Sinai Health | Healthy Ageing and Geriatrics

UHN Toronto General Toronto Western Princess Margaret Toronto Rehab Michener Institute

NIA NATIONAL INSTITUTE ON AGEING

Healthy Ageing 101:

Navigating The Good, The Bad and Avoiding The Ugly: Practical Medication Tips for Older Adults from An Expert Pharmacist

Sabrina Haq BScPharm

Geriatrics Pharmacist - Rexall, Sinai Health and University Health Network

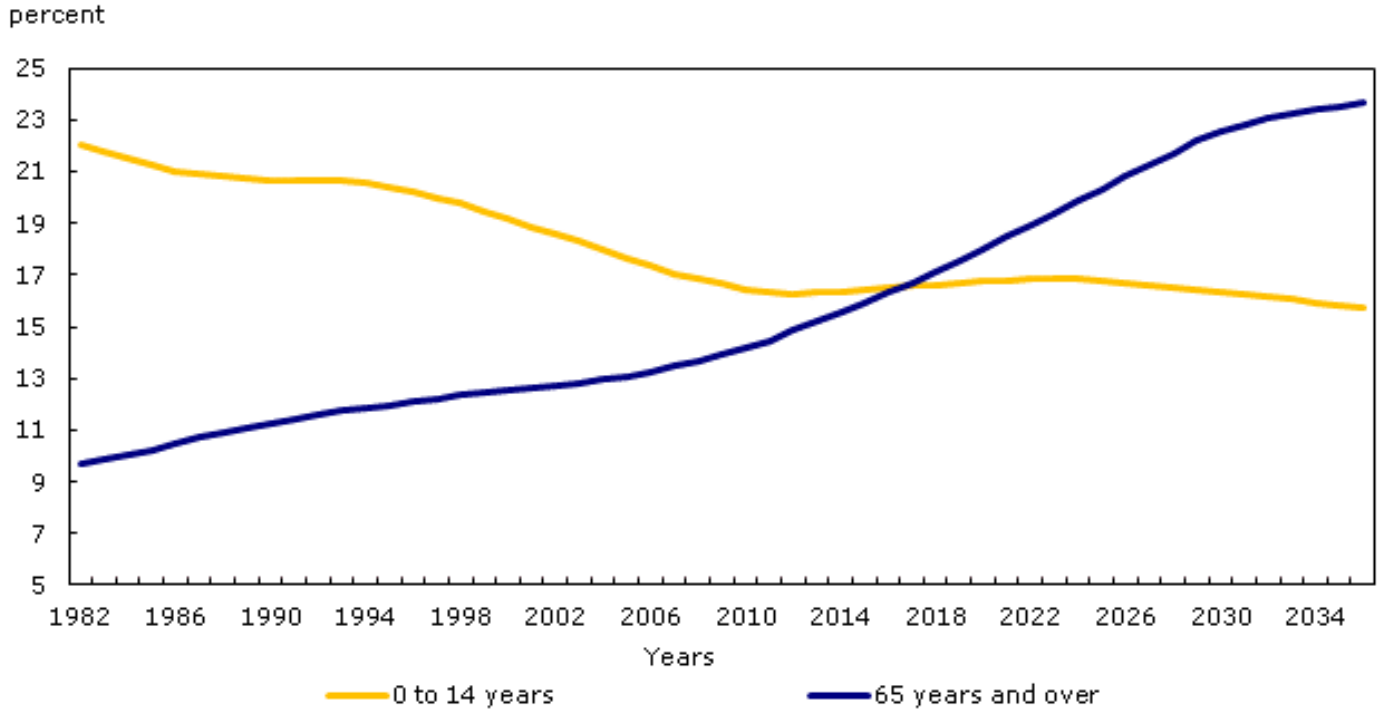
Bridgepoint Active Healthcare | Circle of Care | Lunenfeld-Tanenbaum Research Institute | Mount Sinai Hospital Joseph and Wolf Lebovic Health Complex

Content

- Demographic of Older Population
- Drug Use in Elderly
- Polypharmacy
- Beers Criteria
- Medications to Avoid in older adults
- OTC Medications to Avoid
- Non-Compliance/Non-Adherence
- Medication Management Strategies
- Medication Review

The Ageing Population…

Proportion of Population aged <15 years old and >65 years old, 1982 to 2036, in Canada

