The Role of a Geriatric Medication Review

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Objectives

• Relate how to conduct a patient interview to inquire about patients' current medications.
• Execute thought process or "critical thinking" when performing medication reconciliation.
• Practice obtaining, documenting, and verifying a patient's current medication list and comparing this list with medications ordered within the facility.
• Demonstrate knowledge of the BEERS criteria.
• Ensure that any discrepancies identified (i.e., omissions, modifications, deletions, etc.) are appropriate and intentional based on the patient's care plan.
• Discuss digital/electronic tools
• Communicate medication information during transitions in care.
Medications and the Elderly

13% of the population
30% of all Rx drugs
50% of OTCs

40% Drug-related hospitalizations
50% of drug-related deaths

When to Conduct Geriatric Medication Assessment

- New patient visits
- Annual exams
- With care transitions
  - Home to hospital
  - Hospital to home
  - Hospital to SNF
  - SNF to home
- When patients are presenting with new symptoms which could be drug related

Why Conduct a Geriatric Medication Assessment?... To Obtain an Accurate Med List and Prevent Harm

- Discrepancies between clinic medication lists and patient reported lists are high and can cause harm
  - Mean # discrepancies per patient: 0.6-8.8
  - 38-100% have at least one discrepancy
  - 22-82% with possibility of harm
  - Most common: nonintentional nonadherence, omitted meds, restarting home meds when supposed to d/c
  - Risk factors for discrepancies: patients with ≥8-10 discharge meds, >5 outpatient visits in previous year, < high school education, male gender
Minnesota FM Model

• Family Medicine clinic in Minnesota, N=327
  – At least 10 meds in EMR
  – Clinical pharmacist saw patient before physician, interviewed patient and corrected medication list; also performed medication review if possible
• Mean 6.6 ± 4.5 med discrepancies identified and resolved (range 0-26)
  – Mean 3.4 ± 3.2 clinically important discrepancies per pt
  – Most common: nonadherence (54%)

University of Colorado Hospital Seniors Clinic Data

• N=303 patients who transitioned from hospital to home between 8/26/14 to 8/25/15
• Pharmacists medication reconciliation performed via phone/in person after UCH discharge
• 78% of patients had at least 1 discrepancy
  – Mean 2.3 discrepancies per patient
  – Range 0-18 discrepancies
  – Many clinically relevant
Examples of Medication Discrepancies: 81 y/o AA Man

Based upon the patient's discharge medication list, they had the following medication changes at discharge:

- **NOTE:** the patient stated they were taking this but will stop it now after this discussion. His wife took them out of the pillbox and moved the bottle
- Start prednisone 20mg, 2 tabs daily  
  **NOTE:** she never picked this up but wife stated he would pick it up today
- Change atorvastatin to 1-2 puffs QH—this is not really a change for him
- Change Home O2 to 1L/min continuous  
  **NOTE:** he does not have this and says he does not need it for his lungs but I left it on his list until he sees Dr. Rawlins for an evaluation
- Continue ASA 500mg for pain, ASA 81mg, calcium carbonate, at 0, ciprofloxacin oral, cimetidine, gdl, digoxin, HCTZ, Combivent, losartan, montelukast, nitrostat, pravastatin, tamulosin, Simicort  
  **NOTE:** he was using ciprofloxacin BID so I educated him to go down to once daily and also remove it with nail polish remover once weekly
- **NOTE:** he has not started nitrostat because he has never picked it up—he said he would pick it up today
- **NOTE:** he has not ever picked up Simicort the last time he makes his doctor appointments. We discussed how important the Simicort is to his lungs and preventing...

Examples of Medication Discrepancies: 81 y/o AA Man

- **NOTE:** he has not ever picked up Simicort before he has been getting a sample each time he sees Dr. Rawlins. We discussed how important the Simicort is to his lungs and preventing...

The patient's CrCl is estimated creatinine clearance: 59.4 mL/min (based on Cr of 1.03), and all medications are appropriately reevaluated and dose adjusted.

