TexMed 2016 Quality Research Abstract

Please complete all of the following sections.

Procedure and Selection Criteria
• Applicants should demonstrate an understanding of systematic investigation through research development, testing and evaluation designed to develop or contribute to generalizable knowledge. Judges will use the scoring described in this matrix to identify projects to be presented at the conference, as well as, projects to be considered for the awards.
• These submissions should provide general information related to the one of the following categories: patient safety, patient centered care, equity, timeliness, efficiency, or effectiveness.
• Maximum points delineated with a brief explanation of the content that should be included under each section. Applicants may describe the problem and results in narrative or graphic format.

PROJECT NAME: Medication Trends for an Academic Internal Medicine Residency Service: Medication Reconciliation the Inadequate Panacea for Polypharmacy and Potentially Inappropriate Medications

Institution or Practice Name: University of Texas Rio Grande Valley, Valley Baptist Medical Center

Setting of Care: Hospital Admissions to the Internal Medicine Residency Service

Primary Author: Leopoldo Cobos, MD PGY-2

Secondary Author: Carlos Ramos, MD PGY-3

Other Members of Project Team: Laura Garcia, MD and James Hanley, MD

Is the Primary Author, Secondary Author or Member of Project Team a TMA member (required)?
☒ Yes ☐ No
Please provide name(s): Laura Garcia, MD; TMA ID# 1142350

Project Category: *(Choose most appropriate category)*
☒ Patient Safety   ☐ Patient Centered Care   ☐ Timeliness
☐ Efficiency   ☐ Effectiveness   ☐ Equity
☐ **Enhanced Perioperative Recovery/Future of Surgical Care program**

For this poster session, TMA is looking for projects that demonstrate the six aspects of Quality Care as defined by the Institute of Medicine.

- Safe - avoids injuries to patients from care that is intended to help them
- Timely - reduces waits and delays for both those who receive care and those who give care
- Effective - based on scientific knowledge, extended to all likely to benefit, while avoiding underuse and overuse
- Equitable - provides consistent quality, without regard to personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status
- Efficient - avoids waste, including waste of equipment, supplies, ideas, and energy

- Patient centered - respects and responds to individual patient preferences, needs, and values, ensuring that patient values guide all clinical decisions

Quality Research

Introduction (15 points max): *Describe 1) where the work was completed; 2) what faculty/staff/patient groups were involved, and 3) sufficient background information provided to establish the significance of the problem.*

This was a retrospective analysis performed at Valley Baptist Medical Center in Harlingen, Texas. The project was submitted to the IRB and was granted an exemption. The project was completed by Dr. Carlos Ramos and Dr. Leopoldo Cobos and supervised by Dr Laura Garcia and Dr. James Hanley.

Older adults ages >65 are at risk of polypharmacy, which is defined when they have >5 prescribed medications. With polypharmacy there is an increased prevalence of Potentially Inappropriate Medications (PIMs). PIMs have been defined by the Beers Criteria that was updated in 2015 by the American Geriatric Society. PIMs are associated with numerous serious side effects including delirium, gastrointestinal bleeding, falls, and fractures; all which may lead to loss of function, readmissions, and/or death. PIMs have been reported in multiple studies to have a prevalence of about 30% to 40%. There have been multiple efforts to reduce the magnitude of PIMs and while some methods have been successful, none have been universally adopted. Our internal medicine residency has multiple discussions about polypharmacy, Beers Criteria, and PIMs during our check in rounds and morning reports, although we do not have a formal curriculum in place.

Recently the Centers for Medicare and Medicaid Services (CMS) started requiring medication reconciliation, but without specific recommended standardized methods to accomplish this task. Our institution performs the required medication reconciliation, but it is unclear how adequately we evaluate the effectiveness and accuracy of the process and specifically whether reconciliation and awareness of Beers criteria supports the resident physician in identifying the prevalence of PIMs, evaluating for associated side effects, and reducing potentially inappropriate medications upon discharge.