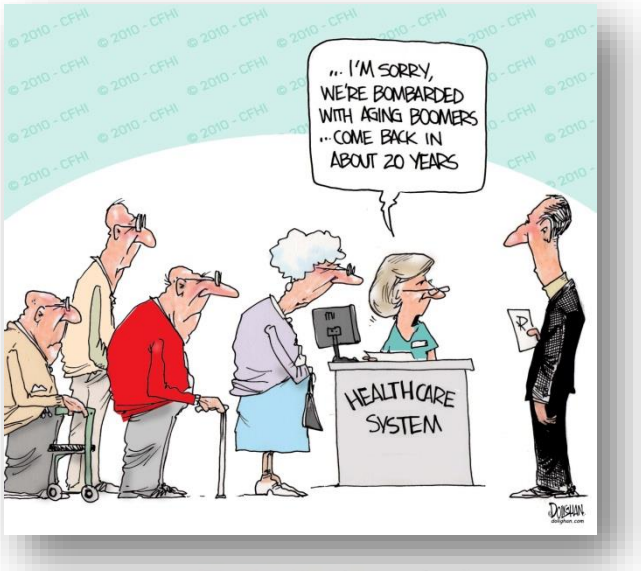


Note: From 1982 to 2012, population estimates. From 2013 to 2036, Population Projections for Canada, Provinces and Territories, 2009-2036, medium-growth scenario (M1), Catalogue no. 91-520-X.

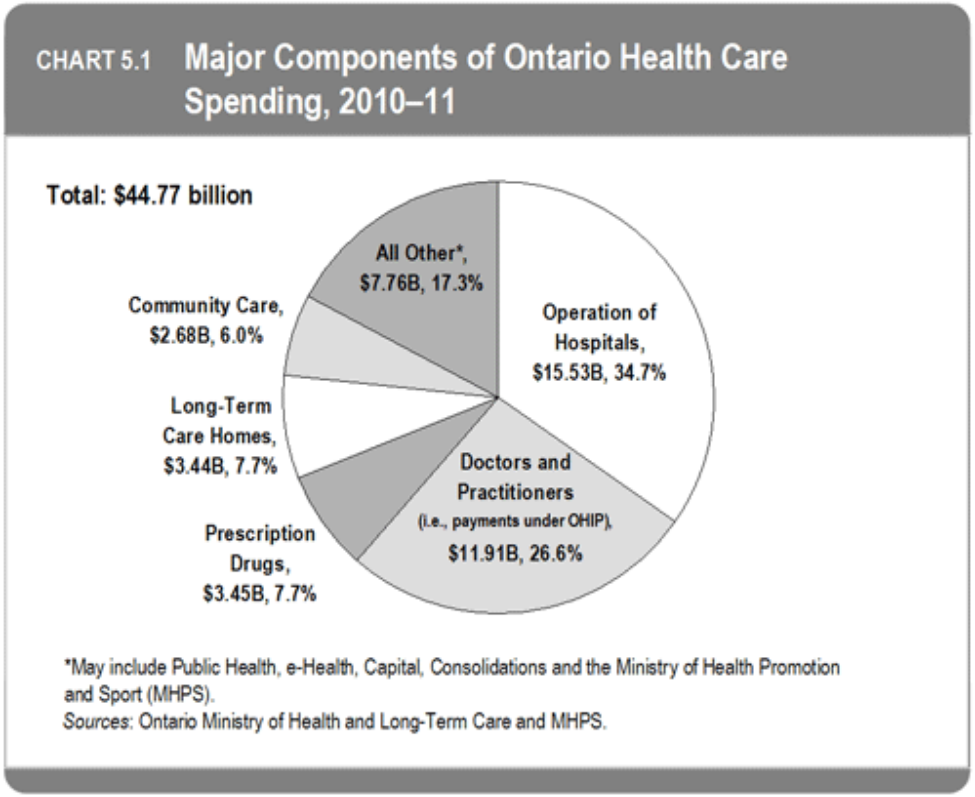
http://www.statcan.gc.ca/pub/91-215-x/2012000/ct008-eng.htm

The Ageing Population…

- By 2052: the eldest seniors (age 85 and older) will account for 24% of all seniors
- In 2011, 14.8% of Canadians were 65+, but accounted for nearly half of all health and social care spending



