Transitions of Care & Medication Reconciliation

Ashley King, PharmD, BCGP
Clinical Pharmacist
LECOM Health
March 2018

Objectives

- Identify when to complete medication reconciliation
- Understand the importance of accurate medication reconciliation
- Use critical thinking skills to compile admission and discharge medication lists via comparison of medication histories
- Use clinical tools to assess the appropriateness of each medication
- Summarize non-pharmaceutical items critical to address prior to discharge

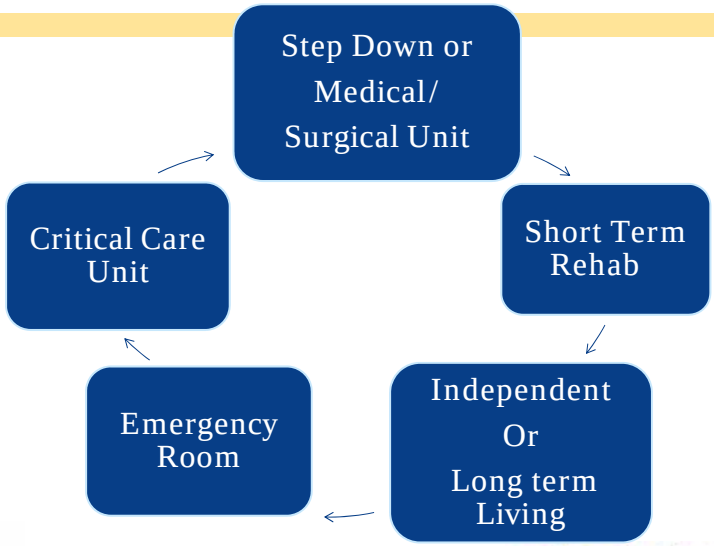
Definitions

- **Transitions of care:** movement of a patient between health care practitioners and/or settings as their medical needs change during the course of an illness
- **Medication reconciliation**: process of comparing medication lists at a point-of-care transitions to identify and resolve medication discrepancies

LIGHT

LECOM HEALTH

Transitions of Care



LIGHT

LECOM HEALTH

Medication Reconciliation

- Should be completed at EACH point of care transition
  - Admission
  - Transfer
  - Discharge
  - Outpatient follow-up visit
- Identifies:
  - New medications
  - Discontinued medications
  - Medication dose or frequency changes

LIGHT

LECOM HEALTH

Medication Reconciliation Purpose

- Reduces risk of medication errors involving:
  - Omission
  - Duplication
  - Unjustified medications
  - Dosing Errors
  - Drug Interactions
- Medication errors → increased healthcare costs & patient safety risks
- Provides opportunity to ensure optimization of med list
- Provides opportunity for clinician to ensure patient understands medication regimen

LIGHT

LECOM HEALTH

Steps to Performing Medication Reconciliation

- Assemble the lists of medications
  - Pre-admission medication list
  - Inpatient medication list
  - Discharge list
  - Current list
- Review and compare lists
  - Ascertain accuracy
- Resolve discrepancies
  - Formulate decisions based on medical judgment with respect to the patient's conditions and medications
  - Optimize care to best meet the patient's needs
- Document changes
- Check the patient's understanding of their medications & counsel on changes
- Provide the patient a of copy current medication list

LIGHT LECOM HEALTH

Importance of Medication Reconciliation

- "Typical" hospitalized patient at risk for one medication error per day
  - 40% are thought to be due to inadequate medication reconciliation
- Out of 577 discharge drug summaries, 66% contained at least one inconsistency
  - 393 drug omissions
    - 32% of which were potentially harmful
  - 17% of all medications were unjustified
    - 16% of which were potentially harmful

LIGHT Perren A, et al. *Qual Saf Health Care*. 2009. LECOM HEALTH

Barriers to Medication Reconciliation

- Inability of patient to provide accurate medication list/history on admission
- Need for fast, immediate care
- Inpatient use of medication lists from previous hospital stays
- Multiple care providers in multiple settings
- Medication adherence not taken into consideration
- Failure to adjust formulary changes on discharge
- Continuation of medications for prophylaxis post acute care discharge
- Lack of patient understanding of medication changes on discharge

