

Long-term clinical outcomes of pharmacist-led care in diabetes

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1

Disclosure statement

- Marcus Tad Autry, Pharm.D., BCPS
 - Potential conflicts of interest: none
 - Sponsorship: none
- Proprietary information or results of ongoing research may be subject to different interpretations.
- Speaker's presentation is educational in nature and indicates agreement to abide by the non-commercialism guidelines provided.

2

Learning objectives

1. Recognize the need for identifying long-term outcomes of pharmacist-led care in diabetes.
2. Identify the potential impact of comparing long-term pharmacist-led care in diabetes to that of non-pharmacist led care

3

1. Introduction

4

Pharmacist involvement in DM

- DM is a chronic, progressive condition that requires chronic care
- Pharmacist involvement in diabetes care
 - Lower Hgb A1c, SBP/DBP, LDL, TGs, BMI, and ASCVD risk
- Variety of pharmacist-care models
 - Directed education and monitoring
 - Pharmacy-based MTM
 - Pharmacist-only managed care

DM = Diabetes mellitus
 Hgb A1c = Hemoglobin A1c
 SBP/DBP = Systolic/diastolic blood pressure
 LDL = low-density lipoprotein
 BMI = Body mass index
 TGs = Triglycerides
 ASCVD = Atherosclerotic cardiovascular disease
 MTM = Medication therapy management

1. Pousiho S, et al. *J Manag Care Pharm.* 2016;22(5):493-515
 2. Fonseca VA. *Diabetes Care.* 2009;32(Suppl 2):S151-S156

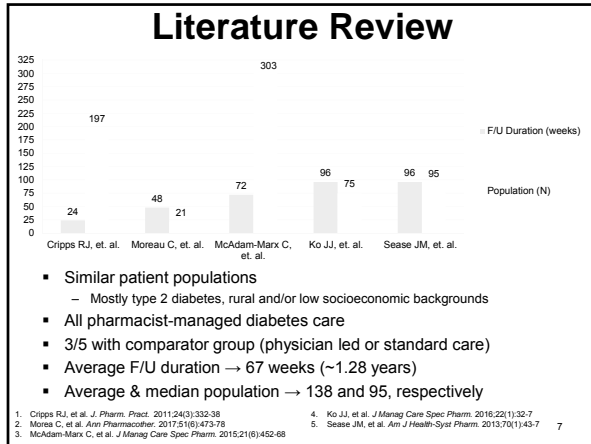
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Pharmacists involvement in DM

- Pharmacists clearly show positive impact
- However, gaps in research exist
 - Longitudinal pharmacist impact
 - Typical follow-up duration: 1 – 3 years
 - Majority in ≤ 2 year range
 - Comparison to other healthcare providers over long-term time periods
 - Literature available for short time periods
 - Description of pharmacist care
 - Process measures → Katherine Newman, Pharm.D.

1. Pousiho S, et al. *J Manag Care Pharm.* 2016;22(5):493-515

6



Summary

- Clear evidence that pharmacist-led care has positive impact in diabetes
- Lacking evidence regarding long-term effects

Study questions


What are the long-term clinical outcomes of pharmacist-led care in diabetes mellitus?

Do long-term clinical outcomes differ in pharmacist-led care versus non-pharmacist led care?

2. Study development

Study site

- OU Family Medicine Center
 - OU Pharmacotherapy Services (aka Silver Clinic)
 - Physician-led clinics (Blue, Purple, and Rose clinics)



Hypothesis

- Long-term clinical outcomes of pharmacist-led care in patients with DM will differ compared to that of non-pharmacist led care provided by family medicine providers.
 - Positive difference in the achievement of clinical outcomes
 - Longer durations and higher percentage of patients at glycemic control over time
 - Faster time to A1c goal
 - Larger A1c reduction from initial

Study objectives

<p>Primary</p> <ul style="list-style-type: none"> ▪ Long-term clinical outcomes <ul style="list-style-type: none"> – A1c Δ from initial visit up to 5 years – Duration and percentage of time A1c at or below patient specific-goal – Yearly completion of select components of the comprehensive diabetes medical evaluation 	<p>Secondary</p> <ul style="list-style-type: none"> ▪ To determine if clinical outcomes differ between pharmacist-led and non-pharmacist led care
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3. Methods