The Ageing Population & Cost of Care



Ontario Drug Plan (ODB) constitutes 10% of Ontario's health expenditure ($4.5 billion) and 75 % of the cost relates to drugs for seniors

http://www.cdhowe.org/pdf/Commentary_326.pdf
http://www.fin.gov.on.ca/en/reformcommission/chapters/ch5.html#_ftn2

Medication Use in Elderly

- 2 out 3 seniors on public drug programs have claims for 5 or more drugs from different drug classes
- Nearly one in 4 have claims for 10 or more drugs
- Seniors are high users of Non-prescriptions drugs (OTC, Herbals, Vitamin/Minerals)
- 2010-11: 1 in 200 Canadian seniors had an ADR- related hospitalization (1:1000 non-seniors)
- 2010-11: 14.2% of Canadians were seniors, but accounted for 57.6% of ADR-related hospitalization between 2006 and 2011

https://secure.cihi.ca/free_products/HCIC_2011_seniors_report_en.pdf

Common Medications Associated with ADR's

Table 3: Top 10 Drug Classes Most Commonly Associated With Seniors' ADR-Related Hospitalizations, 2005–2007 to 2010–2011

Drug Class	Common Uses	Most Common Diagnosis Related to Hospitalization	Percentage of ADRs
Anticoagulants	Heart attack and stroke prevention	Hemorrhagic disorder (bleeding) due to circulating anticoagulants	12.6%
Antineoplastic drugs	Cancer	Neutropenia (low white blood cell count)	12.1%
Opioids and related analgesics	Pain management	Constipation	7.4%
Glucocorticoids and synthetic analogues	Asthma	Chronic obstructive pulmonary disease with acute lower respiratory infection	6.9%
NSAIDs* (excluding salicylates)	Arthritis, pain management, inflammation	Gastric ulcer, chronic or unspecified with hemorrhage (bleeding)	4.9%
Beta-adrenoreceptor antagonists, not elsewhere classified	Heart failure, high blood pressure, angina (chest pain)	Bradycardia (low heart rate), unspecified	4.6%
Other (non-thiazide, low-ceiling) diuretics	Heart failure, high blood pressure	Hypo-osmolality and hyponatremia (low blood sodium)	3.6%
Benzothiadiazine derivatives (thiazide diuretics)	High blood pressure	Hypo-osmolality and hyponatremia (low blood sodium)	3.2%
Cardiac-stimulant glycosides and drugs of similar action (e.g. digoxin)	Heart failure, arrhythmia (irregular heartbeat)	Bradycardia (low heart rate), unspecified	3.1%
Antipsychotics	Symptoms of dementia, schizophrenia, bipolar disorder	Disorientation, unspecified	2.7%

Note

* Non-steroidal anti-inflammatory drugs.

Sources

Discharge Abstract Database and Hospital Morbidity Database, Canadian Institute for Health Information.

Risk Factors For ADR's

- Increasing age
- Increasing # of prescribers
- Comorbidities
- Number of Pharmacies visited
- History of prior drug reactions
- Increasing number of prescriptions (Polypharmacy)

What is Polypharmacy

- While there is no consensus definition for polypharmacy, most studies have used a numerical threshold of **5 or more medications per day**
  - Approximately 40% of older adults take 5-9 medications
  - Approximately 18% of older adults take 10 or more medications

Appropriate versus problematic Polypharmacy

Appropriate Polypharmacy

- Medication optimization ensures benefits outweigh risks
- Takes into consideration impact on outcomes important to the older adult, such as:
  - Improving the duration and quality of life
  - Symptom control
  - Prevention
- It is evidence-based

Problematic Polypharmacy

- Risk of harm exceeds the potential benefits or coexists with the benefits

Impact of Polypharmacy on the Older Adult

1. ↑ Adverse drug reactions
2. ↑ Drug Interactions
   - 2 medications: 13%
   - 5 medications: 58%
   - >7 medications: 82%
3. ↑ Drug Expense
4. ↓ QoL
5. ↑ Hospitalization & ED visits
6. ↑ Risk of non adherence
7. ↑ Risk of medication errors
8. Prescribing cascades
9. Precipitate or exacerbate geriatric syndromes

