

# Implementation of Comprehensive Medication Management into a Family Medicine Clinic

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# Conflicts of Interest

- The speaker has no actual or potential conflict of interest in relation to this presentation

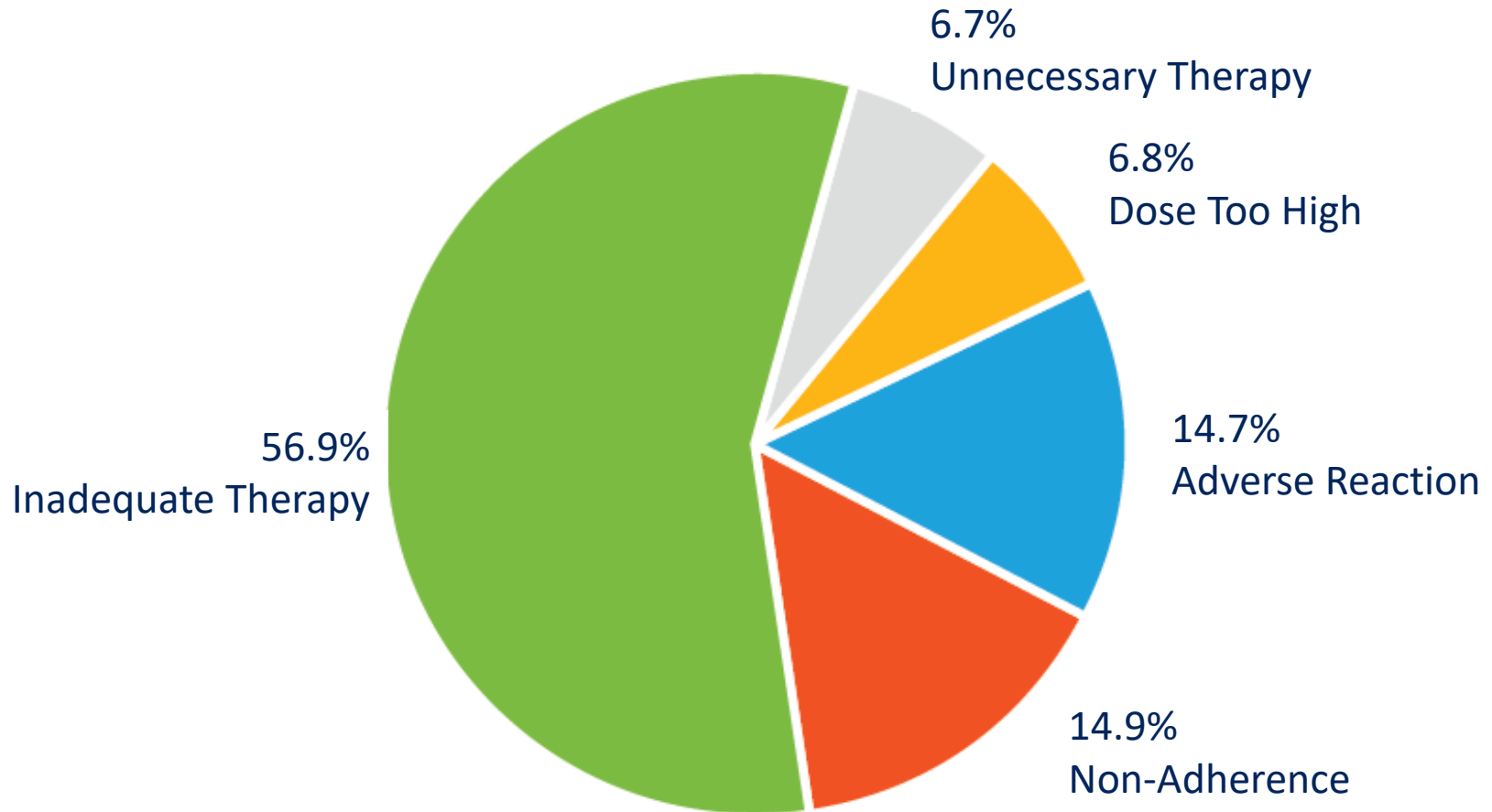
# Background

- Medications are involved in 80% of patient treatment plans
- Prescription medications dispensed in the United States will approach 5 billion by the year 2021<sup>1</sup>
- Over 40% of patients 65 years old or older in the United States are taking five or more prescription medications<sup>2</sup>

1. ACCP CMM Brief. Comprehensive Medication Management in Team-based care. Online. 2018.

2. National Health and Nutrition Examination Survey 2017. (NHANES).

# CMM Encounter Data



ACCP CMM Brief. Comprehensive Medication Management in Team-based care. Online. 2018.

