelines available to identify inappropriate drugs – e.g. Beers List
- Guidelines available to consider appropriateness of medications:
 - START (Screening Tool to Alert doctors to Right Treatment)
 - STOPP (Screening Tool of Older Persons' potentially inappropriate Prescriptions)

Deprescribing

Deprescribing is the **planned process of reducing or stopping medications** that may **no longer be of benefit or may be causing harm**. The goal is to reduce medication burden or harm while improving quality of life.

Ref: www.deprescribing.org

Deprescribing

- Team input and management
- In LTC: personal support workers, nursing aids are key to monitoring the patient's response
- To observe changes in the patient and bring this to the attention of the care team

Tips on Medication Management

Medication Reconciliation during transitions of care

- 1 in 5 patients discharged from a general medicine service to home experienced an adverse event, and 72% of the adverse events were related to medications (Forster, 2004)
- In a small study, 77% of patients discharged from an acute care institution had at least one drug therapy problem in the 2 weeks following discharge, linked to gaps in the transfer of medication-related information (Cameron, 2010)
- Following hospital discharge, interventions that include a comprehensive medication management service, have demonstrated positive patient outcomes (Pellegrino, 2009)

Medication Reconciliation during transitions of care

- **Review of medications** when clients are transferred from a nursing home to an acute care institution and vice versa
- Ensure that **medication changes in the hospital** are clearly communicated to the nursing home staff; to monitor the client for any changes
- **Effective communication** – importance of a **discharge summary**
- New drugs – to ensure that **the indication for the drug is clearly recorded**
- **Well defined interventions**; visits to the home; clear communication between team members

Presentation of adverse drug events in the elderly

- Delirium
- Falls
- Fractures
- Urinary incontinence or retention
- Fecal incontinence or constipation
- Hypotension
- Electrolytes disorders
- Heart Failure
- Depression
- Hospitalization
- Death

Risk factors for ADR in the elderly

- Number of medications
- Comorbidity – remember the Geriatric Giants
- Age-related changes in the body
- Multiple prescribers

Caring for the Older Adult

- Many “geriatric” problems are multifactorial
- Atypical Responses to Illness
 - Confusion due to infection
- **A multidimensional approach to management;** we need to consider the medical, functional, and psychosocial status of the individual
- Not to assume that it is ‘because of your age’
- Polypharmacy issues may become visible due to an adverse event
- **The pharmacist has an important role in enhancing health outcomes of older adults!**

Key points to consider...

- Caring for the elderly requires a holistic, **team approach!**
- Patient and care-givers are part of this team!
- Engaging patients in their own care can contribute to positive health outcomes
- Polypharmacy and inappropriate medication use can lead to **adherence issues!**
- Consider various strategies to increase adherence: clear **communication** of how medication can help and how to address any side effects

Key points to consider...

- Informing patient/care-giver on **when to seek assistance**
- Consider **prescription labels** – size, language
- Prescription bottle: access and safety!
- When any new symptoms arise, always check **if this is caused by a drug!**
- “Start Low and Go Slow” *but keep going!*