Risk Factors of Polypharmacy

Multiple medical problems can lead to multiple medications

+

Reduced homeostatic mechanisms and organ dysfunction

+

Frailty

AND/ OR

Acute illness or change to medications

Harmful medication effect

AND

Increased risk of Problematic Polypharmacy

Polypharmacy Risk Factors

Multiple medical problems/multiple medications

- **Treatment guideline-based prescribing**
  - Promotes the use of multiple medications
  - Guidelines may recommend multiple therapies for one condition
  - No set guidelines for deprescribing medication (stopping or lowering dosage)
- **ADRs and prescribing cascade**
  - An adverse reaction to one drug may go unrecognized/ misinterpreted
  - Healthcare provider may inappropriately prescribes a second drug to treat signs/symptoms
- **Infrequent medication review**
  - There is a lack of incentive to deprescribe
  - Unnecessary drugs or doses not adjusted

Polypharmacy Risk Factors

Reduced Homeostatic Mechanisms & Organ Dysfunction

Changes in physiology with aging:

Pharmacokinetics changes

Changes in how the body acts on the drug

- Absorption
- Distribution
- Metabolism (liver)
- Excretion (kidney)

Pharmacodynamics changes

Changes in how the drug acts on the body

- Changes in receptor binding
- ↓ # of receptors and receptor activity
- ↑↓ Drug efficacy
- ↑ Toxicity / ADRs

Jackson,L. (2021,Sept01). Polypharmacy: An introductory module for Clinicians.Slideshare: https://www.rgptoronto.ca/resource/introduction-to-polypharmacy-clinician-learning-series/

Polypharmacy Risk Factors

Frailty

- Older people are vulnerable to medication-related problems associated with frailty

Characteristics of frailty

- Unintended weight loss due to inadequate nutrition
- Slow walking speed
- Impaired grip strength
- Exhaustion
- Self reported decline in activity levels

Robust	Pre-frail	Frail
0	1-2	≥3

Jackson,L. (2021,Sept01). Polypharmacy: An introductory module for Clinicians.Slideshare: https://www.rgptoronto.ca/resource/introduction-to-polypharmacy-clinician-learning-series/

Polypharmacy Risk Factors

Acute illness or changes to medication can lead to problematic polypharmacy

- With acute illness, usual medications can cause unanticipated harm
- With any change in medications or change in dose, adverse effects can result

Tips for Identifying Inappropriate Prescribing

- Beers Criteria
  - What is it?
  - When should it be used?
  - Where do I find it?


CLINICAL INVESTIGATIONS

American Geriatrics Society 2019 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults

*By the 2019 American Geriatrics Society Beers Criteria® Update Expert Panel**

Identifying Inappropriate Prescribing

American Geriatric Society Beer's Criteria Update 2019

Five Main Categories

1. Potentially inappropriate medicines
2. Potentially inappropriate medicines to avoid in elders with certain conditions
3. Medicines to be used with caution
4. Medicine combinations that may lead to harmful interactions
5. Medications that should be avoided or dosed differently for those with poor renal function

Medications to Avoid in the Elderly: Benzodiazepines

Examples: Lorazepam, Clonazepam, Diazepam, Alprazolam

Reasoning: Cause sedation & drowsiness, ↑ risk of falls/MVA,↓ Cognition

Alternatives: SSRI/SNRI-→ safer alternatives for Anxiety/Depression

Medications to Avoid in the Elderly: Non- Benzodiazepines Hypnotics: "Z Drugs"

Examples: Zopiclone, Zolpidem

Reasoning: : Cause sedation & drowsiness, ↑ risk of falls/MVA,
↓ Cognition

Alternatives: Offer non-pharmacological approaches for difficulty sleeping (Sleep Hygiene)
Use Melatonin as it has less falls risk
Use PRN dosing and the lowest effective dose
Avoid long term use if possible

Medications to Avoid in the Elderly: Diabetes Medications

Examples: Glyburide, Glimeperide & Sliding scale insulin

Reasoning: Has long half life, ↑ risk of hypoglycemia

Alternatives: Gliclizide is a safer option.