# Previous Studies

	<i>Smith M, et al (2011)<sup>1</sup></i>	<i>Schwartz E, et al (2017)<sup>2</sup></i>	<i>Matzke G, et al (2018)<sup>3</sup></i>
Number of patients	88	50	2,480
Results	<p>During 401 CMM encounters, pharmacists detected</p> <ul style="list-style-type: none"> <li>- 917 drug therapy problems</li> <li>- 63 medication regimens did not comply with evidence based guidelines</li> </ul>	<p>Pharmacists identified 138 MTPs</p> <ul style="list-style-type: none"> <li>- 29% drug-drug interactions</li> <li>- Recommendations:               <ul style="list-style-type: none"> <li>• Monitoring</li> <li>• Alternative therapy</li> </ul> </li> </ul>	<p>Team-based care compared to usual care</p> <ul style="list-style-type: none"> <li>- Improvements in               <ul style="list-style-type: none"> <li>• DBP</li> <li>• LDL cholesterol</li> <li>• Total cholesterol</li> </ul> </li> <li>- Decrease in hospitalizations (23.4%)</li> </ul>

CMM: Comprehensive Medication Management  
 MTPs: Medication therapy problems  
 DBP: Diastolic blood pressure

1. *Health Aff (Millwood)*. 2011 Apr;30(4):646-54.  
 2. *J Am Board Fam Med*. 2017 Nov-Dec;30(6)701-714.  
 3. *Am J Health Syst Pharm*. 2018 Jul 15;75(14):1039-1047.

# Study Purpose

- To evaluate the number of medication therapy problems resolved for patients provided pharmacist-delivered CMM versus usual care

# Design

- Single center, case control, retrospective chart review of patients seen between June 1, 2019 to September 30, 2019
- Approved by the International Review Board

# Methods

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"><li>• Patients <math>\geq 18</math> years old</li><li>• BNA score <math>\geq 10</math></li><li>• Cared for by a primary care provider at the study site</li></ul>	<ul style="list-style-type: none"><li>• BNA score <math>&lt; 10</math></li><li>• No visit with PCP within 30 days of CMM visit date</li></ul>

BNA: Basic Needs Assessment



# Group Assignment

CMM	Usual
<ul style="list-style-type: none"><li>• One or more CMM visits with a clinical pharmacist either via phone or in person</li></ul>	<ul style="list-style-type: none"><li>• No CMM visits with a clinical pharmacist via phone or in person</li></ul>

CMM: comprehensive medication management

# Matching Process

- Usual care patients were matched 1:1 with patients provided CMM based on the following
  - Primary care physician
  - BNA score (+/- 2 points)
  - Number of medications ( $\leq 10$ , 11-19,  $\geq 20$ )

CMM: comprehensive medication management

BNA: Basic Needs Assessment

# Primary Endpoint

- The median number of medication therapy problems resolved per patient in the CMM versus usual care group using the PQA framework for categorizing medication therapy problems

PQA: Pharmacy Quality Alliance  
CMM: comprehensive medication  
management

# Pharmacy Quality Alliance (PQA)

Medication Related Needs	Medication Therapy Problem Category	Medication Therapy Problem Rationale
Indication (I)	Unnecessary medication therapy (U)	Duplicate therapy (1)
		No medical indication at this time (2)
		Non-medication therapy more appropriate (3)
		Addiction/recreational medication use (4)
		Treating avoidable adverse medication reaction (5)
	Needs additional medication therapy (N)	Preventative therapy (1)
		Untreated condition (2)
Synergistic therapy (3)		
Effectiveness (E)	Ineffective medication (I)	More effective medication available (1)
		Condition refractory to medication (2)
		Dosage form inappropriate (3)
	Dosage too low (D)	Dose too low (1)
		Frequency inappropriate (2)
		Incorrect administration (3)
		Medication interaction (4)
		Incorrect storage (5)
	Needs additional monitoring (N)	Duration inappropriate (6)
		Medication requires monitoring (1)

