

Evaluation of a Pharmacist Managed Diabetes Clinic

Beaumont

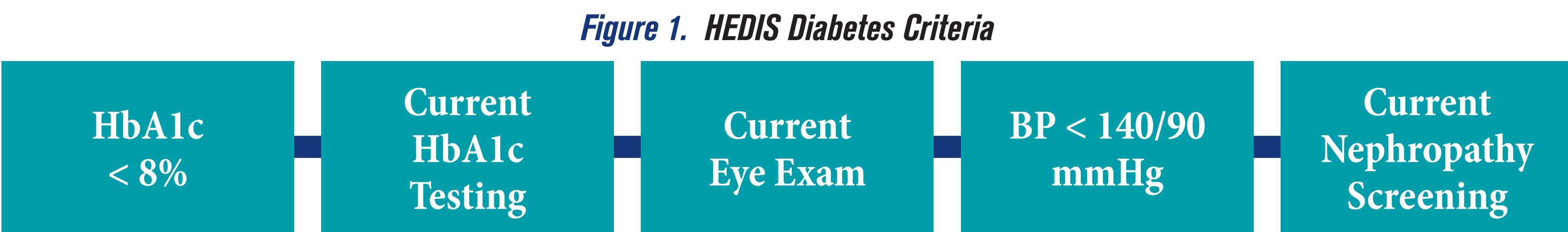
Nadia Aneese, PharmD¹; Alexandra Halalau, MD, FACP²; Colleen Lauster, PharmD, BCPS, CDE¹; Sarah Muench, PharmD, CDE¹; Daniel Shelden, DO²; Janna Fett, PharmD, BCACP¹

¹Departments of Pharmaceutical Services; ²Internal Medicine ■ Beaumont Hospital, Royal Oak, MI



Background

- Diabetes mellitus (DM) affects 29.1 million people in the United States¹
- DM was the 7th leading cause of death in 2013¹
- In 2012, DM caused \$245 billion in direct and indirect costs¹
- Healthcare Effectiveness Data and Information Set (HEDIS) is a tool to evaluate performance of healthcare providers and clinics (*Figure 1*)²
- Studies have shown the benefit of pharmacist managed diabetes clinics (PMDCs) across various clinical settings including attaining significant improvement of diabetes related parameters (hemoglobin A1c (HbA1c), and blood pressure (BP)) and reaching HbA1c goals more frequently³⁻⁵



OUTPATIENT CLINIC (OPC) AT BEAUMONT HOSPITAL – ROYAL OAK

- Teaching clinic — training site for 60 Internal Medicine and 16 Medicine-Pediatrics residents with over 50,000 clinic visits each year
- Over 800 DM patients currently receive DM management within the OPC
- The need for improvement in HEDIS measures was identified
- Primary care physicians (PCPs) may manage DM or may refer patients to the multidisciplinary diabetes clinic (MDC) for management

Intervention

PHARMACIST MANAGED DIABETES CLINIC (PMDC)

- Started in January 2015 to help the OPC attain HEDIS measures
- Pharmacists work under a collaborative practice agreement to manage high-risk DM patients, defined in clinic as those with an HbA1c ≥ 9%
- Face-to-face pharmacist visits
 - Initial visits are 60 – 90 minutes in length, with a focus on education, medication management, and patient identified self-management goals
 - Follow-up visits are 30 – 45 minutes, with a focus on identified self-management goals

Objectives

- Evaluate the impact of a PMDC on HEDIS measures
- Assess the adherence of each clinic to other DM standards of care recommendations