Hypothesis (15 points max): *State the pertinent research or change hypothesis. Using if/then format, describe the 1) assumption; 2) condition; and 3) prediction(s).*

The assumption is: If the residents have been introduced to the Beers criteria, concept of PIMs, and importance of medication reconciliation in the absence of a formalized curriculum,
The condition is: the residents, with medication reconciliation, should be able to recognize PIMS at the time of admission and reduce PIMs at the time of discharge.
The prediction: we should see a significant reduction in both number of medications and number of PIMs at the time of discharge and we should be able to calculate the prevalence of PIMs in our older adult patients.

Methods (25 points max): *Describe the specific methods, resources, procedures, models and/or programs used to study and test the subject of the investigation. Note charts, graphs and tables here and send as addendum with abstract form.*

IRB Exemption was granted for this study. Patients admitted to the internal medicine service during August 25, 2014 to December 5, 2014 were retrospectively analyzed by chart review of H&P and Discharge dictation notes performed by internal medicine residents. Inclusion Criteria: Patients 65 to 95 years of age admitted during this period of time taking 5 or more medications. Exclusion Criteria: Patients 65-95 years of age who were either admitted from or discharged to Hospice Care, taking <5 medications dictated on admission, having no medications dictated on admission or discharge, and patients younger than 64 years. Patients older than 95

years were excluded due to their low prevalence and higher likelihood of identification. Information collected and analyzed included patient's age, gender, name and number of home medications on admission as well as medications on discharge. Data was collected from medical records originally used for medical purpose only, and an Excel spreadsheet was created to collect and analyze this information. The number of PIMs per patient and overall prevalence was then evaluated as defined by the Beers 2015 Criteria during both admissions and discharge dictation notes.

Results (25 points max): *Specifically explain what was discovered, accomplished, collected and/or produced; supports hypothesis and conclusions with adequate evidence and includes quantitative data. Note charts, graphs and tables here and send as addendum with abstract form.*

There were 589 total adult patients admitted to the residency service during the study period; 327 (56%) of admissions meeting the age criteria of older adults to be included in this study (age 65-95). Of those, 147 (45%) were excluded of which 67 (46%) had no medications dictated, 75 (51%) had <5 home medications, and 5 (3%) were admitted or discharged into hospice care.
The remainder 180 (55%) patients (95 male and 85 female) were evaluated for total number of medications on admission (1725) and on discharge (1819, with a 5% increase), and for the prevalence of PIMs. The prevalence of patients with ≥ 1 PIM on admission was 135/180 (75%) and on discharge 125/180 (69%); for ≥ 2 PIMs, the prevalence was 69/180 (38%) on admission, and 56/180 (31%) on discharge with a net reduction by discharge of 6% and 7% respectively.

Conclusions (20 points max): *Provide a succinct interpretation of the results and evaluate what the results mean to the investigation, OR evaluate the relevance or uniqueness of what was accomplished in the immediate context of the project's purpose and describe how the investigation fits within a larger field.*

We found that more than half (55%) of our elderly patients met the criteria for polypharmacy, and that a large majority (75%) of these patients had one or more PIMs on admission. Although we had good documentation of medication reconciliation occurring on each of these patients, and also had a small reduction of PIMs (-6%) at the time of discharge despite having an overall small increase of total medications (+5%), there do not appear to be concerted efforts to address these issues of polypharmacy or PIMs. We think that hospitalization provides an excellent opportunity to identify elders at risk for PIMs use when medications are documented during the admission history and physicals. However, our process of medication reconciliation is currently not well defined and we believe that a more focused approach could lead to improved prescribing practices and further elimination of PIMs.

TexMed 2016
PIMs Supporting Charts and Tables

Leopoldo Cobos, MD PGY-2
Carlos Ramos, MD PGY-3
Laura Garcia, MD
James Hanley, MD

Patient Demographics

Table: Patient Demographics	Combined Green & Red	Percentage	Green	Red
Total Patients	589 (49%G, 51%R)	100%	289	300
Male	329	56%	156(54%)	173 (58%)
Female	260	44%	133(46%)	127 (42%)
Age>65-95	**327**	**56%**	**163 (56%)**	**164 (55%)**
Age>95	1	0%	1 (0%)	0(0%)
Age 18-64	261	44%	125 (43%)	136 (45%)
			% Green	%Red

Exclusions

	Red	Green	Total
Patients	164	164	327
Excluded	**71**	**76**	**147**
Male	49	46	95
Female	44	41	85
Total Included			180