If using insulin: Fixed units are preferred to reduced confusion & hypoglycemia

OTC Meds to Avoid in the Elderly: NSAIDs (Non-Steroidal Anti-Inflammatory Drugs)

Examples: Aleve (Naproxen), Advil/Motrin (Ibuprofen), Aspirin (Acetylsalicylic Acid)

Reason: Can ↑ bleeding risk, worsen existing ulcers or cause new ulcers

- Can ↑ BP, ↑ risk of AKI & Worsen CHF
- Regular Use → Requires a gastroprotective agent (PPI or Misoprostol)

Alternatives:

- Tylenol (Acetaminophen) → Safer option for pain relief (max 3 gm/day = 6 extra strength tabs per day)
- Voltaren Emugel (Topical NSAID)

OTC Meds to Avoid in the Elderly: Excess Tylenol

- Found in Fever reducer tabs, allergy tabs, cough/cold products, pain killer & sleep aids
- Safe & Effective option in Elderly
- Maximum dose of 4000mg daily for Adults
- Maximum Daily Dose for Older Adults : 3 gm/day (6 Extra-strength tabs)
- Overdosage → Liver Damage
  - >3 Alcoholic Beverages /day (↑ risk of liver damage)

OTC Meds to Avoid in the Elderly: 1st Generation Antihistamines

Examples: Benadryl (Diphenhydramine), Chlor-Tripolon (Chlorpheniramine), Bropheniramine

Reason: Can cause dizziness,drowsiness, confusion, blurred vision, constipation & dry mouth

Alternatives: Aerius (Desloratidine), Claritin (Loratadine), Allegra (Fexofenadine) & saline nasal rinses

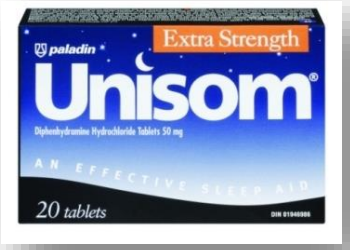
OTC Meds to Avoid in the Elderly: Sleep Aids

Examples: Nytol, Sleep-Eze, Unisom, Tylenol Nightime, ZzQuil & Advil Nighttime (All contain Diphenhydramine→ Antihistamine)

Reason: Daytime drowsiness, falls, confusion, dry mouth and urinary retention

Alternatives: Sleep hygiene

If you want to try something: Melatonin 1-3mg po QHS +/- Sleepytime Tea (Inlcudes Valarian)



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OTC Meds to Avoid in the Elderly: Muscle Relaxants

Examples: Robaxacet, Robaxisal, Tylenol Body Pain Night, Motrin Muscle & Body (all contain Methocarbamol or Orphenadrine)

Reason: ↑ risk of falls, drowsiness, dry mouth, constipation (plus little evidence that they work well)

Alternatives: No good alternatives, may try topical rubs (A535 or Voltaren Emulgel)

OTC Meds to Avoid in the Elderly: Miscellaneous

Gravol

- Can cause drowsiness, ↑ risk of falls

Mineral Oil For Constipation

- Can cause Aspiration Pneumonia

Practical Tips for Appropriate Drug Prescribing in Older Adults

- Start low, go slow…
- Use the lowest effective dose
- Avoid drugs with prolonged half-lives
- Keep a list of all current prescription and over-the-counter or herbal medications
- List the indication for each drug in the chart
- Avoid Prescribing cascade
- Explain common adverse effects in advance and what to do

Common Causes of Non-Compliance/Non-Adherence

- Doesn't agree with plan; doesn't "trust" the physician; doesn't know why they need to take it and thus, won't take it
- Memory disorder – doesn't remember to take
- Cultural beliefs
- Language barrier
- Cannot afford medication; "not covered"; "no LU Code"
- Drug unavailability
- Instructions unclear or incorrectly labelled (illegible Rx)

Common Causes of Non-Compliance/Non-Adherence

- Difficulty opening bottle (e.g. child resistant vials) due to impaired manual dexterity
- Physical limitations to administer (e.g. inhalers, insulin)
- Impatience for response – patient increases dose/frequency
- Complicated/impractical regimen
- Unable to read label/visual impairment/small print/”as directed”/forgets info

Compliance Aids

- Average compliance rates are just 50 %, despite evidence that adherence provides better outcomes (WHO)
- Lists/Calendars/Diaries
- Combination Tablets
- Daily organizers
- Dosettes
- Blister Packing
- Vial caps with timers
- Smart Phone Apps/reminders

Strategies to Improve Compliance

1. Make drug regimens and instructions simple
2. Use the same dosage schedule whenever possible
3. Time the dose in conjugation with a daily routine
4. Instruct relatives and caregivers on the drug regimen
5. Enlist others (home health, pharmacist) for compliance
6. Make sure the elderly patient can get to a pharmacist, can afford prescriptions, and can open the container
7. Use aids (pillboxes, calendars) /supervision
8. Keep updated medication records
9. Review knowledge, compliance, drug regimens
10. Inform the patient about potential adverse reactions from a med and what actions should they occur