Table 1. Study Outcomes

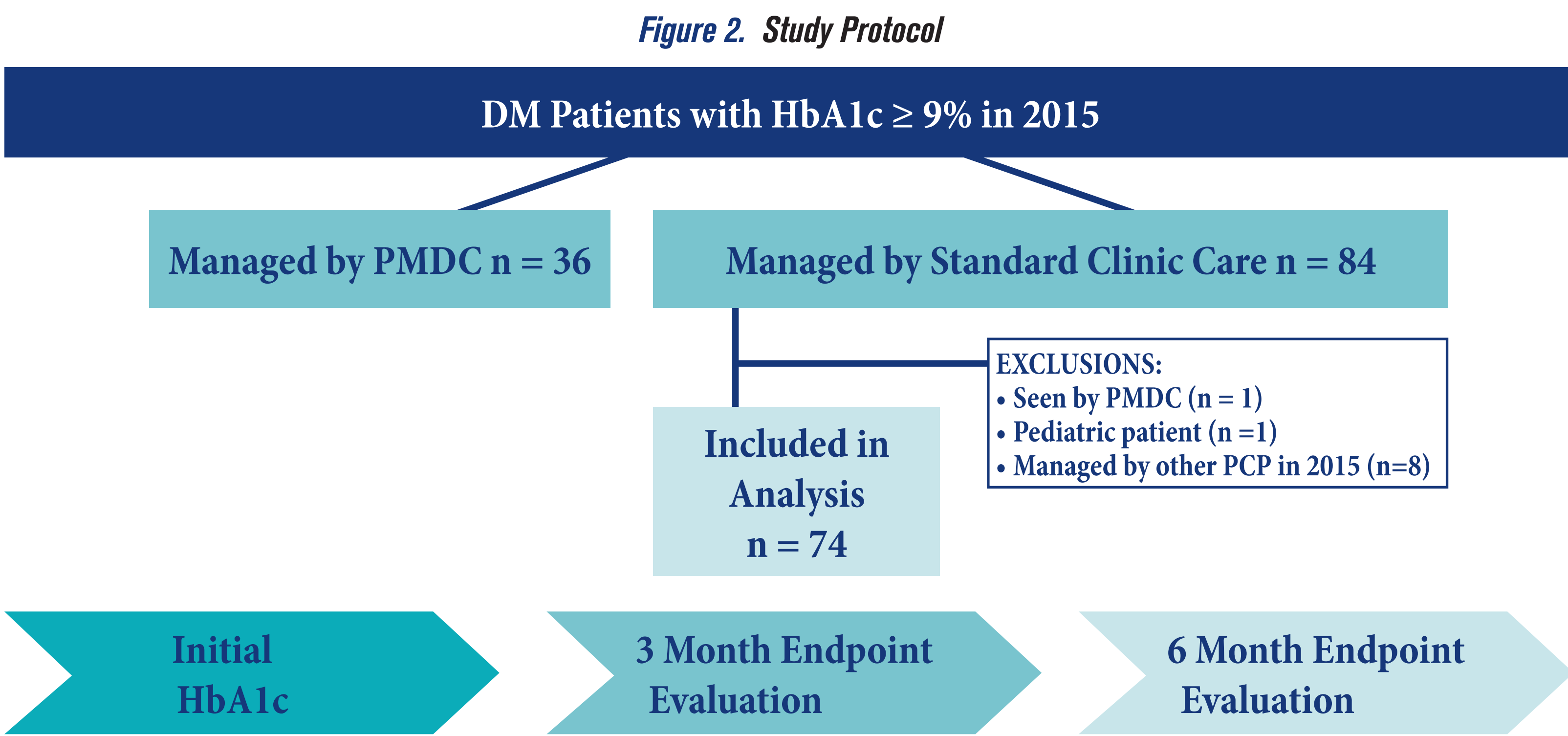
Primary Outcomes	Secondary Outcomes
Change in HbA1c	Patients Meeting BP Goal (percent)
	Patients with Current Eye Exam (percent)
Patients Who Reach an HbA1c Goal of < 8% (percent)	Patients with Current Nephropathy Screening (percent)
	Appropriateness of pharmacologic therapy (angiotensin converting enzyme inhibitor, angiotensin II receptor blocker and statin)

