Medication rationalization in patients with advanced medical illness

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Relationships with commercial interests:

1. Advisory board for Boehringer-Ingelheim (Canada) Inc.
2. Speaker fees for Medtronic and Novartis.
3. Consultant and instructor, Joule Inc.
Canadian Hospice Palliative Care Conference

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Not Applicable
Canadian Hospice Palliative Care Conference

Faculty/Presenter Disclosure

Presenter Name:

Sandra Porter

Relationships with commercial interests:

Not Applicable
Canadian Hospice Palliative Care Conference

Disclosure of Commercial Support

This program has not received any financial or in-kind support.
Mitigating Bias

This presentation will not discuss any specific products.

This presentation will advocate for deprescription.
Objectives

1. Discuss the results of MERA pilot
2. Review guidelines for medication deprescription in patients with advanced illness
3. Practice medication rationalization
4. Understand barriers to deprescription among the seriously ill.
Background

• Most Canadians die in an acute hospital setting, without receiving comfort-focused care.

• Medications often mismatched to care
  • Many noncomfort medications
  • Comfort medications not offered
Noncomfort Medication Use

- Review of 70 pts near EOL
- Final week of life
  - 40 Comfort doses
  - 41 Non-Comfort (NC) doses
  - 3 NC meds stopped
  - 4 new NC meds started
  - 14% of NC meds stopped on day of death/discharge to PCU

Ma and Downar. *AJHPM* 2013
Polypharmacy

- 2/3 of seniors take >5 meds
- Up to 40% of frail elderly on inappropriate meds
- 30% of admissions over age 75 are med-related

Background

- Barriers to deprescription
  - Poor understanding of harms
  - Concerns about precipitating acute event
  - Balancing risks and benefits
  - “Too sick to benefit”

- Barriers to comfort medications
  - Lack of training
  - Fear of addiction/dependence
  - Cultural attitudes
  - Onerous regulation

Background

- Hospital-based, pharmacy-focused interventions can improve patient safety and reduce costs.
  - Antimicrobial stewardship
  - Medication reconciliation
Case #1

56M admitted with failure to cope at home, requesting admission to a PCU

- Past Medical History:
  - stage 4 metastatic lung adenocarcinoma (failed 4th line chemotherapy), dyslipidemia, hypertension, BPH
- Frailty score: 7
- ESAS: pain 6/10, tiredness 7/10, wellbeing 8/10
# Case #1- Medication list

**PMHx:** metastatic lung cancer (failed chemo), dyslipidemia, HTN, BPH

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Dosage/Usage Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetylsalicylic acid 81 mg daily</td>
<td></td>
</tr>
<tr>
<td>Ramipril 5 mg once daily</td>
<td></td>
</tr>
<tr>
<td>Rosuvastatin 10 mg orally daily</td>
<td></td>
</tr>
<tr>
<td>Lansoprazole 30 mg orally daily</td>
<td></td>
</tr>
<tr>
<td>Hydromorphine 1-2 mg orally</td>
<td></td>
</tr>
<tr>
<td>Acetaminophen 1000 mg every 8</td>
<td></td>
</tr>
<tr>
<td>Docusate 100 mg twice daily</td>
<td></td>
</tr>
<tr>
<td>Senna 17.2 mg once daily</td>
<td></td>
</tr>
<tr>
<td>Tamsulosin 0.4 mg orally once</td>
<td></td>
</tr>
<tr>
<td>Lansoprazole 30 mg orally daily</td>
<td></td>
</tr>
<tr>
<td>Vitamin C 2000 mg orally once</td>
<td></td>
</tr>
<tr>
<td>Hydromorphine CR 6 mg twice</td>
<td></td>
</tr>
<tr>
<td>Vitamin D 2000 units once daily</td>
<td></td>
</tr>
<tr>
<td>Juice Plus Multivitamin 2 caps</td>
<td></td>
</tr>
<tr>
<td>Hydromorphine 1-2 mg orally</td>
<td></td>
</tr>
<tr>
<td>Acetaminophen 1000 mg every 8</td>
<td></td>
</tr>
<tr>
<td>every hour as needed</td>
<td></td>
</tr>
<tr>
<td>every day</td>
<td></td>
</tr>
<tr>
<td>every 8 hours</td>
<td></td>
</tr>
<tr>
<td>every 8 hours</td>
<td></td>
</tr>
</tbody>
</table>
# Case #1 - Medication list