Upon medication review, I also noted the following discrepancies/issues with their medications:

- **NOTE:** he was taking ASA for stroke prevention with paroxysmal MB—could consider a newer agent given better efficacy and patient has good insurance coverage and kidney function
- **NOTE:** he has to take his medications
- **NOTE:** he has to take his medications
- **NOTE:** he has to take his medications
- **NOTE:** he has to take his medications
Discrepancies after D/C from SNF to Home: 84 y/o Caucasian Woman

The patient does not have a TOC flu app't yet.
I spoke to the patient but was unable to really go over her meds other than warfarin. She was a bit confused on the phone, so I will try to reach out to HGN (Accent Care 303-626-5402 per pt) tomorrow for further flu on meds.

Based upon the patient’s discharge medication list from the SNF and our UCH medication list, they have the following 14 discrepancies in their list:

• Dulcolax supp daily PRN constipation
• Flaxseeds enema Q3 days PRN constipation
• MOM 30mL daily PRN constipation
• Motility 30mL Q4h GI upset
• Compazine 5mg Q6h PRN
• Furazolidine 40mg daily
• Ranitidine 150mg BID
• APAP 325mg, 2 tabs TID scheduled—plus she has a PRN order
• Nasacort AQ in each nostril BID

• The SNF does NOT have the following meds on their discharge list but we still have it on our list— I removed them from our list:
  - Citalopram 20mg
  - Nystatin ointment
  - Omeprazole 40mg

• After SNF discharge the following meds changed:
  - Warfarin 7.5mg daily changed to warfarin 4mg daily—I updated this on our med list
  - Metoprolol XL 100mg 1/2 tab daily changed to 25mg daily (XL version not specified)

The patient's CrCl is CrCl cannot be calculated (Patient has no serum creatinine result on file).

Upon medication review, I also noted the following issues with their medications:

• Warfarin management: The nurse at the facility gave me the following info on her warfarin:
  - INR 6/1: 5.4 Warfarin held 6/1-6/4 then restarted at 5mg daily
  - INR 6/15: 4.2 Warfarin held 6/15-6/16 then restarted at 4mg daily
  - INR 6/17: 3.3 Hold X1d, then continued at 4mg daily
  - INR 6/19: 1.8, continued at 4mg daily
  - INR 6/22: 1.6, continued at 4mg daily

• I called [Name] and spoke to [Name]. He will have their staff schedule for a flu INR. I also asked [Name] to take 2 or 4mg tabs (e.g. 8mg) tonight since her INR is low—she did this while I was on the phone with her. She could not cut the tabs.

• Patient’s citalopram was stopped—suggest flu for depression

Immunization Assessment: the patient is up-to-date on immunizations EXCEPT for: Zostavax (not sure if she rec’d it)

Action items for PCC:
1. flu on depression after stopping citalopram
2. flu BPHNA after reducing metoprolol
3. flu on GERD/respira after stopping down from omeprazole to ranitidine
Obtaining an Accurate Medication List

- **Must** include patient/caregiver
- May include pharmacy
- Preferably:
  - In person, with all prescription and OTC bottles
  - If completing over the phone, patient/caregiver needs to have access to their prescription bottles

How to Conduct a Patient Interview

- **Open conversation** with goal that we are working with the providers to ensure accurate medication list
- Patients may need encouragement to discuss medications—they are the ones who most need the review
- Patient is asked to show bottles (if in person) or tell us how they are taking medications (over the phone, using bottles)
How to Conduct a Patient Interview

• Patient is asked to identify all meds taken
  – Often requires going to other rooms to get more bottles/creams/eye drops etc.
  – Emphasis is given to identifying names, ingredients of nutritional supplements/herbals
• When discrepancies are identified, no blame is placed
• Identified discrepancies are resolved or triaged
• Patient goals should be documented

How to Conduct a Patient Interview

• Discrepancies
  – Urgent, need discussion with provider now
  – Semi-urgent, can wait until appt within 7-10 days, notes for f/u
  – Non-urgent, minor—resolved on medication list now, notes for f/u, education of patient
• Drug-related problems
  – Investigated by interviewing patient about symptoms, effectiveness, and adverse effects
How to Conduct a Patient Interview

