



**INTRODUCTION**

Polypharmacy lacks clear universal definition despite the increasing prevalence

Polypharmacy is *routinely taking 5 or more medications within a 24-hour period. This is necessary in some circumstance based on patients' clinical needs and management which is considered "appropriate polypharmacy"* (Word Health Organization, 2019).

Research has identified Polypharmacy as a prevalent issue among older adults, leading to increase in Potentially Inappropriate Medications (PIM), Adverse Drug Events (ADEs), poorer health outcomes, and increased healthcare cost.

This project aims to improve medication reconciliation and to reduce the occurrence rate of inappropriate polypharmacy in elderly populations.



**BACKGROUND & SIGNIFICANCE**

- In the United States, Polypharmacy affects about 39% of adults over the age of 65 (CDC, 2019). In primary care settings, identifying inappropriate polypharmacy is crucial to prevent Adverse Drug Events.
- Adverse Drug Events cause approximately 1.3 million ER visits each year leading to about 350,000 hospitalized patients yearly (CDC, 2019).
- Management and appropriate polypharmacy could save the world \$18 billion, which accounts for 0.3% of the global total health expenditure (CDC, 2019).
- Evidence shows that a tool such as STOPP/START Criteria studies have shown a reduction in potentially inappropriate medication. STOPP/START screening tool demonstrated highest level of effectiveness in reducing polypharmacy.
- STOPP (Screening Tool of Older Person's Prescription).
- START (Screening Tool to Alert to Right Treatment i.e., appropriate, indicated Treatment).

**METHODOLOGY**

This quality improvement project used a Retrospective/prospective chart review to measure the effectiveness of the STOPP/START Criteria in reducing inappropriate polypharmacy and prescription omission in adults in primary care settings in Northern New Jersey.

- **Total patients= 126**
- Retrospective review (n=63)
- Prospective review (n= 63)
- Providers used the STOPP/START Criteria when prescribing and during medication review for:
- Patients 65 years and older taking 5 or more medications in a 24-hour period,
- 65 years and older taking 3 medications treating same problem.
- Providers were introduced and educated on STOPP/START tool via PowerPoint and in-person presentation.
- Laminated STOPP/START was distributed to providers. Distributed Signage at providers' offices and treatment rooms as a reminder.
- Providers used STOPP/START criteria when prescribing and during medication review for 8 weeks.

- ❖ Outcomes were measured with SPSS by independent sample t-test and chi square.
- ❖ By age, gender, ethnicity and number of medications
- ❖ Goal is to find:
  - Reduction in the average number of medications prescribed
  - Reduction in potentially inappropriate medications
  - Reduction in prescription omissions