**PMHx:** metastatic lung cancer (failed chemo), dyslipidemia, HTN, BPH

<table>
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<th>Medication</th>
<th>Dosage/Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetylsalicylic acid</td>
<td>81 mg daily</td>
</tr>
<tr>
<td>Ramipril 5mg</td>
<td>once daily</td>
</tr>
<tr>
<td><strong>Rosuvastatin</strong> 10mg</td>
<td>orally daily</td>
</tr>
<tr>
<td>Lansoprazole 30 mg</td>
<td>orally daily</td>
</tr>
<tr>
<td>Hydromorphone 1-2 mg</td>
<td>orally every hour as needed</td>
</tr>
<tr>
<td>Hydromorphone CR 6 mg</td>
<td>twice daily</td>
</tr>
<tr>
<td>Acetaminophen 1000 mg</td>
<td>8 hours</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>2000mg orally once daily</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>2000 units once daily</td>
</tr>
<tr>
<td>Juice Plus Multivitamin</td>
<td>2 caps daily</td>
</tr>
</tbody>
</table>

- **withdrawal concerns** - lansoprazole
Pilot Study

- A pharmacy-focused intervention for MEdication RAtionalization (MERA)
  - Patients with advanced illness and/or palliative philosophy
  - Deprescription of nonbeneficial medications
  - Addition of PRN comfort medications
  - Evidence based recommendation
  - Involving patients in the process
MERA Study

Study Participants:
• Patients on GIM service at TGH
• Advanced Illness (at risk of 6 month mortality)

Intervention:
• Stop, change, or add medications with comfort focus

Outcomes, is MERA intervention
• Feasible?
• Acceptable to Patients, family and healthcare team?
• Effective?
• Time-efficient?
MERA Process

Intro
- Study is introduced to the patient
- Survey is administered (ESAS, BMQ, PATD)

MERA Review
- MERA team reviews diagnosis, prognosis, goals of care and survey results of patient.
- Using evidence-based criteria, make recommendations about stopping, changing or adding medications

Team Review
- MERA team attends GIM team meeting
- Suggested changes are reviewed and discussed with the team

Patient Review
- MERA team discusses approved recommendation with patient/SDM, to seek their input and consent for the changes.
- Summary report is given to patient
Deprescription Guidelines

• STOPP Criteria
  – Screening Tool of Older People’s Prescriptions
  – 2008, rev. 2015
  – by European experts in Geriatric Medicine & medication use in older people
  – based on published evidence
  – identifies potentially inappropriate medications – (harmful and/or limited benefit) – in older adults
Deprescription Guidelines

• Beers Criteria
  – geriatrician Dr. Mark H. Beers, consensus panel of experts
  – based on published evidence and expert consensus
  – identify medications that are potentially inappropriate in older adults
Deprescription Guidelines

• Choosing Wisely Canada & USA
  – campaigns to help health care providers and patients engage in conversations about unnecessary tests, treatments and procedures.  
http://www.choosingwiselycanada.org/,  
http://www.choosingwisely.org/
MERA Medication Assessment Algorithm

Does the ongoing administration of this medication help the patient achieve their health goals? Would the benefits outweigh the risks given the patient’s prognosis and clinical status? (Consider available evidence, duration of treatment, and also duplicate therapies.)