• Drug-related problems cont…
  – Major/urgent: discussed with provider now
  – Minor/non-urgent: noted for f/u, patient educated about drug-related problem if deemed helpful

• Patient/caregiver education
  – Education is provided for any lack of knowledge identified and to help improve adherence

How to Conduct a Patient Interview

• Challenges
  – Medication list/discharge summary is confusing
    • Contact inpatient team/PCP/pharmacy for clarification
  – Patient is confused
    • Ask if patient has a family member who can help
    • Discuss HHN options with provider/social worker
    • Ask patient to write down information/instructions
    • Call back the next day to reinforce information
    • Delay majority of med rec to in person visit
How to Conduct a Patient Interview

- Challenges
  - Patient needs more assessment
    - Involve nursing staff, provider, and/or SW
  - Time (at UCH)
    - Average interview and documentation time: 45 min
    - Range 20-90 minutes
    - Longer if patient needs an interpreter

Critical Thinking When Performing Medication Reconciliation

- Is this new symptom a side effect of any medication the patient is currently taking?
  - If not, is the problem/symptom treatable with drugs?
- Have the risks versus the benefits of drug therapy been weighed for this patient?
- How will age-related changes in drug disposition and response affect this drug in this patient?
Critical Thinking When Performing Medication Reconciliation

✓ Is this the right drug for this illness?
  – Are there any non-drug alternatives which can be tried before drug therapy?
✓ Is this the right drug for this patient?
  – Can this drug interact with any other diseases a person may have?
  – Can this drug interact with any other drugs this person is taking?
  – Can the patient afford the drug?
✓ Is this the right dose for this elderly patient?
  – Has the dose been adjusted for age, renal function, hepatic function or other parameter?
  • Is the patient adherent to the drug?

Critical Thinking When Performing Medication Reconciliation

✓ Has both the patient and/or caregiver been educated about the proper use and side effects of this drug?
✓ Is this drug having the desired therapeutic effect?
✓ Is this drug causing an unwanted adverse effect?
✓ What is the appropriate duration of treatment?
✓ When can the drug be stopped?
✓ Does the patient need all of these drugs?
  – Can we talk them out of any of the OTCs/herbals?
Coordinating Follow-Up and Communication of Medication Assessment

• Medication assessment documented in clinical note
  – Routed to PCP, provider seeing patient for f/u, nurse and SW if needed
• If medication changes are made:
  ✓ Make sure the patient/family knows
    ✓ Ask them to write down changes and/or provide an updated med list
  ✓ Communicate with the pharmacy
    ✓ Deactivate prescriptions or ask pharmacy to stop automatic refills
• Coordinate f/u appt if necessary

Examples of Medication Reconciliation in EPIC
Digital/Electronic Tools

- Computerized algorithm to reconcile meds between clinical notes and discharge medication list
  - Utilizes machine learning & natural language processing technology
  - High performance

- Electronic reconciliation tool
  - Integrated into CPOE to register the best possible medication history and prevent discrepancies with inpatient medications

Geriatric Medication Assessment: *Identification of Drug-Related Problems*

- Polypharmacy
- Drug interactions
- Adverse events
- Non-adherence
- Underuse of medications
- Potentially inappropriate medications (PIMs)
- Drug-induced disease/conditions
Geriatric Medication Assessment: Other Benefits

- To assist providers and patients to achieve the best possible drug/non-drug therapy
- AGS Updated Beers Criteria
  - Resource for potentially inappropriate medications, drug interactions and renal dosing

Resource: The AGS Beer’s Criteria

- Consensus criteria for safe medication use in older adults
- Based on expert consensus developed through modified Delphi technique
- Originally published in 1991
- Current versions supported by AGS and include evidence rating, evidence tables, and additional resources
- Additional guidance document available + alternatives paper
- Adopted by NCQA and CMS into quality initiatives
### AGS 2015 Updated Beers Criteria

#### Usefulness
- Evidence-based
- Updated regularly
- Includes evidence rating and evidence tables
- Designed to support good clinical judgment

#### Limitations
- Evidence-based
  - If no evidence, not included
  - If evidence supports in patients of all ages, drug was not included
- Does not apply to all patients
- Does not replace common sense and clinical judgment
- The criteria are not equally applicable in all countries