LIGHT LECOM HEALTH

Overcoming barriers to medication reconciliation

- NEVER assume patient is on same medications as last visit
- Use family members/POAs, pharmacy refill records, outpatient records, inpatient progress notes/discharge summaries, MARs, PDMP
- ALWAYS ask about over the counter products, including herbals and vitamins
- Complete within 24 hours of admission if unable to accurately complete immediately
- Complete 1-3 days post discharge instead of at next outpatient visit
- Utilize interdisciplinary team
  - Pharmacy staff, nursing support

LIGHT LECOM HEALTH

Optimization of Phamacotherapy

- Critical thinking to ensure appropriateness of each medication while performing medication reconciliation
  - Not only HAS each medication been continued? But, *SHOULD* each medication be continued?
- Opportunity for reduction of polypharmacy

Polypharmacy

- Concomitant use of multiple medications
- Can also be associated with quantity
  - LTC setting: 9 or more medications
  - 6 or more medications with 2 or more chronic conditions
- Associated with:
  - Adverse events
  - Non-compliance
  - Decreased functional status
  - Increased healthcare costs
- Contributed to by prescribing cascade
  - When one medication is prescribed to treat side effects of another medication

Polypharmacy & ADEs Can Cause:

- Confusion
- Delirium
- Depression
- Dizziness
- Falls
- Incontinence
- Insomnia
- Malnutrition
- Memory loss

Which can then cause:

- Decreased QOL
- ED visits
- Fractures
- Hospitalization
- Loss of function
- Loss of independence
- SNF placement
- Physician visits
- Death

Tools to Assess Pharmacotherapy

- Medication Appropriateness Index
- Beer's Criteria
- STOPP
  - Screening Tool of Older Persons' potentially inappropriate Prescriptions
- START
  - Screening Tool to Alert doctors to the Right Treatment

Medication Appropriateness Index

- Is there an indication for the medication?
- Is the medication effective for the condition?
- Is the dosage correct?
- Are the directions correct?
- Are the directions practical?
- Are there clinically significant drug interactions?
- Are there clinically significant drug-disease interactions?
- Is there duplication of therapy?
- Is the duration of therapy acceptable?
- Is the medication the least expensive alternative?

LIGHT

LECOM HEALTH

Beers Criteria

- Published by American Geriatric Society
- List of potentially inappropriate medications in older adults
  - Divided into 5 categories
- Widely used by geriatricians in clinical settings
- Originally published in 1997, revised multiple times, most recent in 2015
- Developed through expert consensus from literature review and questionnaire
- Used by CMS for nursing home regulation

LIGHT

LECOM HEALTH

2015 Beers Criteria Categories

- **Potentially Inappropriate Medications (PIMS)** in Older Adults
- PIMS in Older Adults due to **Drug-disease Interactions** that may Exacerbate the Disease or Syndrome
- Drugs to be **Used with Caution** in Older Adults
- Potentially Clinically Important Non-anti-infective **Drug-drug Interactions** that should be Avoided in Older Adults
- Potentially Clinically Important Non-anti-infective Drugs that Should be Avoided or Dose Reduced with Varying Levels of **Kidney Function** in Older Adults

LIGHT LECOM HEALTH

START/STOPP (Version 2)

- Published by British Geriatrics Society
- List of inappropriate medications & potential prescribing omissions
- Divided by organ system
- Addresses drug-disease interactions, drug-drug interactions, duration, doses based on eGFR
- Originally published in 2008, updated 2014
- Criteria developed through expert consensus from literature review

LIGHT LECOM HEALTH

Beers, START/STOPP Strengths

- Strengths
  - Evidence based!
  - Includes drug-drug interactions, drug-disease interactions, renal dosing
  - Updated regularly
  - **Effective tool for informing clinicians on which medications to evaluate for appropriate use and/or to avoid initially AND which medications to start**

LECOM HEALTH

Beers, START/STOPP Limitations

- Does not address duplication or ALL problems
- Older adults often under-represented in trials
- Search strategies may have missed unpublished reports
- Not applicable to hospice/palliative care
- Problems not prioritized
- **Does not replace clinical judgment!!!**