- **YES**
  - Continue the medication and monitor appropriately.
- **NO**
  - Are there risks to stopping the medication? (ex. withdrawal – see MERA withdrawal medication list)
    - **YES**
      - Can these risks be adequately managed?
        - **YES**
          - Stop the medication, and inform the patient.
        - **NO**
          - Is the medication for prophylaxis? (ex. For MI prevention: ASA/other antiplatelet, ACEI/ARB, BB, cholesterol-lowering agents; for stroke prevention: anticoagulant, BB; for vascular protection in diabetes: ACEI/ARB, cholesterol-lowering agents; prophylactic antibiotics, or vitamins/supplements)
            - **NO**
              - Is the medication a “hospital medication” used only during inpatient admissions? (ex. VTE prophylaxis, insulin sliding scale)
                - **NO**
                  - Is the medication related to diabetes management? (ex. oral hypoglycemic, insulin, include associated blood glucose checks for consideration)
                    - **NO**
                      - Is this an intravenous medication? Or an oral medication in a patient with trouble swallowing?
                        - **NO**
                          - Has the patient been refusing to take this medication? Has the administration schedule been optimized? (ex. avoid unnecessary administration overnight)
                            - **NO**
                              - Continue the medication and monitor appropriately.
                            - **YES**
                              - Is there a cheaper and equally effective alternative to this medication?
                                - **NO**
                                  - **NO**
                                - **YES**
                                  - Continue the medication and monitor appropriately.

Please note: “patient” in this algorithm refers to a patient or substitute decision maker as appropriate.
Results - Enrollment

- 718 screened
- 285 met inclusion
- 125 eligible
  - 70 discharged / transferred
    - 48 bed-spaced
    - 22 language/communication
    - 4 died
    - 16 other
  - 53 included
  - 8 not included
  - 61 (48%) enrolled
  - 34 (27%) team refused
  - 10 (8%) unable to reach SDM
  - 20 (16%) patient refused
Patient characteristics

- 11 home meds per pt (avg, range 1-24)
- Patients reported generally negative beliefs about meds (BMQ)

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>% of patients enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &gt;80</td>
<td>41%</td>
</tr>
<tr>
<td>Cancer</td>
<td>38%</td>
</tr>
<tr>
<td>End Organ Failure</td>
<td>21%</td>
</tr>
</tbody>
</table>
Results - Intervention

- MERA recommended an intervention for **96%** of patients
- Very high acceptance of MERA recommendations by GIM team and patients
  - **88%** acceptance from GIM team
  - **94%** acceptance from Patients

<table>
<thead>
<tr>
<th></th>
<th>Meds Stopped</th>
<th>Meds Changed</th>
<th>Meds Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total #</td>
<td>162</td>
<td>48</td>
<td>13</td>
</tr>
<tr>
<td>AVG/Patient</td>
<td><strong>3.1</strong></td>
<td><strong>0.9</strong></td>
<td><strong>0.2</strong></td>
</tr>
</tbody>
</table>
Results – Top 5 Medications

<table>
<thead>
<tr>
<th>MERA Medication Class</th>
<th># Stops Recommended</th>
<th># Patients Recommended to Stop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamins/Minerals</td>
<td>55 (27%)</td>
<td>28 (53%)</td>
</tr>
<tr>
<td>Lipid Lowering Agents</td>
<td>20 (10%)</td>
<td>20 (38%)</td>
</tr>
<tr>
<td>Homeopathic/Herbal Supplements</td>
<td>14 (7%)</td>
<td>6 (11%)</td>
</tr>
<tr>
<td>Proton Pump Inhibitors</td>
<td>13 (6%)</td>
<td>13 (25%)</td>
</tr>
<tr>
<td>Docusate</td>
<td>8 (4%)</td>
<td>8 (15%)</td>
</tr>
</tbody>
</table>

These account for 54% of meds recommended to stop
Results - Discharge

- Discharge Outcome of Stopped Medications

Total: 162 medications stopped

- Remained Stopped: 63%
- Restarted: 25%
- Other (patient died, transferred): 12%
Results – 3 Month Follow-Up