Dos and Don’ts of Medication Management

- **Do** return expired medications to your pharmacy for proper disposal
- **Do** make a list of your medications
- **Do** ask questions
- **Do** keep your prescriptions filled so you don’t run out
- **Do** use a pillbox, dosette or blister packs to help you remember when to take medications
- **Don’t** take medications that are not prescribed for you
- **Don’t** use medication that has expired
- **Don’t** stop taking a medication just because you feel better. Ask your health care provider before stopping any medication

Medication Management and Caregivers

- Order prescriptions and schedule regular medication refills at your pharmacy, or arrange to get them delivered to you.
- Some medications can interact with other medications, food, alcohol and cause dangerous side effects; take note.
- Pay attention to side effects.
- Make sure that no one else takes your family member's medication.
- In addition to keeping all medications in a safe place, check if any medications may need to be refrigerated as well.
- Ask questions. Your loved one's pharmacist or health care provider can provide additional helpful tips on how to manage medications for older adults.

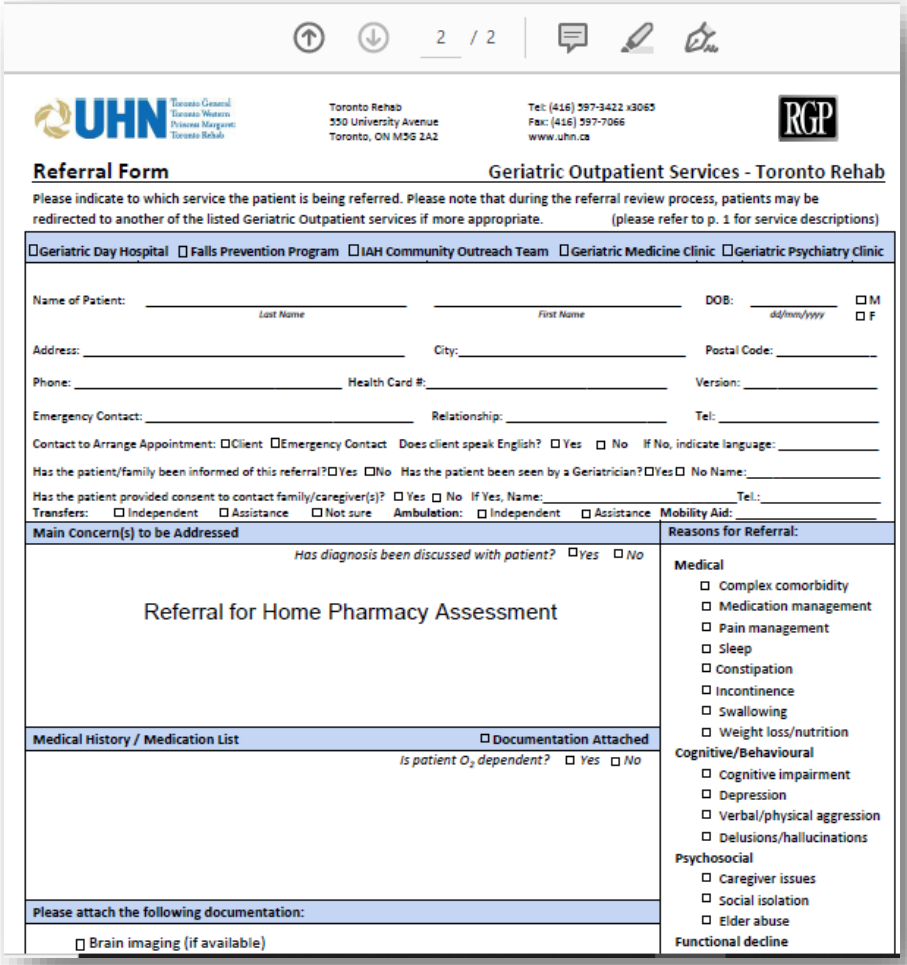
Medication Review (Medscheck)

- Funded by MOHLTC
- One-on-one 30 minute appointment with the community pharmacist
  - Reviews all the patient's meds (prescribed and OTC)
  - Helps patients better understand their meds and ensure they are taken as prescribed
- MedsCheck at Home
  - Once a year review for Home bound seniors

How Can Pharmacists help? Through Medication Reviews

- Provide Education related to drugs & diseases
- Simplify Medication Regimens
- Prevent duplications of drugs
- Identify Drug Interactions
- Identify Inappropriate Medication use in the Elderly→ Avoid Overmedication
- Side effects Management
- Identify Dosage Errors (too high/low)
- Appropriate OTC Medication Use
- Provide Education on Device Use
- Inhaler technique
- Injection Technique
- Glucose/BP Monitor use
- Provide flu shots for the homebound senior
- Assess Falls risk
- Develop a complete & accurate list of all meds

How To Refer for Home Medication Review?