LECOM HEALTH

Patient Case #1

- Betty, a 93 year old female is being admitted to an acute care setting for pneumonia and acute kidney injury
- PMHx: DVT 3 years ago, dementia, GI bleed, hypertension, hypothyroidism, coronary artery disease, OA
- Patient resides at a skilled nursing facility

LIGHT

LECOM HEALTH

Compare Medication Lists

Home Medication List

- Aspirin 81mg PO daily
- Donepezil 10mg PO daily
- Memantine 10mg PO BID
- Lisinopril 10mg PO daily
- Metoprolol succinate 50mg daily
- Levothyroxine 100mcg PO daily
- Lansoprazole 30mg PO daily
- Calcium/vitamin D 600mg/400 units BID

Inpatient Medication List

- Aspirin 81mg PO daily
- Donepezil 10mg PO daily
- Memantine 10mg PO BID
- Metoprolol tartrate 50mg PO daily
- Levothyroxine 100mcg PO daily
- Pantoprazole 40mg PO daily
- Xarelto 15mg daily
- Normal Saline IV @ 100mL/hour
- Ceftriaxone 2G IV daily
- Azithromycin 250mg IV daily

LIGHT

LECOM HEALTH

Discrepancies

- Lansoprazole→ pantoprazole
  - Formulary change
- Addition of sodium chloride
  - Added for dehydration/AKI
- Removal of lisinopril
  - Held due to AKI
- Addition of ceftriaxone & azithromycin
  - Added for pneumonia

LIGHT

LECOM HEALTH

Discrepancies

- Metoprolol succinate 50mg daily→ metoprolol tartrate 50mg daily
  - No rationale for change
  - Medication reconciliation error
- Addition of Xarelto 15mg daily
  - Patient previously on this medication for DVT but discontinued by PCP
  - Medication reconciliation error
  - Expensive
  - Potentially harmful

LIGHT

LECOM HEALTH

Patient Case #2

- Fred, a 75 year old female is being admitted to acute rehab setting. She is status post femur fracture fixation in an acute care setting
- Past Medical History: diabetes mellitus type 2, falls, osteoporosis, arthritis, hypertension, hyperlipidemia, CAD, GERD

Compare medication lists

Home Medication List	Acute Care Medication List	Inpatient Rehab List
Aspirin 81mg PO daily	Aspirin 81mg PO daily	Aspirin 81mg PO daily
Quinapril 20mg PO daily	Lisinopril 20mg PO daily	Quinapril 20mg PO daily
Ibuprofen 800mg PO q6h PRN	Hydrocodone/apap 5/325mg PO q4h PRN pain	Hydrocodone/apap 5/325mg PO q4h PRN pain
Omeprazole 20mg PO BID	Ibuprofen 800mg po q6h PRN	Ibuprofen 800mg po q6h PRN
Calcium/vitamin D 600mg/400 units BID	Pantoprazole 40mg PO BID	Omeprazole 40mg PO BID
Januvia 100mg PO daily	Calcium/vitamin D 600mg/400 units BID	Calcium/vitamin D 600mg/400 units BID
	Xarelto 10mg daily	Xarelto 10mg daily
	Tradjenta 4mg PO daily	Tradjenta 4mg PO daily
		Januvia 100mg PO dailly

Discrepancies

- Omeprazole 20mg BID→ pantoprazole 40mg BID → omeprazole 40mg BID
  - Formulary interchanges
  - Appropriately back to home medication when discharged from acute care; however, dosing error
- Quinapril 20mg daily→ lisinopril 20mg daily→ quinapril 20mg daily
  - Formulary interchange
  - Appropriately adjusted on discharge
- Januvia 100mg daily→ Tradjenta 4mg daily→ BOTH Januvia 100mg daily & Tradjenta 4mg daily
  - Formulary interchange not appropriately adjusted on discharge

LIGHT LECOM HEALTH

Discrepancies

- Addition of Xarelto 10mg PO daily
  - Added for DVT prophylaxis s/p surgery
  - BUT→ no stop date!
- Addition of hydrocodone/apap 5/325mg po q4h prn pain
  - Added for pain due to fracture & surgery
  - Assess pain & use on discharge to determine need or amount to send home with patient
  - NEVER assume patient is using around the clock
  - Patient should follow-up with PCP regarding duration
  - Counsel patient on appropriate opioid disposal

LIGHT LECOM HEALTH

Inappropriate Medications?