• Outcome of Stopped Medications 3 months Post-Discharge
• Source: Ontario Drug Benefit Program – Drug Profile Viewer (note: 102 meds stopped in total, data available for 36 meds only (patient and/or med not covered by ODB (41) or patient died or transferred to PCU (23). 2 meds were hospital use only))

Total: 36 medications stopped

- Remained Stopped: 81%
- Restarted: 19%
Conclusion

MERA intervention is:

- Feasible
- Highly acceptable by both physicians and patients
- Effective at stopping medications
Conclusion

MERA intervention lessons:

• System issues that undermine medication rationalization

• Critical role of pharmacists in medication rationalization

• Distinct from medication reconciliation
Case #2

92F admitted w/ pneumonia

- from home alone, 3 hospitalizations in 6 months, new poor baseline functional status

• Past Medical History:
  - Stroke 11 years ago (no deficits), Alzheimer’s dementia (MMSE 18/30), hypertension, osteopenia (no history of fractures), anemia

• Frailty score - 6

• ESAS- tiredness, drowsiness 6/10
# Case #2 - Medication list

PMHx: Stroke, Alzheimer’s, HTN, anemia, osteopenia

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose/Regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amlodipine</td>
<td>2.5 mg once daily</td>
</tr>
<tr>
<td>Lorazepam</td>
<td>1mg at bedtime</td>
</tr>
<tr>
<td>HCTZ</td>
<td>12.5mg once daily</td>
</tr>
<tr>
<td>Risedronate</td>
<td>35mg every Sunday</td>
</tr>
<tr>
<td>Atorvastatin</td>
<td>10 mg orally daily</td>
</tr>
<tr>
<td>Centrum Adults 50+</td>
<td>1 tablet daily</td>
</tr>
<tr>
<td>Donepezil</td>
<td>5 mg once daily</td>
</tr>
<tr>
<td>Calcium/ vitamin D</td>
<td>twice daily</td>
</tr>
<tr>
<td>Ferrous fumarate</td>
<td>300mg twice daily</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>500mg orally once daily</td>
</tr>
</tbody>
</table>
**Case #2 - Medication list**

PMHx: Stroke, Alzheimer’s, HTN, anemia, osteopenia

<table>
<thead>
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<tr>
<td>Vitamin C</td>
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</tr>
</tbody>
</table>

- Withdrawal concerns - lorazepam
- Consider BP targets - if BP <150/90, could consider stopping both antihypertensives
Case #3

77M admitted with HF decompensation, has frequent decompensation

• Past Medical History:
  – T2DM (A1C=7.7%), AFib, CAD (NSTEMI, PCI x3 (’96, ’04, ’14), Hypertension, Dyslipidemia, CKD (baseline SCr~120), HFrEF (EF=21% 1 month ago)

• Frailty score - 5

• ESAS- depression 6/10, drowsiness 6/10

• Patient frustrated about # of pills he takes
## Case #3 - Medication list

**PMHx:** T2DM, AF, PCI (2014), HTN, CKD, DLP, CHF

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dosage/Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetylsalicylic acid 81 mg daily</td>
<td>Metformin 1000 mg twice daily</td>
</tr>
<tr>
<td>Clopidogrel 75 mg once daily</td>
<td>Gliclazide MR 60 mg once daily</td>
</tr>
<tr>
<td>Bisoprolol 5 mg once daily</td>
<td>Pioglitazone 30mg once daily</td>
</tr>
<tr>
<td>Perindopril 8 mg once daily</td>
<td>Omega-3 1 capsule once daily</td>
</tr>
<tr>
<td>Rosuvastatin 20 mg orally daily</td>
<td>Vitamin D 2000 units once daily</td>
</tr>
<tr>
<td>Warfarin 6mg alternating with 5 mg every other day</td>
<td></td>
</tr>
</tbody>
</table>
Case #3- Medication list

