

Evaluation of Appropriateness/Inappropriateness of Medication Prescribing Using the STOPP/START Criteria in Home Based Primary Care Veterans



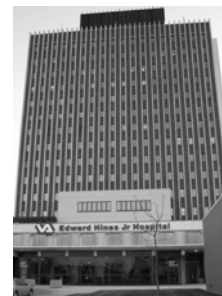
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No conflict of interest to disclose



Edward Hines, Jr. VA Hospital

- 12 miles west of downtown Chicago
- Tertiary care referral center
- 483 beds
- Serves ~54,000 veterans
- Associated with Loyola University – Stritch School of Medicine



Learning Objectives

- Discuss inappropriate medication prescribing in elderly patients.
- Identify medications with a potential benefit in the elderly population.
- Discuss the use of STOPP/START criteria in elderly Home Based Primary Care Veterans.



Inappropriate Medications in Elderly Population^{1,2}

- Increased risk for adverse drug events
- Adverse drug events responsible for 30% of hospital admissions
- Physiologic changes can alter pharmacokinetic/pharmacodynamic properties
- Often denied potentially beneficial medications



Tools to Assess Inappropriate Prescribing¹

- Beers' Criteria
- Improved Prescribing in the Elderly Tool (IPET)
- Medication Appropriateness Index (MAI)
- Assessing Care of Vulnerable Elders (ACOVE)



Screening Tool of Older People's potentially inappropriate Prescriptions(STOPP)/Screening Tool to Alert doctors to Right Treatments (START) Criteria¹

- STOPP: 65 clinically significant criteria for potentially inappropriate medication use
- START: 22 evidence based prescribing indicators for commonly encountered disease states



STOPP Criteria¹

- 10 categories include:
 - Cardiovascular system (17)
 - Central nervous system and (13)
 - Gastrointestinal system (5)
 - Respiratory system (3)
 - Musculoskeletal system
 - Urogenital system (6)
 - Endocrine system (4)
 - Drugs that adversely affect
 - Analgesic drugs (3)
 - Duplicate drug classes (1)

Mostly related to Tricyclic
Systemic
Mostly related to NSAID use
•Benzodiazepines
•Neuroleptics
•1st generation antihistamines
Regular opiates for more than 2 weeks in those
Identify any duplicate drug class prescription

START Criteria¹

- 6 categories include:
 - Cardiovascular system (8)
 - Respiratory system (3)
 - Central nervous system (2)
 - Gastrointestinal system (2)
 - Musculoskeletal system
 - Endocrine system (4)

ACE Inhibitor
Regular inhaled β_2
Antidepressant with moderate/severe
PPI with severe GERD
Calcium and vitamin
Antiplatelet therapy in DM with coexisting major CV risk factors

Self Assessment Question #1

The STOPP criteria identify aspirin > 150 mg/day as potentially inappropriate.

A. True
B. False

Self Assessment Question #2

Which medication class affecting the central nervous system is identified most frequently in the STOPP criteria?

A. Benzodiazepines
B. Selective Serotonin Re-uptake Inhibitors
C. Tricyclic Antidepressants
D. Neuroleptics


Previous Trials

- Gallagher et al.³
 - Objective:** To compare the performance of the STOPP criteria to the Beers' criteria
 - Methods:** Prospective study of 715 acute admissions
 - Results:** STOPP identified 336 potentially inappropriate medications, Beers' criteria identified 226 potentially inappropriate medications
 - Conclusion:** Significant difference in the number of potentially inappropriate medications detected by the STOPP criteria than Beers' criteria

Previous Trials


- Davis et al.⁴
 - Objective:** To examine medication appropriateness using MAI and recommendation acceptance associated with pharmacist medication review for veterans enrolled in the home based primary care program
 - Methods:** Retrospective analysis
 - Results:** Statistically significant decrease in MAI score from initial review to end of study
 - Conclusion:** By use of MAI for evaluation, pharmacist recommendations significantly improved appropriateness of medication use

Home Based Primary Care (HBPC) Program


- Provides primary care and outpatient monitoring to patients who are home bound
 - Interdisciplinary team approach
 - HBPC team reviews each patient within 14 days of admission and every 90 days thereafter
 - Pharmacists conduct an evaluation of a patient's medication regimen initially and every 90 days thereafter
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Study Purpose


Evaluate appropriateness/inappropriateness of medication prescribing using the STOPP/START criteria in elderly HBPC veterans and understand the potential impact of the HBPC team on the STOPP/START criteria.