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### AGS 2015 Updated Beers Criteria: Key Principles to Guide Optimal Use

1. Medications in the AGS 2015 Beers Criteria are potentially inappropriate, not definitely inappropriate
2. The caveats and guidance listed in the rationale and recommendation statements are important.
3. Understand why medications are included in the Criteria and adjust your approach to those medications accordingly.
4. Optimal application involves identifying PIMs, and where appropriate, offering safer nonpharmacological and pharmacological therapies
5. The Criteria should be a starting point for a comprehensive process of identifying and improving medication appropriateness
6. Access to medications included in the Criteria should not be excessively restricted by prior authorization and/or health plan coverage policies

AGS Beers Criteria: Tables

- Table 2: PIMs that should be avoided, if possible, in all older adults
- Table 3: PIMs that should be avoided, if possible, in certain older adults
  - Those with a drug-disease/syndrome interaction
- Table 4: PIMs to be used with caution in older adults
- Table 5: Non-Infective DDIs that should be avoided
- Table 6: Non-Infective meds that should be avoided or have dose reductions in patients with varying degrees of kidney function


iGeriatrics App

[App Description and Screenshots]
## Format of AGS Beers Criteria 2015

<table>
<thead>
<tr>
<th>Therapeutic Category</th>
<th>Rationale</th>
<th>Recommendation</th>
<th>Quality of Evidence</th>
<th>Strength of Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPIs</td>
<td>Risk of Clostridium difficile infection and bone loss and fractures</td>
<td>Avoid scheduled use for &gt;8 weeks unless for high-risk patients (e.g., oral corticosteroids or chronic NSAID use), erosive esophagitis, Barrett’s esophagitis, pathological hypersecretory condition, or demonstrated need for maintenance treatment (e.g., due to failure of drug discontinuation trial or H2 blockers)</td>
<td>High</td>
<td>Strong</td>
</tr>
</tbody>
</table>


## Excerpts from AGS Beers Criteria 2015

### Table 2 AVOID

<table>
<thead>
<tr>
<th>Therapeutic Category</th>
<th>Rationale</th>
</tr>
</thead>
</table>
| Digoxin              | Use in Afib: Avoid as first line therapy  
Use in HF: Avoid as first-line therapy  
If used for Afib or HF: avoid dosages >0.125 mg/day in patients with Stage 4 or 5 chronic kidney disease |
| Nifedipine IR        | Avoid     |
| PPIs                 | Avoid scheduled use for >8wks unless high risk patient, erosive esophagitis, Barrett’s esoph, hypersecretory cond, or failure of d/c or H2RA |
| NSAIDs               | Avoid chronic use, unless other alternatives are not effective and patient can also take PPI/misoprostol |
| Skeletal muscle relaxants | Avoid     |

### Table 3: AVOID in certain patients

<table>
<thead>
<tr>
<th>Drug Class</th>
<th>Avoid in Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSAIDs, COX-2 inhibitors, Non-DHP CCBs, TZDs, cilostazol, dronedarone</td>
<td>Avoid in patients with HF</td>
</tr>
<tr>
<td>AChE-Is, peripheral alpha-1 blockers, tertiary TCAs, chlorpromazine,</td>
<td>Avoid in patients with a history of syncope</td>
</tr>
<tr>
<td>thioridazine, olanzapine</td>
<td></td>
</tr>
<tr>
<td>Anticholinergics, benzodiazepines, H2 blockers, Z-drugs, antipsychotics</td>
<td>Avoid in patients with dementia or cognitive impairment</td>
</tr>
<tr>
<td>Oral and transdermal estrogen, peripheral alpha-1 blockers</td>
<td>Avoid in women with urinary incontinence</td>
</tr>
</tbody>
</table>