PMHx: T2DM, AF, PCI (2014), HTN, CKD, DLP, CHF

<table>
<thead>
<tr>
<th>Medication</th>
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<td>Acetylsalicylic acid</td>
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</tr>
<tr>
<td>Metformin</td>
<td>1000 mg twice daily</td>
</tr>
<tr>
<td>Clopidogrel</td>
<td>75 mg once daily</td>
</tr>
<tr>
<td>Gliclazide</td>
<td>MR 60 mg once daily</td>
</tr>
<tr>
<td>Bisoprolol</td>
<td>5 mg once daily</td>
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<tr>
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</tr>
<tr>
<td>Vitamin D</td>
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</tr>
<tr>
<td>Warfarin</td>
<td>6 mg alternating with 5 mg every other day</td>
</tr>
</tbody>
</table>

- Withdrawal concerns- beta-blockers
What are some barriers to deprescription?
Barriers

- Poor understanding of harms
- Concerns about precipitating acute event
- Communication – “how do I approach this with the patient?”
- Who? / clinical inertia
- System issues
- Lack of automation/tools
Next Steps

Can the process be made more efficient?

- Automated screening of the 5 most commonly stopped medication classes?
- Would save time, increase efficiency

Multi-site Pilot: automated deprescription tool, MedSafer
Pilot Project: Automation

- Automated tool online
- Input patient specific medical conditions and medications
- Output recommendations of medications to consider stopping based on evidence-based guidelines (ie. Beers)
- Recommendation reports provided to GIM teams to consider
### Cardiovascular
- Hypertension
- Dyslipidemia (high cholesterol)
- Congestive heart failure
- Valvular
- Ischemic heart disease
- Orthostatic hypotension
- Syncope
- Atrial fibrillation / flutter
- Bradycardia

### Oncologic
- Palliative
- ECOG (Enter a value from 0 to 4):
  - Lung
    - In remission
    - Value: 4
- Breast
- Colon
- Pancreas
- Ovary

### CNS
- Benign essential tremor
- Ischemic stroke
- Intracerebral bleed
- TIA
- Epilepsy/Seizure
- Parkinson's disease

### Renal/Urologic
- GFR before this admission: 20
  - eGFR on this admission (based on MDRD calculation)
<table>
<thead>
<tr>
<th>CHART ID</th>
<th>TRADEMARK</th>
<th>GENERIC</th>
<th>STRENGTH</th>
<th>FORMAT</th>
<th>FREQUENCY</th>
<th>PRN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aspirin</td>
<td>Asa</td>
<td>80mg</td>
<td>Enteric tab.</td>
<td>die / od</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Coumadin</td>
<td>Warfarin</td>
<td>3mg</td>
<td>Tablet</td>
<td>die / od</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Lipitor</td>
<td>Atorvastatin</td>
<td>80mg</td>
<td>Tablet</td>
<td>die / od</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Lipidil</td>
<td>Fenofibrate</td>
<td>160mg</td>
<td>Capsule</td>
<td>die / od</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Altace</td>
<td>Ramipril</td>
<td>10mg</td>
<td>Capsule</td>
<td>die / od</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Colace</td>
<td>Docusate-sodium</td>
<td>100mg</td>
<td>Capsule</td>
<td>die / od</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Palafer</td>
<td>Ferrous-fumarate</td>
<td>300mg</td>
<td>Tablet</td>
<td>tid</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>None</td>
<td>Vitamin-d3</td>
<td>400 IU</td>
<td>tablet</td>
<td>die / od</td>
<td></td>
</tr>
<tr>
<td>MEDICATION</td>
<td>CONDITION/SECOND MEDICATION</td>
<td>RATIONALE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>asa (Aspirin)</td>
<td>warfarin (Coumadin)</td>
<td>Dual antithrombotic therapy increases the risk of major hemorrhage and prolonged therapy beyond 6-12 months is rarely indicated. Use of proton pump inhibitor reduces but does not eliminate risks. Dual therapy should be reevaluated for ongoing necessity.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>asa (Aspirin)</td>
<td>Palliative</td>
<td>In patients whose prognosis is likely to be less than one year consider stopping aspirin if it is for primary prevention. This may decrease pill burden, lessen associated symptoms and improve quality of life.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fenofibrate</td>
<td>(Lipidil)</td>
<td>There is limited evidence for the use of non-statin lipid lowering drugs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>docusate-sodium</td>
<td>(Colace)</td>
<td>Don't use stool softeners to prevent or treat constipation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>atorvastatin</td>
<td>Palliative</td>
<td>Don't routinely prescribe lipid-lowering medications in individuals with a limited life expectancy.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ferrous-fumarate</td>
<td>Any</td>
<td>In general, iron can be prescribed once daily, with as good absorption, and fewer gastrointestinal side effects than more frequent daily dosing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>vitamin-d3</td>
<td>Palliative</td>
<td>For patients whose prognosis is likely to be less than one year consider stopping vitamin D supplementation to decrease pill burden and increase quality of life.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Deprescription Resources