**RESULTS**

*Fig. 1. Medications ordered by demographic category*

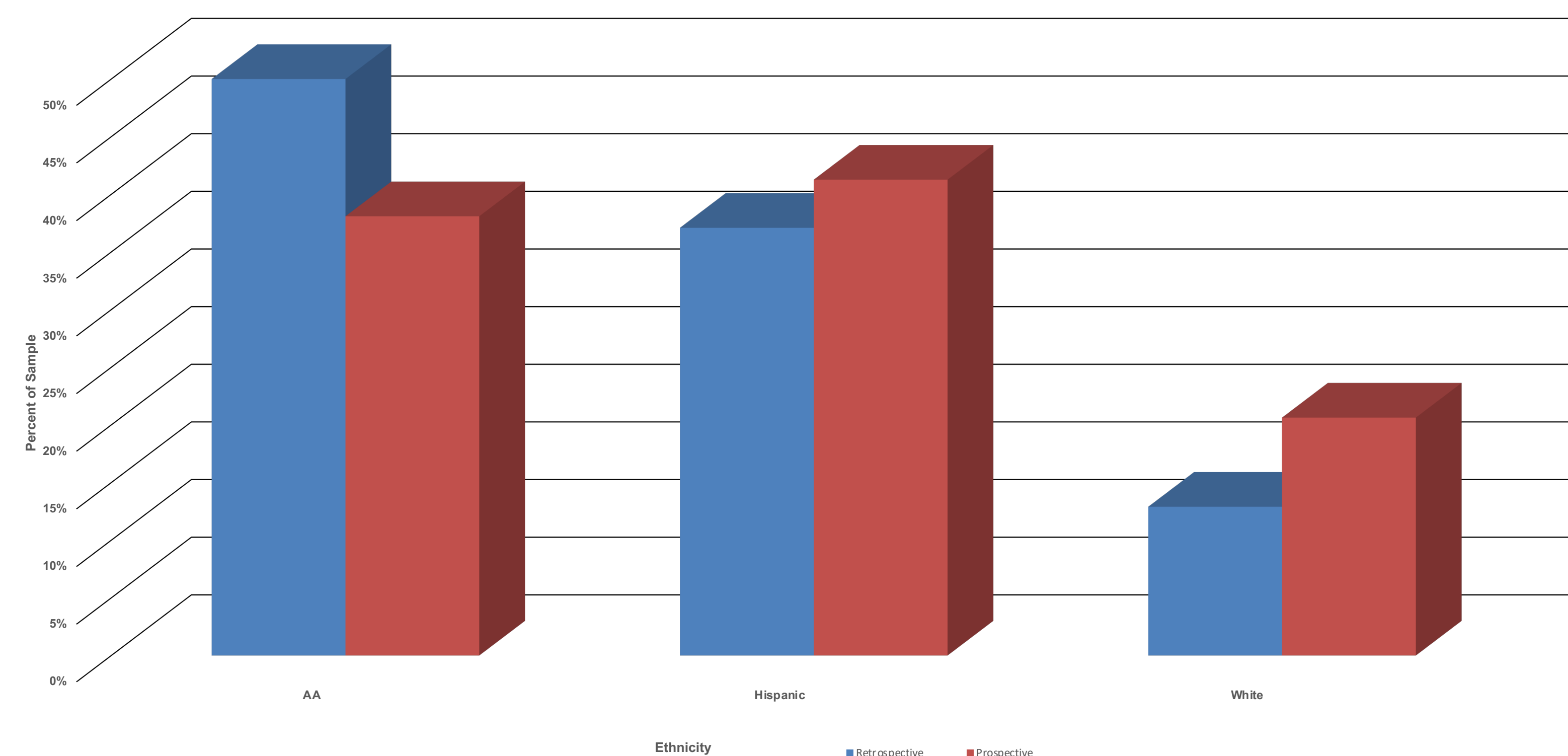


Table 1. Number of medications ordered

Demographic Item	n	Mean # Medications	Std Dev
<b>Gender</b>			
Female	70	13.6	4.44
Male	54	14.2	3.85
<b>Ethnicity</b>			
AA	55	14.3	3.84
Hispanic	49	12.8	4.35
White	21	15.4	4.21
<b>Age</b>			
Under 70	57	13.7	3.49
70 to 79	53	13.9	4.86
80+	16	14.8	4.04

Table 2. Frequency table and chi-square test of association - PIM by pre-post

Item	PIM		Total
	No	Yes	
<b>Prospective</b>			
Frequency	42	21	63
Expected Freq	38.5	24.5	
Percent	33.3	16.7	50.0
<b>Retrospective</b>			
Frequency	35	28	63
Expected Freq	38.5	24.5	
Percent	27.8	22.2	50.0
<b>Total</b>			
Frequency	77	49	126
Percent	61.1	38.9	100.0
Chi-Square Test	DF	Value	p value
	1	1.64	0.201

Item	PPO		Total
	No	Yes	
<b>Prospective</b>			
Frequency	59	4	63
Expected Freq	55.5	7.5	
Percent	46.8	3.2	50.0
<b>Retrospective</b>			
Frequency	52	11	63
Expected Freq	55.5	7.5	
Percent	41.3	8.7	50.0
<b>Total</b>			
Frequency	111	15	126
Percent	88.1	11.9	100.0
Chi-Square Test	DF	Value	p value
	1	3.71	0.05

Table 3. Frequency table and chi-square test of association - PPO by Retro-prospective group

Outcome	Retrospective		Prospective		T-Statistics				
	Mean	Std Dev	Mean	Std Dev	Diff	Std dev	DF	t Value	P value
<b>Meds</b>	14.5	4.19	13.3	4.09	-1.2	0.74	124	-1.66	0.050

Table 4. Two-sample independent t-test on outcome measure MEDS

**Findings**

- ✓ Total of 126 charts reviewed in both Retro/prospective
- ✓ STOPP/START detected 28 (44%) PIM and 11 (17%) PPO in retro
- ✓ STOPP/START detected 21 (33%) PIM and 4 (6%) PPO in prospective.
- ✓ Duplicate was not studied but observation showed
- ✓ 21 (33%) of same class meds in retro 14 (23%) in prospective.
- ✓ Patients older than 80 years tended to have more medications than patients under 80 years of age.
- ✓ The mean reduction in meds ordered was statistically significant indicating that there is enough evidence to conclude that STOPP/START reduced medications ordered by 1.2 with p=0.05

**Discussion**

- The project showed effectiveness of tool in reduction of # meds and PPO.
- The finding showed that STOPP/START criteria are more likely in reducing number of medications ordered and PPO (statistically significant).
- Although, there was no statistically significant between PIM and pre and post status.
- STOPP/START implementation impacted incidence of PIM from 44.4% retrospective group to 33.3% at prospective group.
- For ethnicity, the number of AA reduced from 50% to 38.1%
- Sample size For male vs female in both retro and prospective were higher in female

**CONCLUSION**

- ❖ STOPP/START is effective in reducing the number of medications ordered and number of prescription omission.
- ❖ Reduced number of meds for African American.
- ❖ Polypharmacy is higher in Male vs Female
- ❖ Older patients experience more polypharmacy

**IMPLICATIONS FOR PRACTICE**

**Implication for practice:**

- STOPP/START should be used by provider in hospitals and outpatient clinics.
  - Medication review should be a standard protocol for providers
- Implication for policy:**
- Reducing polypharmacy can Improve patient functioning and quality of life.
  - Reduce Healthcare cost.

**Implication on Education:**

- STOPP/START tool can be used as educational tools for providers when prescribing.
- Can be used as guideline protocol for medication review.
- Protocol which will help to provide more uniform practices across the healthcare industry.

**Contact and References**

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**View STOPP/START screening tool here**