# Pharmacy Quality Alliance (PQA)

Medication Related Needs	Medication Therapy Problem Category	Medication Therapy Problem Rationale
Safety (S)	Adverse medication event (A)	Undesirable effect (1)
		Unsafe medication for the patient (2)
		Medication interaction (3)
		Incorrect administration (4)
		Allergic reaction (5)
		Dosage increase/decrease too fast (6)
	Dosage too high (D)	Dose too high (1)
		Frequency inappropriate (2)
		Duration inappropriate (3)
		Medication interaction (4)
	Needs additional monitoring (N)	Medication requires monitoring (1)
Adherence (A)	Adherence (A)	Does not understand instructions (1)
		Patient prefers not to take (2)
		Patient forgets to take (3)
		Medication product not available (4)
		Cannot swallow/administer medication (5)
	Cost (C)	More cost-effective medication available (1)
		Cannot afford medication product (2)

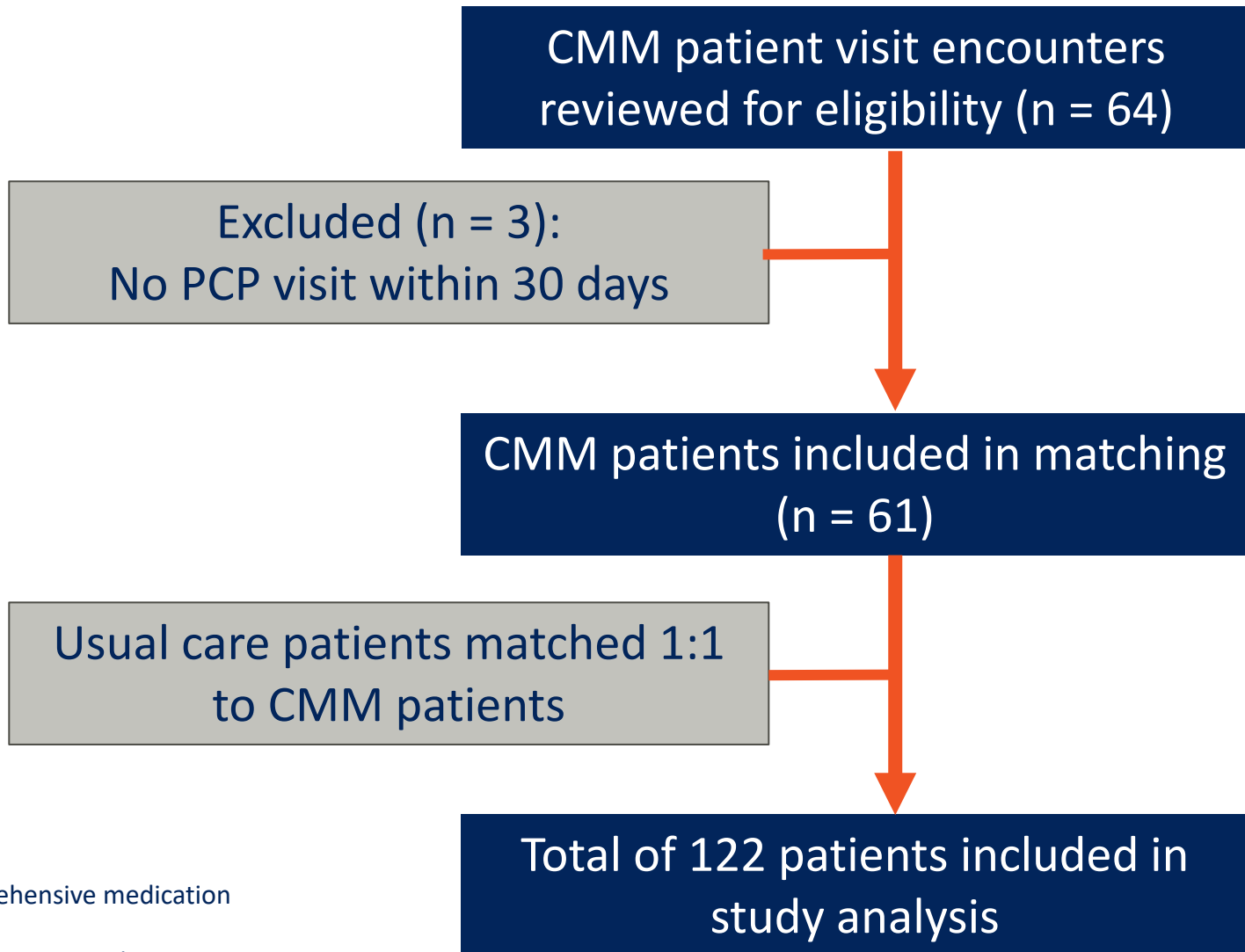
# Secondary Endpoints

- Median number of each PQA subcategory of medication therapy problems resolved per patient
- Prevalence of 90-day hospital admissions post-index visit
- Prevalence of 90-day emergency room visits post-index visit

# Statistical Analysis

Endpoints	Data Type	Statistical Tests
Primary	Continuous	Mann-Whitney U test
Secondary	Nominal	Fisher's Exact test
	Continuous	Mann-Whitney U test
Baselines Characteristics	Nominal	Fisher's Exact test
	Continuous	Mann-Whitney U test