**STOOPP Criteria**

**Beers Criteria**

**Choosing Wisely Canada**
http://www.choosingwiselycanada.org/

**Choosing Wisely USA** http://www.choosingwisely.org/
Deprescription Resources
Canadian Deprescribing Network
http://www.deprescribing.org/

Proton Pump Inhibitor (PPI) Deprescribing Algorithm

**Why is patient taking a PPI?**
- If unsure, find out if history of endoscopy, if ever hospitalized for bleeding ulcer or if taking because of chronic NSAID use in past, if ever had heartburn or dyspepsia

**Indication still unknown?**
- Mild to moderate esophagitis or GERD treated x 4-8 weeks (esophagitis healed, symptoms controlled)
- Peptic Ulcer Disease treated x 2-12 weeks (from NSAID; H. pylori)
- Upper GI symptoms without endoscopy, asymptomatic for 3 consecutive days
- ICU stress ulcer prophylaxis treated beyond ICU admission
- Uncomplicated H. pylori treated x 2 weeks and asymptomatic

**Recommend Deprescribing**
- Strong Recommendation (from Systematic Review and GRADE approach)
  - (evidence suggests no increased risk in return of symptoms compared to continuing higher dose, or
  - (daily until symptoms stop) (i.e. patients may have return of symptoms)

**Decrease to lower dose**
- Stop PPI
- Monitor at 4 and 12 weeks
  - If verbal: Heartburn, Dyspepsia, Regurgitation, Epigastric pain
  - If non-verbal: Loss of appetite, Weight loss, Agitation

**Stop PPI or consult gastroenterologist if considering deprescribing**
- Use non-drug approaches:
  - Avoid meals 2-3 hours before bedtime, elevate head of bed, address if need for weight loss and avoid dietary triggers

**Manage occasional symptoms**
- Over-the-counter antacid, H2RA, PPI, alginate pm (i.e. Tums®, Rolaid®, Zantac®, Olex®, Gaviscon®)
- H2RA daily (weak recommendation – GRADE; 1/5)

**If symptoms relapse:**
- If symptoms persist x 3-7 days and interfere with normal activity:
  1) Test and treat for H. pylori
Thank You

Any Questions?
Extra Slides
Tools

- Surveys
  - Beliefs about Medicines Questionnaire (BMQ)
  - Patient Attitudes Towards Deprescribing (PATD)
  - Edmonton Symptom Assessment System (ESAS)
- Medications reviewed with algorithm
Vitamins/Minerals

- Choosing Wisely USA:

  Don’t take a multi-vitamin, vitamin E or beta carotene to prevent cardiovascular disease or cancer.
Lipid Lowering Agents

- Choosing Wisely USA:

Don’t routinely prescribe lipid-lowering medications in individuals with a limited life expectancy.
Homeopathic/Herbal Supplements

• Choosing Wisely USA:

Don’t use homeopathic medications, non-vitamin dietary supplements or herbal supplements as treatments for disease or preventative health measures.
Proton Pump Inhibitors

- Choosing Wisely Canada

Don’t maintain long term Proton Pump Inhibitor (PPI) therapy for gastrointestinal symptoms without an attempt to stop/reduce PPI at least once per year in most patients.
Proton Pump Inhibitors

• Choosing Wisely USA

For pharmacological treatment of patients with gastroesophageal reflux disease (GERD), long-term acid suppression therapy (proton pump inhibitors or histamine2 receptor antagonists) should be titrated to the lowest effective dose needed to achieve therapeutic goals.