Methods

- Retrospective cohort analysis of adult type 1 and 2 high-risk DM patients seen in the OPC
- Patients managed in the PMDC were compared to those managed by their PCP or the MDC (*Figure 2*)
- Baseline HbA1c was defined as the first one ≥ 9% measured in 2015
- All outcomes were evaluated at 3 and 6 months after date of baseline HbA1c
- Approved by Institutional Review Board

Table 2. Study Criteria

Inclusion	Exclusion
Adult patients ≥ 18 years old	No HbA1c between January 1, 2015 – September 30, 2015
HbA1c ≥ 9%	
Must have been seen by an OPC physician in 2015	



Statistical Analysis

- Descriptive statistics
- Pearson's Chi-square tests or Fisher's Exact tests
 - Categorical variables
- Non-parametric Wilcoxon tests
 - Continuous variables
- p < 0.05 for statistical significance

Results

- Patients in both groups (n = 110) were well matched in regard to their demographics (*Table 3*) except for baseline HbA1c, which was significantly higher in the PMDC group

Table 3. Demographics

	PMDC (n = 36)	Standard (n = 74)	p-value
Age (years), mean ± SD	51 ± 12	51 ± 14	0.96
Male, n (%)	19 (52.8)	30 (40.5)	0.23
Weight (kg), median (25 th , 75 th)	95 (78,123)	93 (77,115)	0.73
BMI (kg/m ²), median (25 th , 75 th)	33 (26,41)	32 (28,39)	0.95
Type II DM, %	92	93	0.72
DM Duration (years), median (25 th , 75 th)	10 (4,14)	9 (4,14)	0.73
New Onset, n	1	4	
Unknown, n	2	13	
Baseline HbA1c, median (25 th , 75 th)	11.5 (10.3,12.9)	10.6 (9.7,11.9)	0.033
Current Smoker, n (%)	8 (22.2)	18 (24.7)*	0.16

*n = 73

- 50% of PMDC patients with follow-up data reached HbA1c goal < 8% and there was an HbA1c improvement of 3.2 (*Table 4 and Figure 3*)

Table 4. Primary Outcomes

Outcomes	PMDC (n = 36)	Standard (n = 74)	p-value
Patients with HbA1c, n (%)			
3 mo	24 (67)	37 (50)	--
6 mo	19 (53)	41 (55)	--
Patients Reached HbA1c Goal < 8% by 3 or 6 mo, n (%)	N = 28 14 (50)	N = 53 16 (30.2)	0.08