13

Patient selection & data retrieval

Inclusion criteria

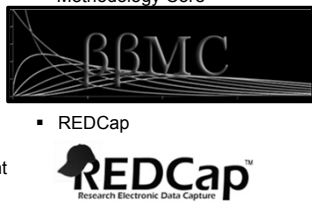
- ≥ 18 years of age
- Initiating care for DM in respective groups between 7/1/09 – 12/31/13
- Initial A1c ≥ 7% at care initiating
- Minimum 365 days in care

Exclusion criteria

- Pregnancy at any time point
- Non-continuous care defined as:
 - No diabetes-specific lab values over 9 consecutive months OR
 - Gaps in visits > 365 days

Data retrieval

- Biomedical and Behavioral Methodology Core
- REDCap



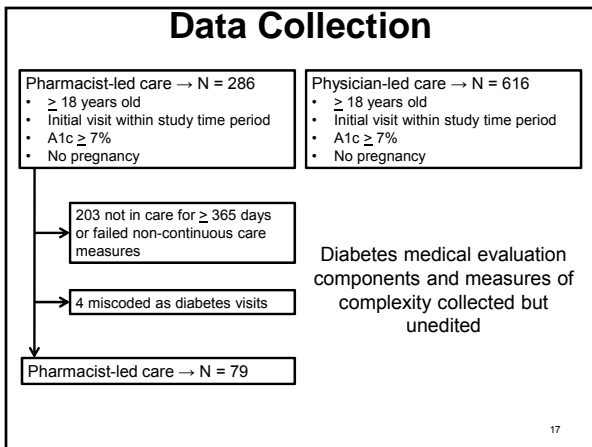
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- ### Statistical analyses
- Descriptive statistics
 - Patient demographics and clinical characteristics
 - Inferential statistics
 - Care group differences in demographics/characteristics
 - Mixed regression models
 - Change in A1c between care groups
 - Generalized estimating equations
 - Model A1c level as above or below goal
 - Kaplan-Meier curves & Log-Rank statistics
 - Differences in time to A1c goal between care groups
- 15

4. Preliminary results

Focus on Silver Clinic population and A1c of 9%

16



Demographics – Silver Clinic

	Male (N = 33)	Female (N = 46)	Total (N = 79)
Gender (%)	41.8	58.2	
Average Age (yr)	56.4	55.8	56.1
Ethnicity			
Non-Hispanic/Latino (%)	25 (75.8)	42 (91.4)	67 (84.8)
Hispanic/Latino (%)	3 (9)	2 (4.3)	5 (6.3)
Unknown (%)	5 (15.2)	2 (4.3)	7 (8.9)
Race			
African American/Black (%)	14 (42.4)	24 (52.3)	38 (48.1)
Caucasian (%)	16 (48.5)	19 (41.3)	35 (44.3)
American Indian/Alaskan Native (%)	1 (3)	1 (2.2)	2 (2.5)
Asian (%)	---	1 (2.2)	1 (1.3)
Unknown (%)	2 (6.1)	1 (2.2)	3 (3.8)

18

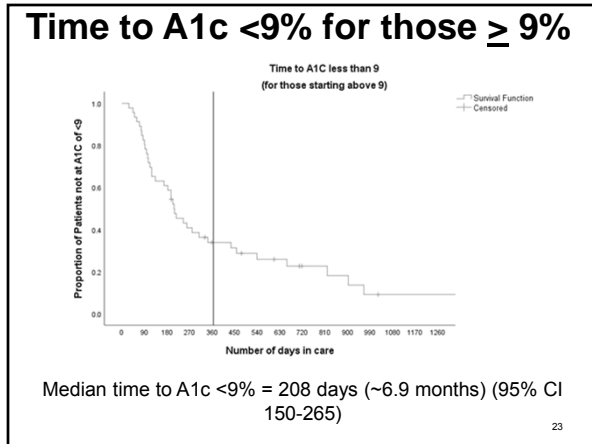
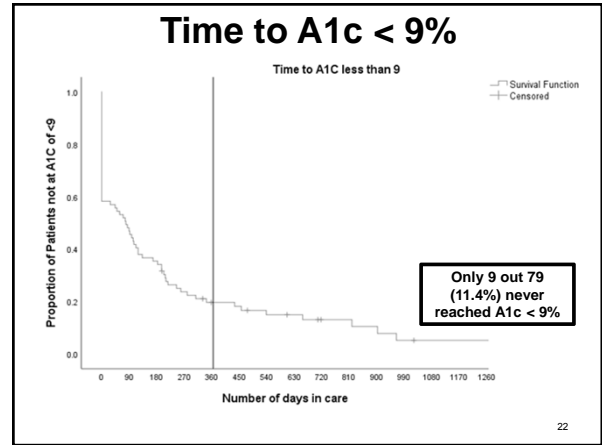
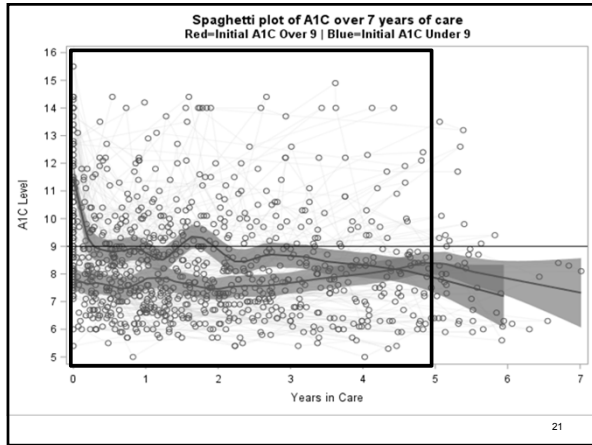
Demographics – Silver Clinic