# Patient Enrollment



CMM: comprehensive medication management  
PCP: Primary care provider



# Baseline Characteristics

Characteristic	CMM (N = 61)	Usual (N = 61)	P-value
Age (years), mean (SD)	69.9 ( $\pm$ 10.69)	69.8 ( $\pm$ 11.74)	0.924
BMI (kg/m <sup>2</sup> ), median [IQR]	30.1 [26.7 – 37.2]	32.3 [26.1 – 37.1]	0.691
Female, N (%)	37 (60.7)	33 (54.1)	0.464
Baseline number of medications, median [IQR]	17 [13 – 20.5]	16 [14 – 22]	0.957
BNA score, median [IQR]	12 [11 – 14]	12 [11 – 14]	0.594

BMI: body mass index

BNA: Basic Needs Assessment

# Baseline Characteristics, cont.

Comorbidity, N (%)	CMM (N = 61)	Usual (N = 61)	P-value
Hypertension	46 (75.4)	44 (72.1)	0.832
Dyslipidemia	38 (62.3)	43 (70.5)	0.444
Type II diabetes	36 (59)	34 (55.7)	0.855
Depression	23 (37.7)	26 (42.6)	0.712
Gastroesophageal reflux disorder	22 (36)	25 (41)	0.711
Obesity	22 (36)	22 (36)	1
Coronary artery disease	22 (36)	20 (32.8)	0.849
Osteoarthritis	16 (26.2)	16 (26.2)	1
Obstructive sleep apnea	18 (29.5)	18 (29.5)	1
Chronic obstructive pulmonary disease	18 (29.5)	8 (13.1)	0.045
Chronic kidney disease	14 (22.9)	18 (29.5)	0.537
Congestive heart failure	14 (22.9)	13 (21.3)	1
Hypothyroidism	15 (24.6)	9 (14.8)	0.255
Rheumatoid arthritis	11 (18)	2 (3.3)	0.016

# Primary Endpoint

	CMM	Usual	P-value
Median number of medication therapy problems resolved per patient, [IQR]	3 [2 – 5]	2 [1 – 3]	0.001
Total number of medication therapy problems resolved	210	136	N/a