Study Design

- Retrospective chart review of patients enrolled in HBPC program from 9/1/07 to 9/30/09
 - Patients reviewed using Computerized Patient Record System (CPRS)
 - Approved by Institutional Review Board
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Study Design: Primary Outcome

- Appropriateness/inappropriateness of medication prescribing using STOPP/START criteria
 - Evaluated by comparing medication list at the initial pharmacist note for medications that met STOPP/START criteria to medication list at follow up note that occurred within 15 weeks
 - Assigning each patient STOPP score and START score
 - Identifying patients with a 2 point improvement in STOPP or START score
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Study Design: Secondary Outcome

- Impact of HBPC team on STOPP/START criteria
 - Assessed by examining the number and type of pharmacist recommendations made and accepted regarding:
 - Medications discontinued
 - Medications started
 - Medications renewed
 - Dosage adjustments
 - Drug-drug interactions
 - Drug-disease interactions
 - Monitoring of lab values
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STOPP and START Scoring

- “1” assigned for an active prescription
 - “0” assigned in the absence of an active prescription
 - STOPP: Higher score indicates more inappropriate medications
 - START: Higher score indicates more appropriate medications
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Study Design

- Inclusion Criteria
 - Enrolled in HBPC program
 - 65 years or older
 - Initial review and follow up review within 15 weeks
- Exclusion Criteria
 - Admission to hospital between initial review and follow up review
 - Admission to HBPC for palliative or hospice care
 - Death prior to completion of second medication review



Data Collected

- Demographic information: age, gender, race
- Medication dosages and duration of therapy
- Pharmacist recommendations:
 - Number of recommendations made and accepted
 - Medications discontinued
 - Medications started
 - Medications renewed
 - Dosage adjustments
 - Drug-drug interactions
 - Drug-disease interactions
 - Monitoring of lab values

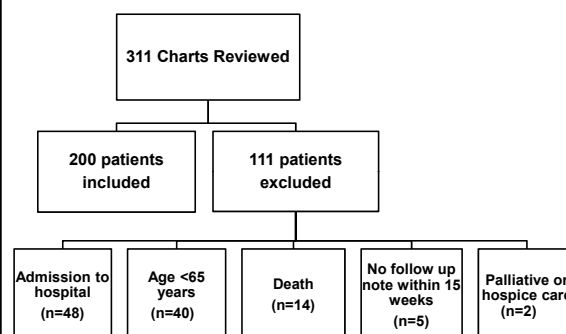


Statistical Analysis

- Baseline characteristics described using counts and percentages for categorical variables and means and standard deviations for continuous variables
- Average STOPP and START score calculated at initial review and compared to follow up score
- Baseline values compared to follow up values using a paired t-test
- Average number of recommendations made and accepted compared between patients with a 2 point change in STOPP or START score
- Estimated 200 patients required to detect a small effect size of 0.2 with 80% power and alpha of 0.05



Results: Enrollment



Results: Baseline Characteristics

- Age
 - Average age 82.4 years
- Gender
 - 96% male
- Race
 - 61.5% Caucasian
 - 23% African American
 - 2% Asian
 - 0.5% Hispanic
 - 13% unknown/unanswered



Results: Primary Outcome

Change in STOPP score and START score

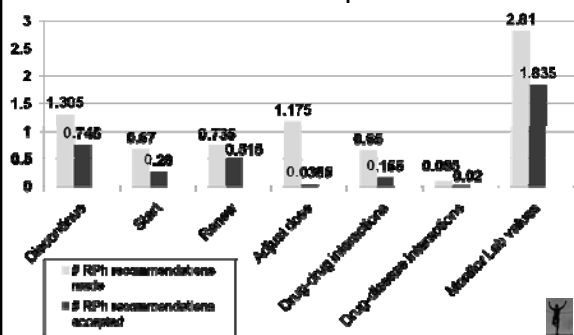
	Initial	Follow-up	p-value
STOPP	1.2	0.895	0.0014
START	3.3	3.33	0.5720

Improvement by at least 2 points

	# of patients	Average # of Pharm.D. recommendations in patients with improved score	Average # of Pharm.D. recommendations in patients without 2 point improvement	p-value
STOPP	15	10.5	5.7	<0.001
START	8	5.1	3.2	0.014

Results: Secondary Outcome

Average number of type of pharmacist recommendations made and accepted



Study Conclusion: Primary Outcome

- Statistically significant improvement in STOPP score
- Change in START score not found to be statistically significant
- Patients with at least a 2 point improvement in STOPP or START score had statistically significant greater number of pharmacist recommendations made; however, no difference in number of recommendations accepted

Study Conclusion: Secondary Outcome

- Greatest number of pharmacist recommendations made regarding:
 - Monitoring of lab values
 - Discontinuing medications
 - Adjusting dose

Limitations

- Retrospective chart review
- Majority of population Caucasian male
- Short duration of 15 weeks
- Some STOPP/START criteria not clearly defined

Future Direction

- Educate HBPC team to identify commonly encountered STOPP/START criteria to improve medication prescribing
- Evaluation of cost savings associated with recommendations made by HBPC pharmacists and accepted by HBPC team

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References

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Questions