	Male (N = 33)	Female (N = 46)	Total (N = 79)
Insurance status			
Commercial (%)	10 (30.3)	15 (32.6)	25 (31.6)
Medicaid (%)	5 (15.2)	12 (26.1)	17 (21.5)
Medicare (%)	7 (21.2)	9 (19.6)	16 (20.3)
Medicare + Supplemental (%)	4 (12.1)	---	4 (5.1)
Medicare + Medicaid (%)	5 (15.2)	9 (19.6)	14 (17.7)
No insurance/unknown (%)	2 (6)	1 (2.1)	3 (3.8)
Government-sponsored (%)	21 (63.4)	30 (65.2)	51 (64.6)
Diabetes Duration			
0 – 1 year (%)	9 (27.3)	10 (21.7)	19 (24.1)
1 – 2 years (%)	2 (6.1)	2 (4.3)	4 (5)
2 – 5 years (%)	3 (9)	6 (13.1)	9 (11.4)
5 – 10 years (%)	6 (18.2)	3 (6.5)	9 (11.4)
> 10 years (%)	11 (33.3)	21 (45.7)	32 (40.5)
Unknown	2 (6.1)	4 (8.7)	6 (7.6)

Baseline A1c & care duration

- A1c at entrance into care
 - Median 9.55 (IQR 8.1 – 11.9)
 - Mean 10.12 (SD 2.35)
- Years in care by A1c

	A1c <9	A1c ≥ 9	P - value
Total Years in Care			
Median (IQR)	2.14 (1.31-5)	2.49 (1.46-4.33)	0.6222
Mean (SD)	3.18 (1.93)	2.9 (1.62)	
Total Number of Visits			
Median (IQR)	13 (7.5-19.5)	12 (9-21.0)	0.7257
Mean (SD)	14.06 (7.45)	15.52 (9.48)	



Limitations

- Single-center study...for now
 - May add additional FQHC in future
- Intervention population group smaller than expected
 - Criteria too rigorous?
 - Extend time period?
 - Nature of disease state and population?
- Complete intervention group analysis
 - Individual A1c goal
 - Stratification by patient complexity
- Comparison to comparator group

FQHC = Federally-qualified health center

5. Conclusions

25

Conclusions

- Longitudinal outcomes in pharmacist-led DM care beneficial in value-based healthcare market
 - OU Silver Clinic population significant target of value-based care
- No statistical differences in years in care or visits by A1c at entrance into care
- Overall, vast majority of patients reach A1c <9%
- Possible target care duration for achieving A1c <9% in higher-risk population

26

Long-term clinical outcomes of pharmacist-led care in diabetes

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27

Assessment questions

1. Which of the following is true regarding the need for identifying long-term outcomes of pharmacist-led care in diabetes?
 - a. Most studies involving pharmacist care in diabetes have a duration of 3 to 4 years
 - b. Diabetes is a chronic, progressive condition that requires long-term management**
 - c. Only change in A1c has been studied in pharmacist care in diabetes
 - d. Pharmacist-led care has never been compared to non-pharmacist led care
2. Which of the following is a potential impact of comparing long-term pharmacist-led care in diabetes to that of non-pharmacist led care?
 - a. Establish the ability of pharmacists to provide long-term, sustained, efficacious care to a chronic disease**
 - b. Prove that pharmacist care in diabetes can lower A1c values
 - c. Create competition between pharmacist and physicians for patient care
 - d. Prove that non-pharmacist care in diabetes can lower A1c values

28