IQR: interquartile range

N/a: not applicable

# Secondary Endpoints

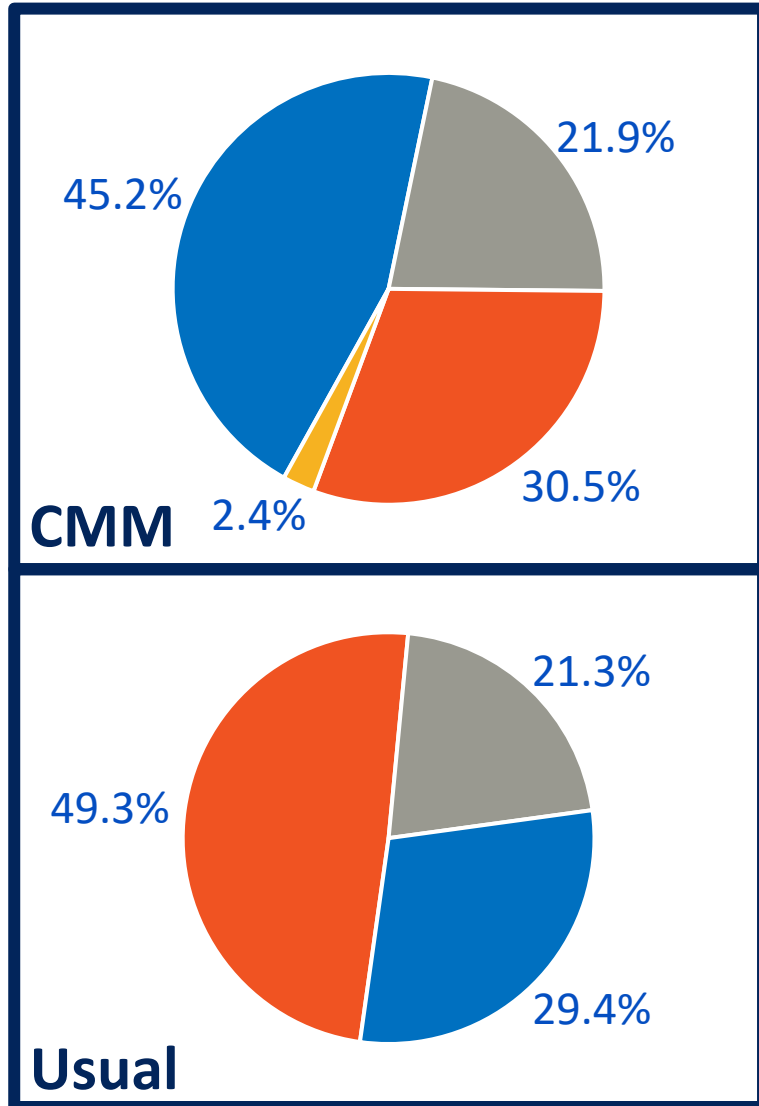
	CMM (N = 61)	Usual (N = 61)	P-value
Prevalence of emergency room visits post-index visit, n (%)	17 (27.8)	16 (26.2)	1
Prevalence of hospitalizations post-index visit, n (%)	12 (19.6)	10 (16.4)	0.814
Median PQA category resolved per patient, [IQR]			
• Efficacy	1 [0 – 2]	0 [0 – 1]	0.001
• Safety	1 [0 – 1]	0 [0 – 1]	0.04
• Indication	1 [0 – 2]	1 [0 – 2]	0.81
• Adherence	0 [0 – 0]	0 [0 – 0]	N/a

PQA: Pharmacy Quality Alliance

IQR: interquartile range

N/a: not applicable

# Interventions per PQA Category



**Number of medication therapy problems resolved per category**

	CMM	Usual
Efficacy	95	40
Safety	46	29
Indication	64	67
Adherence	5	0

PQA: pharmacy quality alliance  
 CMM: comprehensive medication management

# Strengths & Limitations

<b>Strengths</b>	<b>Limitations</b>
<ul style="list-style-type: none"><li>• Use of matching</li><li>• Utilizing standardized data collection tools</li><li>• External validity</li></ul>	<ul style="list-style-type: none"><li>• Retrospective design</li><li>• Sample size</li><li>• Single center study design</li></ul>

# Conclusion

- Incorporation of pharmacist-delivered CMM at this family medicine clinic lead to resolution of more medication therapy problems compared to usual care

# Future Direction

- Scheduling follow-up CMM visits with patients could lead to measuring clinical outcomes
- Gauge patient satisfaction
- Gauge provider satisfaction



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