Excerpts from AGS Beers Criteria 2015


### Table 4

<table>
<thead>
<tr>
<th>Drug Class</th>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA for primary prevention of cardiac events</td>
<td>Use caution in adults ≥80 yrs</td>
</tr>
<tr>
<td>Dabigatran</td>
<td>Use caution in adults ≥75 yrs or if CrCl &lt;30mL/min</td>
</tr>
<tr>
<td>Prasugrel</td>
<td>Use caution in adults ≥75 yrs</td>
</tr>
<tr>
<td>Antipsychotics, diuretics, carbamazepine, carboplatin,</td>
<td>Use caution in older adults due to risk of SIADH</td>
</tr>
<tr>
<td>cyclophosphamide, cisplatin, mirtazapine, oxcarbazepine, SSRIs, SNRIs,</td>
<td></td>
</tr>
<tr>
<td>TCAs, vincristine</td>
<td></td>
</tr>
</tbody>
</table>

Excerpts from AGS Beers Criteria 2015

### Table 5: DDIs to Avoid

<table>
<thead>
<tr>
<th>Object Drug</th>
<th>Interacting Drug</th>
<th>Rationale</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzos and Nonbenzo, Benzo receptor agonist hypnotics</td>
<td>≥2 other CNS active drugs&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Increased risk of falls and fractures</td>
<td>Avoid total of ≥3 CNS-active drugs&lt;sup&gt;a&lt;/sup&gt;; minimize number of CNS active drugs</td>
</tr>
<tr>
<td>Anticholinergic</td>
<td>Anticholinergic</td>
<td>Increased risk of cognitive decline</td>
<td>Avoid, minimize number of anticholinergic drugs (Table 7)</td>
</tr>
</tbody>
</table>

<sup>a</sup> Increased risk of falls and fractures and fractures

Excerpts from AGS Beers Criteria 2015


### Table 5: Renal Dosing

<table>
<thead>
<tr>
<th>Med or Med Class</th>
<th>CrCl where Action Required</th>
<th>Rationale</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gabapentin</td>
<td>&lt;60 mL/min</td>
<td>CNS adverse effects</td>
<td>Reduce dose</td>
</tr>
<tr>
<td>Spironolactone</td>
<td>&lt;30 mL/min</td>
<td>Increased potassium</td>
<td>Avoid</td>
</tr>
<tr>
<td>Ranitidine</td>
<td>&lt;50 mL/min</td>
<td>Mental status changes</td>
<td>Reduce dose</td>
</tr>
<tr>
<td>Dabigatran</td>
<td>&lt;30 mL/min</td>
<td>Increased risk of bleeding</td>
<td>Avoid</td>
</tr>
</tbody>
</table>

Excerpts from AGS Beers Criteria 2015

Example Med Assessment
80 y/o Asian Man: Drug-Related Problems and Needs More F/U

Drug-related Problems
Coordinating Follow-Up

Med Assessment: Quick F/U Needed
75 y/o Caucasian Woman

Additional Documentation
Encounter Info  Billing Info  History  Allergies  Detailed Report
Med Assessment: Quick F/U Needed
75 y/o Caucasian Woman

Discrepancies Identified:
- Patient is taking a lower dose of bumetanide than she is supposed to—Kim is fixing this
- Patient is taking a different isosorbide than she is supposed to—I changed the med list to what the patient is taking.
- Patient is NOT taking 3 meds: trazodone, furosemide, or aspirin—the patient does not have these meds at home.

I asked Kim to weigh the patient and she weighted 167.4 lbs, which is up from 161.5 lbs on 6/10 (Kim says she thinks the scale is showing 2 lbs less than actual based upon her weight). Kim is not a nurse, but I asked her to look at Sarah’s legs and she said they did not look swollen. She said the patient is not more SOB than when she went to the hospital.

LM for Rob to let him know that Kim is going to help out and fill the pillbox for the next few days (pt aware) as meds need taken care of now vs later. Also asked him to call back to confirm plan and to help monitor body weight/fluid in legs.

Action Items:
1. Will request PCP to review ASAP and if he wants to make any other interventions (e.g. add spironolactone) will need to fill on DMP due to changes in diuretics, weight and edema.
2. Fill BP.
3. Consider changing dosing interval of furosemide to q 12 hours.
4. If appropriate at 1st visit, would recommend flu for Zoster, so patient can receive at her pharmacy.