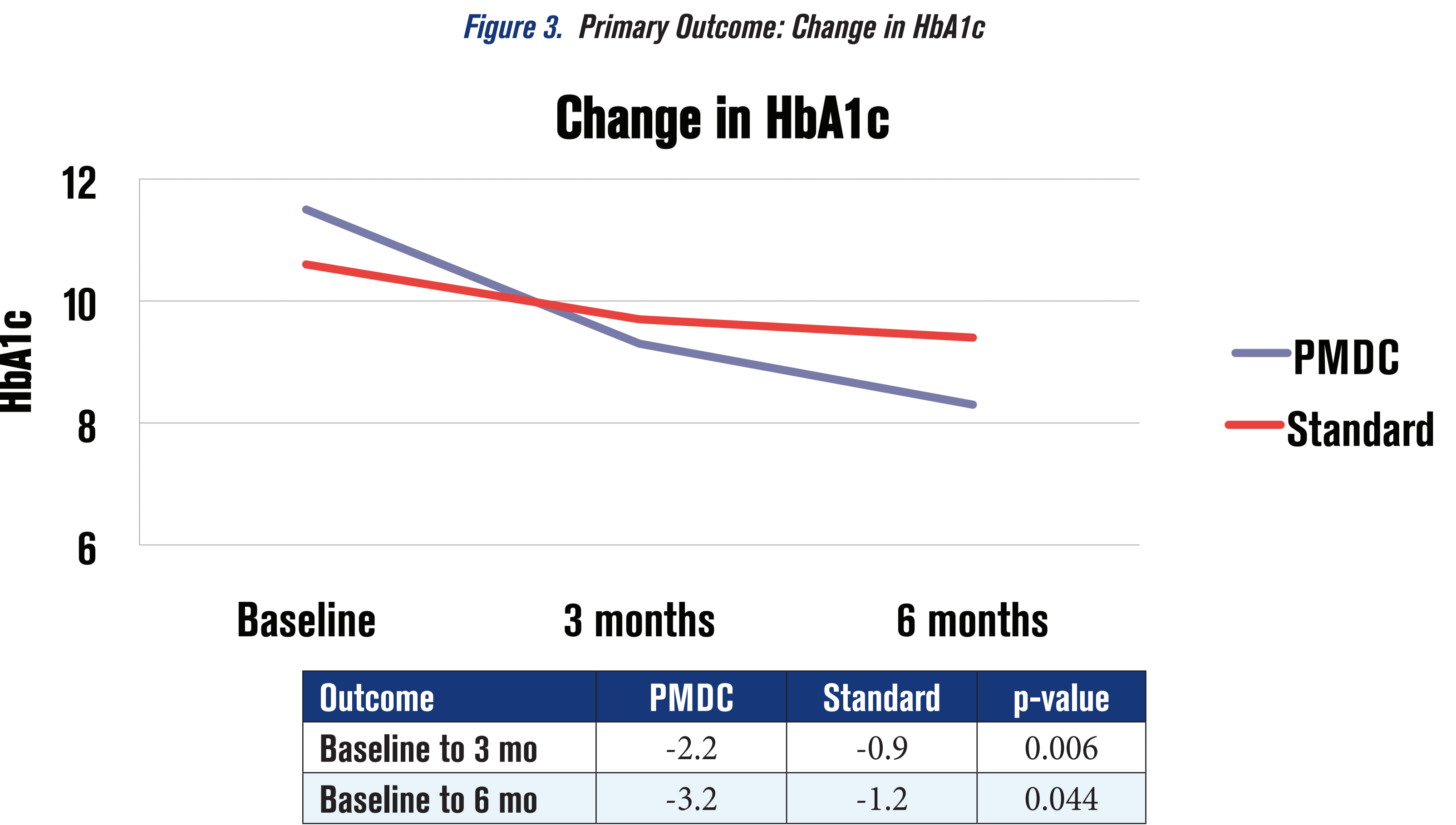


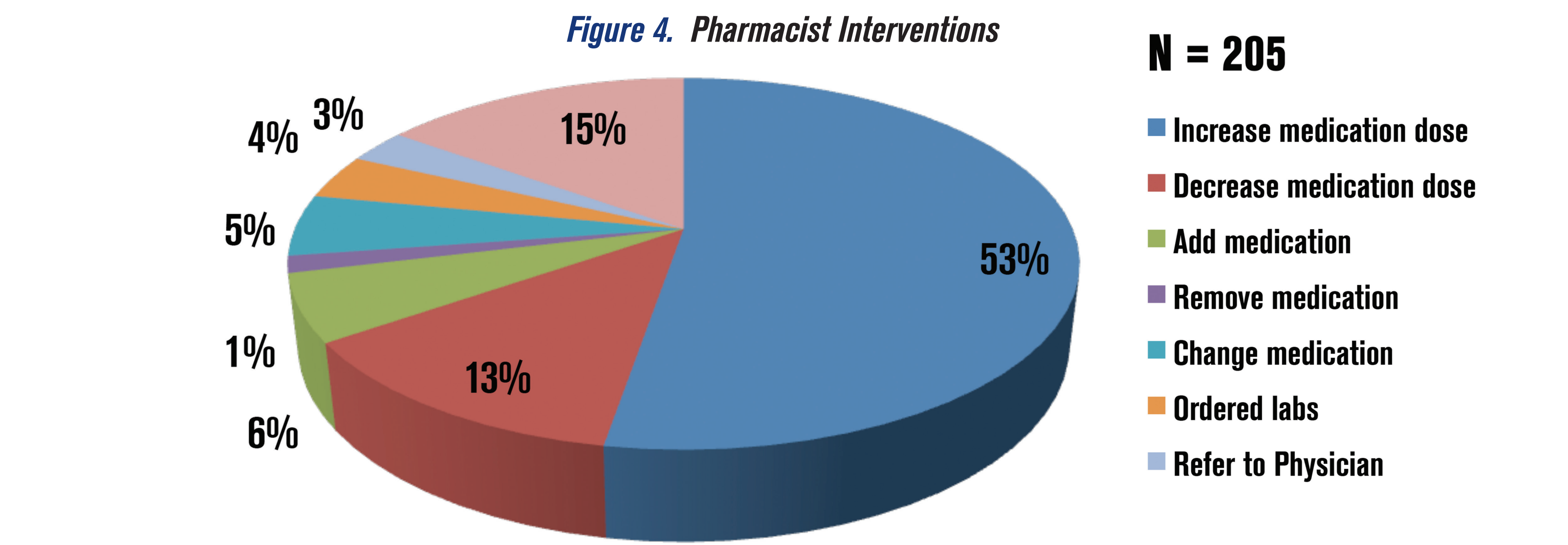
Table 5. Secondary Outcomes

Outcomes	PMDC (n = 36)	Standard (n = 74)	p-value
Patients Meeting BP Goal, n (%)	28 (77.8)	53 (71.6)	0.49
Patients with Current Eye Exam, n (%)	19 (52.8)	32 (43.2)	0.35
Patients with Current Kidney Screening, n (%)	35 (97.2)	59 (79.7)	0.015
Medication Appropriateness	35 (97.2)	74 (100)	0.33
ACE-Inhibitor/ARB Statin Therapy	34 (94.4)	68 (91.9)	1.00

Table 6. Medical Follow-Up

	PMDC (n = 36)	Standard (n = 74)	p-value
DM-Related Hospitalizations, n (%)			0.28
0	29 (80.6)	56 (75.7)	
1 - 2	5 (13.9)	15 (20.3)	
3 - 4	2 (5.6)	2 (2.7)	
5	0	1 (1.4)	
Number of DM-Related Clinic Appointments			0.19
Median (25th, 75th)	3 (3, 6)	3 (2, 5)	
Min to Max	1 to 15	0 to 10	
Percent No-Show, Median (25th, 75th)	15 (9, 22)	16 (6, 22)	0.86
Min to Max	0 to 46	0 to 53	
PMDC Appointments* Median (25th, 75th)	3 (2, 4)	—	—
Min to Max	1 to 14		

*Not included in DM-related clinic appointments



Limitations

- Small sample size
- Retrospective chart review
 - Laboratory follow up
 - Number of patients without HbA1c
 - Eye exam and immunization records
 - Patients may have received these elsewhere
- BP goal determination
 - Due to the snapshot method, patients may have been at goal at other points in time

Future Directions

- Initiatives to improve adherence to retinopathy screening and BP goals
- Immunization counseling and discussion
- Updating EMR with outside records
- Patient follow-up
 - Ensure patients maintain an appropriate follow-up schedule
- PMDC referral process
 - Many patients in the standard group were referred to the PMDC, but appointments were not made
 - Coordinate referral with registration

Conclusions

- Addition of a PMDC had a positive effect on the change in HbA1c leading to a higher percentage of patients reaching goal HbA1c < 8%
- PMDC also assisted in improving rates of nephropathy screening
- Patients in both groups were ordered appropriate medications in regard to other DM standards of care
- Overall, the OPC still requires improvement in retinopathy screening and BP goal

References

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