- Ibuprofen 800mg PO q6h PRN
  - Decreases fracture healing
  - Increased risk of side effects in elderly: nephrotoxicity, cardiotoxicity, bleeding
  - Consider discontinuation
- PPI twice daily
  - Increases risk of impaired calcium absorption
  - Increased risk of cdif
  - Consider dose reduction based on symptoms

LIGHT

LECOM HEALTH

Patient Case #3

- Mary, a 66 year old female following-up with outpatient primary care provider. Recently discharged from hospital. Treated in hospital for new onset atrial fibrillation
- Past medical history: hypertension, hyperlipidemia, obesity, depression, anxiety osteoarthritis, coronary artery disease

LIGHT

LECOM HEALTH

Compare medication lists

Pre-admit Home Medication List	Acute Care Medication List	Acute Care Discharge Medication List
Valsartan 160mg PO daily	Losartan 100mg PO daily	Losartan 100mg PO daily
Pravastatin 20mg PO QHS	Atorvastain 40mg PO qhs	Atorvastatin 40mg PO QHS
Duloxetine 60mg PO daily	Lorazepam 0.5mg PO q6h PRN anxiety	Lorazepam 0.5mg PO q6h PRN anxiety
Lorazepam 0.5mg PO q6h PRN anxiety	Cardizem IV continuous infusion converted to dilitazem ER 120mg PO daily	Furosemide 40mg IV daily
Furosemide 20mg PO daily	Furosemide 40mg IV daily	Acetaminophen 650mg PO q6h
Acetaminophen 650mg q6h PRN	Acetaminophen 650mg PO q6h	Apixaban 5mg PO q12h
	Apixaban 5mg PO q12h	

LIGHT

LECOM HEALTH

Discrepancies

- Valsartan 160mg at home→ losartan 100mg on discharge
  - Approximate equivalent doses
  - Formulary interchange not changed back to home medication
  - Determine which to continue based on patient's current supply or preference

LIGHT

LECOM HEALTH

Discrepancies

- Duloxetine 60mg daily not continued during hospital or discharge
  - Rationale for discontinuation unclear
  - SNRI associated with withdrawal symptoms
  - Potentially harmful medication reconciliation error

LECOM HEALTH

Discrepancies

- Pravastatin 20mg PO QHS→ atorvastatin 40mg PO QHS
  - Not equivalent doses
  - Potentially therapeutic optimization
  - Monitor for new/worsening myalgia
- Addition of Eliquis
  - Therapeutic optimization for atrial fibrillation

LECOM HEALTH

Discrepancies

- Addition of IV furosemide in hospital & continuation of IV on discharge
  - Failure to convert IV to PO on discharge
- IV Cardizem→ PO dilitazem in hospital, not continued on discharge
  - Erroneously discontinued?
  - Difficult to determine without review of hospital records
  - Clinical judgment based on patient specifics & hospital course
  - Potentially harmful medication reconciliation error

LIGHT LECOM HEALTH

Patient Case #4

- An 93 year old patient presents to your outpatient clinic after a recent hospital stay due to a fall and complicated UTI.
- The patient is presenting with new dyskinesias of arms, shoulders, and heads
- The patient lives at home with daughter and visiting nurse services
- PMHx: frequent falls, Parkinson's disease, mild dementia with behaviors, frequent diarrhea, osteoporosis, depression