Me to Pamel: Bennett L, MD

- Please see my note. Pt’s meds messed up and needs to have filled at least in 5 days (possibly). Could not reach her.

Me

- 2:31 PM

Pamel: Bennett L, MD: to Seniors Phrmed Op

- 2:33 PM

Spoke to Dr. Pamel. Per plan, called Kim back to go patient an extra 1 tab of bumetanide 2mg now. She took the tablet, and as per plan, Kim should be able to go home. I then attempted to schedule a med refill tomorrow with Nisa but she does not drive and does not have a ride. She will not bring her (see Kim). Kim always brings her and attends appts and Kim does not work on T/F due to taking a class from 9am-3pm. There are no apple open in the clinic on Monday, so we will just have to hope that filling the pillbox for tonight-Monday is effective. Will route back to PCP.

Pamel: Bennett L, MD: to Seniors Phrmed Op

- 2:35 PM

Discussed with clin pharm, Dr. Linnebro: One extra bumetanide 2mg, to be seen tomorrow.

- 2:43 PM

Sounds like weights are happening. Wally. Can you or Danielle check back in for ses. and weight tomorrow or Friday?

- 2:44 PM

Me to Pamel, Bennett L, MD

- 2:59 PM

Fills with patient on 6/17 to get a weight.

Me to Seniors Phrmed Op

- 2:09 PM

Kim goes to the patient’s home on MW and offered to do weights. We can call back on Friday after 11:30am to check a weight.
Geriatric Medication Assessment: 

*Providing Patient Education*

Patients with polypharmacy may be unaware of their why they are taking certain medications

- 754 older adults interviewed about medications
  - Mean age 73 years
  - Mean # prescribed drugs: 9
- Only 15% of patients were able to recall indication for each of their drugs
- Factors associated with not knowing drugs: taking ≥10 drugs, age ≥80 yrs old, male sex
- Patients living with a partner were more knowledgeable
- No association with educational level

*Age Ageing 2016;45:402-408*
Geriatric Medication Assessment: Providing Patient Education

- When providing patient education, helpful to also provide to family member helping older adult at home.
- Information should be verbal and written if possible.
  - If patient is just home from a care facility, typically also need to reinforce information again at a later date or time.
    - Verbally by another clinician OR
    - At follow-up visit by provider.

Example of Patient Ed: 74 y/o Caucasian Man

Based upon the patient's discharge medication list, they had the following medication changes at discharge:
- ASI-buprofen
- Start APAP 650mg every 6 hours PRN
- Start amiodarone 400mg BID
- Start atorvastatin 10mg daily— for high TGs
- Start dorzolamide 100mg BID x 10x
- Start furosemide 40mg BID
- Start metoprolol 50mg BID
- Start oxycodone 5mg, 1-2 tabs Q4H PRN

  - Note: Patient has only taken 1 tablet. Educated wife on side effect of constipation with this medication. Advised wife to get semi if her husband is using this medication regularly.
  - Start KCL 20mEq daily
  - Start warfarin 5mg daily

  - Note: Educated patient's wife on warfarin (side effects, food interactions, INR, etc). Also, ordered INR for tomorrow given interaction with Amiodarone. Of note, patient is a candidate for apixaban or rivaroxaban. Spoke to the wife about these medications and she was open to trying rather than having INR monitoring and diet restrictions.
  - Change fluticasone nasal spray to 2 sprays each nostril daily
  - Continue ASA 325mg (0.5 tablet), vit D, CPAP, glucosamine/chondroitin, MVI, omega 3 FA

Other discrepancies:
1. Asked the wife if she knew why her husband was taking omega 3 capsule daily. She stated they started for heart health but she has recently stopped her capsule. I educated the wife on how this medication is likely not providing benefit and her husband could discontinue. She stated they
Example of Patient Ed: 74 y/o Caucasian Man

Key Points

- Adverse drug events are common in the elderly and are often preventable
- A thoughtful, systematic process to assess medications in the elderly is important and should be utilized at least annually
- The 2015 AGS Beers Criteria is a helpful resource for clinicians managing medications in the elderly
Questions?

Email: sunny.linnebur@ucdenver.edu