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UHN Toronto General Toronto Western Princess Margaret Toronto Rehab

Toronto Rehab
550 University Avenue
Toronto, ON M5G 2A2

Tel: (416) 597-3422 x3065
Fax: (416) 597-7066
www.uhn.ca

RGP

Referral Form — **Geriatric Outpatient Services - Toronto Rehab**

Please indicate to which service the patient is being referred. Please note that during the referral review process, patients may be redirected to another of the listed Geriatric Outpatient services if more appropriate. (please refer to p. 1 for service descriptions)

☐ Geriatric Day Hospital ☐ Falls Prevention Program ☐ IAH Community Outreach Team ☐ Geriatric Medicine Clinic ☐ Geriatric Psychiatry Clinic

Name of Patient: _____ (Last Name) _____ (First Name) DOB: _____ (dd/mm/yyyy) ☐ M ☐ F

Address: _____ City: _____ Postal Code: _____

Phone: _____ Health Card #: _____ Version: _____

Emergency Contact: _____ Relationship: _____ Tel: _____

Contact to Arrange Appointment: ☐ Client ☐ Emergency Contact Does client speak English? ☐ Yes ☐ No If No, indicate language: _____

Has the patient/family been informed of this referral? ☐ Yes ☐ No Has the patient been seen by a Geriatrician? ☐ Yes ☐ No Name: _____

Has the patient provided consent to contact family/caregiver(s)? ☐ Yes ☐ No If Yes, Name: _____ Tel.: _____

Transfers: ☐ Independent ☐ Assistance ☐ Not sure Ambulation: ☐ Independent ☐ Assistance Mobility Aid: _____

Main Concern(s) to be Addressed

Has diagnosis been discussed with patient? ☐ *Yes* ☐ *No*

Referral for Home Pharmacy Assessment

Medical History / Medication List ☐ **Documentation Attached**

Is patient O_2 dependent? ☐ *Yes* ☐ *No*

Please attach the following documentation:

☐ Brain imaging (if available)

Reasons for Referral:

Medical
- ☐ Complex comorbidity
- ☐ Medication management
- ☐ Pain management
- ☐ Sleep
- ☐ Constipation
- ☐ Incontinence
- ☐ Swallowing
- ☐ Weight loss/nutrition

Cognitive/Behavioural
- ☐ Cognitive impairment
- ☐ Depression
- ☐ Verbal/physical aggression
- ☐ Delusions/hallucinations

Psychosocial
- ☐ Caregiver issues
- ☐ Social isolation
- ☐ Elder abuse

Functional decline

Additional Resources

https://sinaigeriatrics.ca/healtheducation/

Find more information in “Safe Medication Use for Older Adults” available on our website

https://sinaigeriatrics.ca/patient-resources/safe-medication-use-for-older-adults/

Questions? (Submit to Q&A)

Stay Connected With Us

https://sinaigeriatrics.ca/healtheducation/

Website:

https://sinaigeriatrics.ca

Twitter:

@SinaiGeriatrics

Upcoming Healthy Ageing Sessions

November 16, 2021 12-1pm EST

Practical Technologies That Can Enable Ageing in Place
Speaker: **Dr. Samir Sinha** (Peter and Shelagh Godsoe Chair in Geriatrics; Director of Geriatrics - Sinai Health and University Health Network)

December 7, 2021 12-1pm EST

Understanding How to Recognize Dementia from Normal Age-Related Memory Loss, and How to Prevent and Manage It
Speaker: **Dr. Sarah Colman** (Geriatric Psychiatrist – CAMH)

Join Us on November 5th

Toronto Geriatrics Virtual Update Course

Friday November 5th; 8:30 AM – 3:30 PM EST

4 Sessions + 4 Workshops

To register, visit **torontogeriatricsupdate.ca**