Excluded	147	45%
Not dictated	67	46%
<5 on D/C	75	51%
Hospice	5	3%

Total Meds of Included Patients

- Included Patients
  - 180 ages 65-95

- Total Medications on Admission
  - 1725 medications (sum of all 180 patients)
  - 135/180 patients had ≥1 PIMs

- Total Medications on Discharge
  - 1819 medications (sum of all 180 patients)
  - 69/180 patients had ≥1 PIMs

PIMs Percentages

	Total Patients	PIMs Admission	%PIMs Admission	PIMs Discharge	%PIMs Discharge	Difference	% Change
PIMs ≥1	180	135	75%	125	69%	-10	-6%
PIMs ≥2	180	69	38%	56	31%	-13	-7%

Subgroup Analysis
Admission 1 PIM Only

1 PIM Only Admission vs. Change on Discharge	Total (Patients)	Percent
Admission	66	100%
Discharge =0 PIMs	19	29%
Discharge =1PIM	37	56%
Discharge =2 PIMs	9	14%
Discharge =3 PIMs	1	2%

PIMs	Admission	Discharge	Difference	% Change
Anticholinergics	4	1	-3	-75%
Antihistamines, 1st Gen	6	0	-6	-100%
Meclizine	3	12	9	300%
Peripheral alpha-1 blockers	25	22	-3	-12%
Central alpha blockers	2	2	0	0%
Digoxin	17	12	-5	-29%
Antidepressants (minus Sertraline)	4	4	0	0%
Antipsychotics	5	6	1	20%
Barbiturates	1	1	0	0%
Benzos	20	17	-3	-15%
Hypnotics (Non-benzos)	5	2	-3	-60%
Estrogens	2	1	-1	-50%
Megestrol	3	0	-3	-100%
Sulfonylureas	34	25	-9	-26%
Metoclopramide	2	0	-2	-100%
PPI (Avoid >8wks)	52	64	12	23%
NSAIDs	15	9	-6	-40%
Muscle Relaxants	2	1	-1	-50%
TCAs	4	1	-3	-75%
Buproprion	1	1	0	0%
Opioids	31	24	-7	-23%
Mirtazapine	6	6	0	0%
Total PIMs	**244**	**211**	**-33**	**-14%**

PIMs	Admission	Discharge	Difference	% Change
Meclizine	3	12	9	300%
PPI (Avoid >8wks)	52	64	12	23%
Antipsychotics	5	6	1	20%
Central alpha blockers	2	2	0	0%
Antidepressants (minus Sertraline)	4	4	0	0%
Barbiturates	1	1	0	0%
Buproprion	1	1	0	0%
Mirtazapine	6	6	0	0%
Peripheral alpha-1 blockers	25	22	-3	-12%
Benzos	20	17	-3	-15%
Opioids	31	24	-7	-23%
Sulfonylureas	34	25	-9	-26%
Digoxin	17	12	-5	-29%
NSAIDs	15	9	-6	-40%
Estrogens	2	1	-1	-50%
Muscle Relaxants	2	1	-1	-50%
Hypnotics (Non-benzos)	5	2	-3	-60%
Anticholinergics	4	1	-3	-75%
TCAs	4	1	-3	-75%
Antihistamines, 1st Gen	6	0	-6	-100%
Megestrol	3	0	-3	-100%
Metoclopramide	2	0	-2	-100%
Total PIMs	**244**	**211**	**-33**	**-14%**
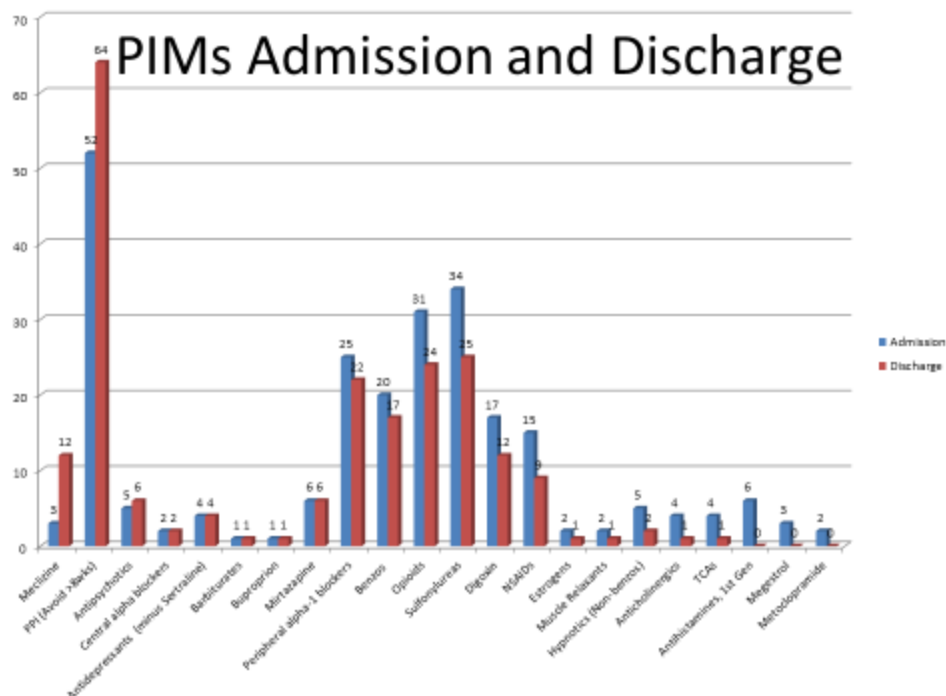
Results Based on Beers Criteria 2015
Tables 2-4