Don’t prescribe medications for stress ulcer prophylaxis to medical inpatients unless at high risk for GI complications.
Docusate

- **Choosing Wisely Canada**

Don’t use stool softeners alone to prevent opioid induced constipation.
Results – Post Intervention Survey

I found it stressful to meet with the MERA team.

I found the recommendations of the MERA team to be confusing.

I felt comfortable starting the medications recommended by the MERA team.

I felt comfortable stopping the medications as recommended by the MERA team.

I was interested to hear the recommendations of the MERA team.

Overall, I am glad that the MERA team reviewed my medications.

- Strongly disagree
- Disagree
- Uncertain
- Agree
- Strongly agree
Results - Ethnographic Findings

- MERA intervention received well by:
  - Patients who trust clinicians
  - Self-responsible patients
Trust in Clinicians & the Self-Responsible Patient

“The bottom line was that I trust the doctors. They know the medications and what’s wrong with my mother.”

“You are in charge, I always thought, of your body... Even if he recommends me a drug, I want to know all about it.”
Time and Teaching among Physicians

“It was a great opportunity for teaching the residents about the pharmacy, the evidence behind it, and the concept of a holistic approach.”

“It's just the time. We barely have time to do the teaching that we need to do, and to be doing that on top of it is added stress.”
Results – Issues at Discharge

- Restarted Medications at Discharge:
  - Intentional
  - Unintentionally due to interface/system issues
    - Example Below:

<table>
<thead>
<tr>
<th>Medication</th>
<th>MERA Outcome</th>
<th>Discharge Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lactulose</td>
<td>CHANGE</td>
<td>CONTINUE</td>
</tr>
<tr>
<td>Advair</td>
<td>STOP</td>
<td>RESTARTED</td>
</tr>
<tr>
<td>Risedronate</td>
<td>STOP</td>
<td>RESTARTED</td>
</tr>
<tr>
<td>Calcium/Vitamin D</td>
<td>STOP</td>
<td>RESTARTED</td>
</tr>
<tr>
<td>Psyllium</td>
<td>STOP</td>
<td>RESTARTED</td>
</tr>
<tr>
<td>Estradiol</td>
<td>STOP</td>
<td>RESTARTED</td>
</tr>
<tr>
<td>Salbutamol</td>
<td>STOP</td>
<td>RESTARTED</td>
</tr>
</tbody>
</table>
Pharmacists & Discharge Med Rec

- **50%** of patients had RPh involved in discharge med rec

<table>
<thead>
<tr>
<th>Discharge Medication Reconciliation</th>
<th>Meds remained STOPPED on discharge</th>
<th>Meds RESTARTED on discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmacist involved</td>
<td>69</td>
<td>25</td>
</tr>
<tr>
<td>Pharmacist NOT involved</td>
<td>33</td>
<td>15</td>
</tr>
</tbody>
</table>

chi-squared = 0.34
p = 0.56 (not significant)
Control Patients

- **59** control patients from GIM teams not receiving MERA intervention during study period

<table>
<thead>
<tr>
<th>Patient Group</th>
<th>Meds remained STOPPED on discharge</th>
<th>Meds RESTARTED on discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>MERA intervention</td>
<td>162</td>
<td>40</td>
</tr>
<tr>
<td>Controls</td>
<td>44</td>
<td>101</td>
</tr>
</tbody>
</table>

\[
\text{chi-squared} = 88.3 \\
\text{p} = <0.0001 \text{ (significant)}
\]