LIGHT LECOM HEALTH

Compare Medication Lists

Pre-admit Home Medication List	Acute Care Medication List	Acute Care Discharge Medication List
Donepezil 10mg PO qhs	Donepezil 10mg PO qhs	Donepezil 10mg PO qhs
Memantine 5mg PO BID	Memantine 5mg PO BID	Memantine 5mg PO BID
Quetiapine 50mg PO qhs	Quetiapine 50mg PO qhs	Quetiapine 50mg PO qhs
Escitalopram 10mg PO daily	Escitalopram 10mg PO daily	Escitalopram 10mg PO daily
Amlodipine 10mg PO daily	Amlodipine 10mg PO daily	Amlodipine 10mg PO daily
Furosemide 20mg PO daily	Furosemide 20mg daily	Furosemide 20mg PO daily
KCl 10mEq PO daily	KCl 10mEq daily	KCl 10mEq PO daily
Cholestyramine 4G PO TID	Cholestyramine 4G PO TID	Cholestyramine 4G PO TID
Alendronate 70mg PO once weekly	Alendronate 70mg PO once weekly	Alendronate 70mg PO once weekly
Calcium/vitamin D 600mg/500 units PO daily	Calcium/vitamin D 600mg/500 units PO daily	Calcium/vitamin D 600mg/500 units PO daily
Carbidopa/levodopa 25/100mg PO TID	Carbidopa/levodopa 50/200mg PO TID	Carbidopa/levodopa 50/200mg PO TID
	Sulfamethoxazole/trimethoprim 400/80mg PO BID	Sulfamethoxazole/trimethoprim 400/80mg PO BID x 14 days
	Enoxaparin 30mg subcutaneous daily	Enoxaparin 30mg subcutaneous daily

LIGHT

LECOM HEALTH

Discrepancies

- Addition of sulfamethoxazole/trimethoprim
  - Added for UTI in hospital
  - Extensive duration
- Increase in carbidopa/levodopa dose
  - Possible cause of new dyskinesias
  - Patient not admitted for increase in Parkinson's symptoms
  - Patient/caregiver unaware of reason for dose change
  - Likely medication reconciliation error
  - Potential to cause harm

LIGHT

LECOM HEALTH

Prescribing Cascade

- Donepezil causing diarrhea→ cholestyramine treating diarrhea
  - Evaluate start dates and on set of diarrhea
  - Benefits of donepezil outweigh risks/side effects?
- Amlodipine causing edema→ furosemide treating edema→ potassium supplement due to K^+ depletion
  - Evaluate start dates and symptom onset
  - Consider alternate antihypertensive agent

LIGHT

LECOM HEALTH

Inappropriate Medications?

- Length of alendronate therapy
  - High affinity for bone, continued osteoclast suppression after discontinuation
  - Increased risk of atypical femur fracture and osteonecrosis of jaw with duration >5 years
- Quetiapine for behaviors in dementia
  - Blackbox warning for increased risk of CV death
  - Increased risk of falls, confusion, worsening of neurocognitive function, EPS, metabolic symptoms
  - Re-evaluate risk vs benefit
  - Consider gradual dose reduction

LIGHT

LECOM HEALTH

To Err is Human

- Errors are inevitable
- Complete medication reconciliation to identify errors
- Utilize reporting of medication errors to increase awareness
- Interdisciplinary approach when making clinical decisions to overcome errors
- Discharge medication counseling and check patients' understanding

LIGHT

LECOM HEALTH

Non-Pharm Considerations on Transitions of Care

- Follow-up visits with PCP & specialists
- Follow-up labs
- Discharge medication counseling & provide updated, accurate medication lists
  - Encourage patient to show new list to all providers
- Provide prescriptions on discharge for new or changed medications
- New dietary considerations
- Change in weight tolerance or ADLs
- Ability to return to work or school
- Driving considerations

LIGHT

LECOM HEALTH

Questions?

References:

Perren A, et al. Omitted and unjustified medications in the discharge summary. *Qual Saf Health Care*. 2009.

Barnsteiner et al. Patient safety and Quality. https://www.jointcommission.org/assts/1/18

Ernest et al. *Am J Health Syst Pharm*. 2001;58:2072-75.

Kane RI, et al. Essentials of clinical geriatrics 5th Ed. New York; MCGraw0Hill. 2015.

2015 Beers Criteria

2015 START/STOPP Criteria

LECOM HEALTH