- Table 2
  - 2015 Beers Criteria for PIMs use in Older Adults
- Table 3
  - 2015 PIMs due to Drug–Disease or
  - Drug–Syndrome Interactions That May Exacerbate the Disease or Syndrome
- Table 4
  - 2015 PIMs to be used with Caution in older adults

Results based on Table 2

2015 BEERS Table 2

| Drug Class | Total Admission | Total Discharge | Green Female Admission | Green Female Discharge | Red Female Admission | Red Female Discharge | Green Male Admission | Green Male Discharge | Red Males Admission | Red Male Discharge |
Drug Class	TA	TD	GFA	GFD	RFA	RFD	GMA	GMD	RMA	RMD
Anticholinergics	4	1	1		2	1	1			
Antihistamines, 1st Gen	6	0	1		1		3		1	
Meclizine	3	12	1	4		2	1	2	1	4
Peripheral alpha-1 blockers	25	22	1				11	11	13	11
Central alpha blockers	2	2	1	1					1	1
Digoxin	17	12	5	1	4	4	3	3	5	4
Antidepressants (minus Sertraline)	4	4	1	1	1	1			2	2
Antipsychotics	5	6	1	1	2	1	1	3	1	1
Barbiturates	1	1							1	1
Benzos	20	17	5	5	4	5	3	3	8	4
Hypnotics (Non-benzos)	5	2	2	1	3	1				
Estrogens	2	1	2	1						
Megestrol	3	0	1		2					
Sulfonylureas	34	25	6	3	10	7	11	8	7	7
Metoclopramide	2	0	2							
PPI (Avoid >8wks)	52	64	7	12	16	19	13	15	16	18
NSAIDs	15	9	3	4	5	1	5	4	2	
Muscle Relaxants	2	1			1				1	

Results based on Table 3

2015 Beers Table 3

| Drug Class | Total Admission | Total Discharge | Green Female Admission | Green Female Discharge | Red Female Admission | Red Female Discharge | Green Male Admission | Green Male Discharge | Red Males Admission | Red Male Discharge |
Drug Class	TA	TD	GFA	GFD	RFA	RFD	GMA	GMD	RMA	RMD
TCAs	4	1	2				1	1	1	
Buproprion	1	1		1	1					
Opioids	31	24	6	4	9	6	6	6	10	8

Results based on Table 4

2015 Beers Table 4										
Drug Class	Total Admission	Todal Discharge	Green Female Admission	Green Female Discharge	Red Female Admission	Red Female Discharge	Green Male Admission	Green Male Discharge	Red Males Admission	Red Male Discharge
Drug Class	TA	TD	GFA	GFD	RFA	RFD	GMA	GMD	RMA	RMD
Mirtazapine	6	6	2	2	2	2	1	1	1	1